



September 14, 2015

David B. Conroy, Chief
Air Programs Branch
United States Environmental Protection Agency – Region 1
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Re: *Revision to the Connecticut State Implementation Plan for the Transfer and Dispensing of Gasoline*

Dear Mr. Conroy:

This package is a revision to the State Implementation Plan (SIP) concerning volatile organic compounds (VOC) emissions during the transfer and dispensing of gasoline. Pursuant to 40 CFR 51, Appendix V, Section 2.1(a) and the April 21, 2011 letter agreement between our two agencies, a copy of the final regulation and documentation of the public hearing are provided. In addition, this package includes, as Attachment A, a demonstration made in accordance with EPA's guidance¹ verifying that this SIP revision is approvable under sections 110(l) and 184(b)(2) of the Clean Air Act (CAA). An electronic copy of this submission has also been mailed to the copy recipients listed below. I certify that such copy is an exact copy of this paper submission.

The Connecticut Department of Energy and Environmental Protection (DEEP) adopted section 22a-174-30a of the Regulations of Connecticut State Agencies (RCSA), revised RCSA section 22a-174-20(b) and repealed RCSA section 22a-174-30, effective July 8, 2015. The primary purpose of this action was to update the volatile organic compound (VOC) emissions control requirements for gasoline dispensing facilities (GDFs) so that the regulations reflect the current status of the state's GDF vapor recovery program as set out in section 22a-174e of the Connecticut General Statutes (CGS), as revised by Public Act No. 13-120 in 2013. Effective the same date, DEEP made minor revisions to RCSA sections 22a-174-3a(a)(2), 22a-174-20(a), 22a-174-20(ee) and 22-174-32(b)(3). All of these revisions are elements of this SIP revision and are included in Attachment B.

The public participation requirements were satisfied during the regulatory adoption proceedings. All required state and federal procedures for public participation were followed, including satisfaction of the requirements of 40 CFR 51, Appendix V, Section 2. To demonstrate satisfaction of the federal public participation requirements, we have enclosed a certified copy of the regulatory revisions; the public notice; a list of attendees at the public hearing; certification of public hearing; and a hearing report, which summarizes comments received, identifies the

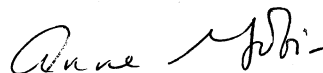
¹ EPA. August 7, 2012. *Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures*. EPA-457/B-12-001.

commenters and describes changes made as a result of the comments. DEEP has the necessary legal authority to adopt and implement such requirements as demonstrated in previous SIP submittals. The submitted attachments include the following:

- Attachment A SIP revision request demonstrating that the requirements of CAA sections 110(l) and 184(b)(2) are met with appendices:
 - Appendix A Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*
 - Appendix B Complete text of RSCA sections 22a-174-3a(a), 22a-174-20(a), 22a-174-20(b), 22a-174-20(ee), 22a-174-30a and 22-174-32(b)
 - Appendix C Final Report: *Analysis of Future Options for Connecticut's Gasoline Dispensing Facility Vapor Control Program*. June 4, 2012
 - Appendix D Calculations
- Attachment B Revisions to the RCSA, effective on July 8, 2015, in the form filed with the Secretary of the State including revisions required in the Legislative Commissioners' Office report, marked with brackets and underlined text to show the changes to the current SIP requirements.
- Attachment C Public notice as published on the Connecticut Secretary of the State's website on June 20, 2014 and on the DEEP website on June 12, 2014.
- Attachment D Attendees at the public hearing on July 24, 2014, DEEP Headquarters, 79 Elm Street, Hartford, CT
- Attachment E Certification of public hearing
- Attachment F Hearing report
- Attachment G Legislative Commissioners' Office reports (June 11, 2015 and June 17, 2015)

If you require additional information or have any questions about this submission, please get in touch with Robin Baena of the Bureau of Air Management at (860) 424-3196 or robin.baena@ct.gov.

Sincerely,



Anne R. Gobin
Chief, Bureau of Air Management

cc: Susan Lancey, EPA Region 1
Ariel Garcia, EPA Region 1

ATTACHMENT A

REVISION TO THE STATE IMPLEMENTATION PLAN CONCERNING THE TRANSFER AND DISPENSING OF GASOLINE

The Connecticut Department of Energy and Environmental Protection (DEEP) submits this State Implementation Plan (SIP) revision so that the SIP will reflect the current status of Connecticut's gasoline dispensing facility (GDF) vapor recovery program. In requesting this action, Connecticut demonstrates that the requirements of sections 110(l) and 184(b)(2) of the Clean Air Act (CAA) are met.

The details of Connecticut's Stage II vapor recovery program were set out in section 22a-174-30 of the Regulations of Connecticut State Agencies (RCSA), which was adopted in November 1992 under the authority of Connecticut General Statutes (CGS) section 22a-174e. In the 2013 legislative session, CGS section 22a-174e was revised by Public Act No. 13-120¹ to mandate the decommissioning of existing Stage II vapor recovery equipment and prohibit the installation of new Stage II vapor recovery equipment at GDFs in Connecticut. Effective July 8, 2015, RCSA section 22a-174-30 was repealed to remove Stage II vapor recovery requirements from the RCSA. Also included in the July 8, 2015 revisions was the revision of RCSA section 22a-174-20(b) and adoption of RCSA section 22a-174-30a to consolidate Stage I vapor recovery requirements from RCSA sections 22a-174-30 and 22a-174-20(b) into new RCSA section 22a-174-30a. In addition, minor revisions were made to RCSA sections 22a-174-3a(a)(2), 22a-174-20(ee) and 22a-174-32(b)(3) to replace the references to section 22a-174-30 with a reference to section 22a-174-30a and to section 22a-174-20(a)(7) to clarify the language. The complete text of RCSA sections 22a-174-3a(a), 22a-174-20(a), 22a-174-20(b), 22a-174-20(ee) and 22-174-32(b) as amended and RCSA section 22a-174-30a as adopted are included as Appendix B.

I. REQUEST

Recognizing the differences between the SIP and Connecticut's current law and regulations, DEEP hereby requests:

- (1) Addition of RCSA section 22a-174-30a into the SIP;
- (2) Revision of the current SIP-approved version of RCSA sections 22a-174-3a(a), 22a-174-20(a), (b) and (ee) and 22a-174-32(b);
- (3) Withdrawal of RCSA section 22a-174-30 from the SIP; and
- (4) Addition of Public Act No. 13-120 into the SIP.

To assist the U.S. Environmental Protection Agency (EPA) in granting this action, DEEP notes that RCSA section 22a-174-30 was first approved into the SIP on December 17, 1993 and was subsequently approved with revisions on August 31, 2006. DEEP has no record of a submission to or approval by EPA of CGS section 22a-174e.

¹ Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*.
<http://www.cga.ct.gov/2013/ACT/pa/pdf/2013PA-00120-R00HB-06534-PA.pdf>. See Appendix A.

To support this action, DEEP satisfies the administrative and technical requirements of 40 CFR 51, Subpart F and Appendix V and demonstrates that the requirements of sections 110(l) and 184(b)(2) of the Clean Air Act (CAA) are met. Removing the Stage II vapor recovery program from the SIP meets the comparable measures requirement under CAA section 184(b)(2) because the statewide incremental emissions control that Stage II achieves beyond ORVR was *de minimis* in 2013, the year Public Act No. 13-120 was enacted. This action may be approved under CAA section 110(l) because decommissioning Stage II vapor recovery equipment will not interfere with attainment of and reasonable further progress towards attainment of the ozone national ambient air quality standards (NAAQS).

II. NARRATIVE

CAA section 182(b)(3) directs state or local air pollution control agencies with moderate or higher nonattainment areas for the ozone NAAQS to implement a Stage II vapor recovery program to control volatile organic compound (VOC) emissions during refueling at GDFs. Further, CAA Section 184(b)(2) requires the Ozone Transport Region (OTR) states to implement a Stage II vapor recovery program or measures capable of achieving emissions reductions comparable to those achieved through Stage II vapor recovery equipment. As a result of its ozone NAAQS nonattainment status and membership in the OTR, DEEP implemented a Stage II vapor recovery program beginning in 1992.

To satisfy the Stage II vapor recovery requirements of the CAA, DEEP adopted RCSA section 22a-174-30 on November 24, 1992. EPA approved the regulation as a revision to the SIP on December 17, 1993.² DEEP revised RCSA section 22a-174-30, effective April 1, 2004, by enhancing the Stage I vapor recovery program with pressure/vacuum vent valve requirements and by requiring more frequent functional testing of the Stage II vapor recovery system. EPA approved the amended version of RCSA section 22a-174-30 by direct final rule on August 31, 2006.³ The authority to adopt and amend RCSA section 22a-174-30 was provided by CGS section 22a-174e, which, prior to its revision in the 2013 legislative session, required the installation of Stage II vapor recovery systems at GDFs with a throughput greater than 10,000 gallons per month.

During the years that DEEP was implementing its Stage II vapor recovery program, EPA promulgated regulations to phase-in the installation of on-board refueling vapor recovery (ORVR) equipment in the motor vehicle fleet beginning with model year 1998. ORVR equipment has been required on nearly all new gasoline-powered highway vehicles since 2006. Because Congress recognized that ORVR would eventually replace Stage II vapor recovery equipment, CAA section 202(a)(6) provides EPA with authority to waive the Stage II vapor recovery requirements of CAA section 182(b)(3) when ORVR systems are determined to be in widespread use throughout the motor vehicle fleet and allow states to remove Stage II vapor recovery programs from their SIPs. Beginning May 16, 2012, EPA determined that ORVR is in widespread use throughout the national motor vehicle fleet and waived the requirement that states implement Stage II vapor control programs.⁴

2 58 FR 65930.

3 71 FR 51761.

4 *Widespread Use for Onboard Refueling Vapor Recovery and Stage II Waiver*. [77 FR 28772](#) (May 16, 2012). Hereafter, "Widespread Use Rule."

In 2011, DEEP entered into a contract with de la Torre Klausmeier Consulting, Inc. (dKC) to have dKC evaluate the state's GDF vapor recovery program. dKC concluded that continuing the Stage II vapor recovery program would achieve minimal emission reductions in 2013 and result in an increase in refueling emissions after 2015.⁵ The predicted increased emissions result from the incompatibility between vacuum-assist Stage II systems and ORVR. According to the dKC final report, ninety-four percent of the gasoline sold in Connecticut was dispensed through incompatible vacuum-assist Stage II vapor recovery systems. Further, dKC determined that adopting the Stage II provisions of the California Enhanced Vapor Recovery program to address incompatibility would not be cost effective. The dKC report is included as Appendix C.

Based on the data and analysis presented in the dKC report, DEEP determined that decommissioning Stage II vapor recovery equipment was justified. As an initial action, on February 2, 2012, DEEP waived the requirement to install Stage II vapor recovery systems at newly constructed GDFs.⁶

The Connecticut General Assembly enacted Public Act No.13-120 during the 2013 legislative session. Public Act No. 13-120 requires the owner of any GDF to decommission installed Stage II vapor recovery equipment on or before July 1, 2015 and prohibits the installation of a Stage II vapor recovery system at any GDF. According to Public Act No. 13-120, decommissioning must be performed in accordance with Section 14 of the 2009 *Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Refueling Sites* of the Petroleum Equipment Institute.⁷ Decommissioning requires all aboveground Stage II vapor recovery equipment to be permanently disconnected and all aboveground and below-ground vapor or liquid paths that may release vapors to the ambient air to be sealed, but does not require removal of below-ground Stage II vapor recovery equipment. Concurrent with mandating removal of Stage II control equipment, Public No. Act 13-120 increases the Stage I vapor control equipment testing frequency at GDFs from three-year intervals to annual testing.

Effective July 8, 2015, Connecticut's regulations concerning GDFs were revised to remove the requirements for the installation and operation of Stage II vapor recovery equipment, while retaining the Stage I vapor recovery requirements for most GDFs, so that the regulations conform to the requirements of Public Act No. 13-120. The action consolidates the Stage I requirements formerly contained in RCSA sections 22a-174-20(b) and 22a-174-30 and incorporates existing federal requirements for controlling air emissions at GDFs (*i.e.* 40 CFR 63 Subpart CCCCC) into RCSA section 22a-174-30a. RCSA section 22a-174-30a also requires a GDF owner/operator to install a California Air Resource Board (CARB)-approved pressure/vacuum (P/V) vent valve when any existing valve is replaced. The better quality materials and construction of CARB-approved P/V vent valves is expected to reduce P/V vent valve failures and decrease emissions.

5 Klausmeier, Rob. *Analysis of Future Options for Connecticut's Gasoline Dispensing Facility Vapor Control Program*. June 4, 2012 [Final Report](#). Included as Appendix C.

6 DEEP. February 2012. *Compliance Waiver for Newly Constructed Gasoline Dispensing Facilities Operating under RCSA Section 22a-174-30 (Stage II Vapor Recovery)*. http://www.ct.gov/deep/lib/deep/air/compliance_monitoring/temp_authorization/stage_ii_vapor_recovery-compliance_waiver.pdf

7 Petroleum Equipment Institute. 2009. *Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Refueling Sites*. Available at: <http://www.pei.org/PublicationsResources/RecommendedPracticesExams/RP300/tabid/101/Default.aspx>

DEEP submits this request in accordance with EPA's *Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures*⁸ (Guidance) and 40 CFR 51 Subpart F and Appendix V. Using the methods in the Guidance, DEEP has assessed the incremental emissions resulting from decommissioning Stage II vapor recovery equipment and concluded that the removal of the Stage II vapor recovery program from Connecticut's SIP may be done in satisfaction of CAA sections 110(l) and 184(b)(2).

A. Satisfaction of CAA Requirements

To remove the Stage II program from Connecticut's SIP, DEEP must address two CAA requirements:

- (1) Section 184(b)(2): *Within 3 years after November 15, 1990, the Administrator shall complete a study identifying control measures capable of achieving emission reductions comparable to those achievable through vehicle refueling controls contained in section 7511a (b)(3) of this title, and such measures or such vehicle refueling controls shall be implemented in accordance with the provisions of this section. Notwithstanding other deadlines in this section, the applicable implementation plan shall be revised to reflect such measures within 1 year of completion of the study.*
- (2) Section 110(l): *Each revision to an implementation plan submitted by a State under this chapter shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 7501 of this title), or any other applicable requirement of this chapter.*

(1) VOC Emissions Calculations

The emissions reduction benefit of maintaining Stage II vapor recovery equipment diminishes over time for two reasons: 1) each year a larger percentage of gasoline is dispensed to vehicles equipped with ORVR as the vehicles fleet turns over; and 2) incompatibility excess emissions (IEE), the increased emissions caused by the incompatibility of most vacuum-assist Stage II systems and ORVR. IEE occur when a vacuum-assist system draws ambient air, rather than an air-gasoline vapor mixture, into a GDF's storage tank during the refueling of an ORVR equipped vehicle, diluting the concentration of gasoline vapors in the headspace of the storage tank. As equilibrium is reestablished, liquid gasoline in the storage tank evaporates and increases the storage tank pressure. A higher pressure results in increased fugitive emissions and can result in vent emissions if tank pressure increases above the positive setting of the P/V vent valve.⁹ IEE emissions are, as the name suggests, emissions in addition to normal (*i.e.*, baseline) tank breathing/emptying losses. Because the majority (94%) of gasoline sold in Connecticut was dispensed through vacuum-assist Stage II vapor recovery equipment that is incompatible with ORVR,¹⁰ IEE was considered when assessing the effectiveness of the state's Stage II vapor recovery program.

8 EPA. August 7, 2012. *Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures*. EPA-457/B-12-001. Available at: <http://epa.gov/glo/pdfs/20120807guidance.pdf>

9 Ibid, p. 10.

10 dKC report, pp. 5-6.

DEEP used the methodology presented in the Guidance to calculate the emissions impact of maintaining the state's Stage II vapor recovery program. DEEP calculated the Stage II incremental emissions control benefit (the "Increment") using Equation 1 of the Guidance and the incremental VOC inventory impact for maintaining a Stage II program using Equation 3 for baseline year 2013 and for the years 2014, 2015, and 2016. All calculations are presented in Appendix D. The incremental emissions impact is the difference between the refueling vapors that Stage II equipment captures from non-ORVR vehicles and IEE. The incremental emissions impact of Stage II vapor recovery systems can be determined without calculating baseline breathing/emptying losses, because the baseline breathing/emptying emissions rate is not significantly affected by removing Stage II vapor recovery equipment.¹¹ In Connecticut where 94% of the gasoline was dispensed through incompatible vacuum-assist systems, IEE would have exceeded Stage II vapor recovery controls once the number of vehicles in the fleet with ORVR surpassed approximately 80 percent.

The results of the Stage II emissions impact calculations are highly dependent on the assumed effectiveness of the Stage II vapor recovery systems. Stage II vapor recovery system performance tests indicate that Stage II systems readily develop leaks and other malfunctions.¹² The control efficiency of Stage II vapor recovery equipment is highly dependent on the frequency of inspection. EPA estimates "Stage II in-use efficiencies of 92 percent with semi-annual inspections, 86 percent with annual inspections and 62 percent with minimal or less frequent state inspections."¹³

DEEP assumed a Stage II control efficiency of 86% in Connecticut's SIP. However, based on the three-year GDF inspection frequency that was in effect in Connecticut, actual Stage II control efficiencies were likely about 60%.¹⁴ Corrected for rule penetration and rule effectiveness, the 86% and 60% control efficiencies translate into overall Stage II effectiveness of 82% and 57%, respectively.¹⁵ The incremental emissions benefit and VOC inventory impact were calculated using both of these control efficiencies and are summarized for 2013 and 2015 in Table 1. The values in Table 1 were calculated using the percent of vehicle miles traveled by vehicles equipped with ORVR (VMT_{ORVR} , as defined in the Guidance¹⁶) to quantify ORVR penetration in the vehicle fleet. Appendix D presents these calculations in detail. The incremental emission control benefit and incremental VOC inventory impact calculated using the fraction of gasoline dispensed to ORVR vehicles to quantify ORVR penetration in the vehicle fleet do not vary significantly from those presented in Table 1.

11 Ibid, p. 8.

12 dKC report, p. 8.

13 Widespread Use Rule at 28774.

14 dKC report, p. 8.

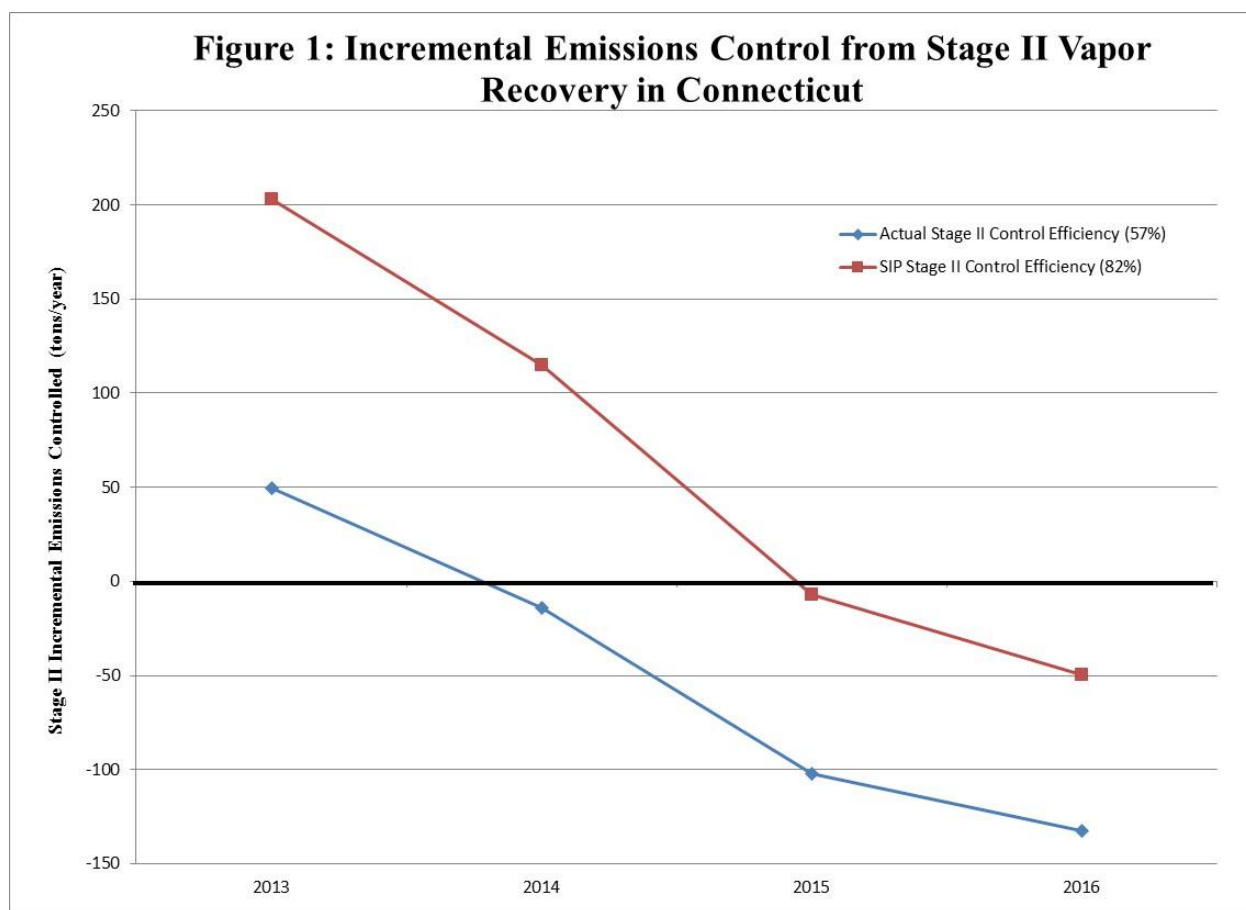
15 Ibid.

16 Guidance, p. 11.

Table 1: 2013 & 2015 Incremental Impact of Removing the Stage II Vapor Recovery Program in Connecticut at Two Control Efficiencies

	2013		2015	
	Actual Stage II Control Efficiency (57%)	SIP Stage II Control Efficiency (82%)	Actual Stage II Control Efficiency (57%)	SIP Stage II Control Efficiency (82%)
Incremental emissions control benefit	1.0%	4.3%	-2.1%	-0.15%
Incremental O ₃ -season VOC inventory impact (Tons controlled)	21	87	(43)	(3.1)
Incremental annual VOC inventory impact (Tons controlled)	50	200	(100)	(7.4)
Note: results are rounded to two significant figures				

The conclusion suggested by the incremental emissions control benefit and VOC inventory impact calculated using the Guidance agrees with the conclusion of the dKC report: continuing the Connecticut Stage II vapor recovery program would have achieved minimal emission reductions in 2013 and, beginning in 2015, would have resulted in an increase in refueling emissions based on the more conservative calculation using the higher Stage II control efficiency, which was likely not achieved. Calculations using a Stage II control efficiency of 57% show that IEE would have resulted in an emissions increase in 2014 if Stage II vapor recovery equipment was not decommissioned (*See* Figure 1).



(2) CAA section 184(b)(2) - Comparable Measures

Under CAA section 184(b)(2), states in the OTR are obligated to implement a Stage II program or other measures capable of achieving emissions reductions comparable to those achievable by Stage II vapor recovery equipment. Comparable measures are not, however, required to achieve reductions “equivalent” to a jurisdiction’s Stage II vapor recovery program. The comparable measures requirement could be “satisfied if phasing out a Stage II control program in a particular area is estimated to have no, or a *de minimis*, incremental loss of area-wide emissions control...”¹⁷ Emissions reductions are considered comparable and alternative reductions are not needed when the incremental emissions control that Stage II achieves beyond ORVR is “less than 10% of the area-wide emissions inventory associated with refueling highway motor vehicles.”¹⁸

The incremental emissions control that Stage II vapor recovery equipment achieves beyond ORVR calculated using Equation 1 of the Guidance for Connecticut in 2013, the year Public Act No. 13-120 allowed decommissioning of Stage II equipment, was 1.0% and 4.3% for Stage II control efficiencies of 57% and 82%, respectively (*see* Table 1). These calculated incremental emissions are well below the 10% *de minimis* incremental loss of emissions control defined by EPA in the Guidance. By 2015, the year Public Act No. 13-120 required decommissioning of all Stage II vapor recovery equipment in Connecticut, retaining State II vapor recovery would have resulted in an increase in emissions due to IEE. DEEP, therefore, concludes that revising

¹⁷ Ibid, p. 6

¹⁸ Ibid.

Connecticut's SIP by removing the state's Stage II vapor recovery program meets the comparable measures requirement under CAA section 184(b)(2).

(3) CAA section 110(l) - Noninterference

Under CAA section 110(l), EPA can only approve a SIP revision that does not interfere with attainment of the NAAQS, reasonable further progress toward attainment or any other applicable CAA requirement. In evaluating whether a given SIP revision would interfere with attainment or maintenance, EPA generally considers whether the SIP revision allows an increase in actual air emissions above what is allowed under the existing EPA-approved SIP. However, a temporary increase in VOC emissions that diminishes rapidly over time as ORVR is phased-in may be consistent with CAA section 110(l) when the transitory emissions increase is "too small to interfere with attainment or progress toward attainment."¹⁹

With decommissioning, the emissions from non-ORVR vehicles not controlled by Stage II vapor recovery equipment can cause refueling emissions to increase. Without any Stage II vapor recovery controls, VOC emissions would have increased by an estimated 200 tons in 2013 (*see* Table 1) in Connecticut, or about one-tenth of one percent of the 135,000 tons²⁰ of the VOC emitted in Connecticut annually, assuming an 82% Stage II control efficiency. Assuming all Stage II vapor recovery equipment was decommissioned in July 2013, in the first month following enactment of Public Act No. 13-120, and 82% control efficiency, the maximum potential annual VOC emissions increase was calculated to be approximately 100 tons for 2013. Assuming the more realistic Stage II control efficiency of 57%, removal of Stage II vapor recovery equipment could have resulted in a potential emissions increase of 25 tons (for July – December 2013). Both of these potential emissions increases are artificially high, as all Stage II equipment was not decommissioned in 2013. Furthermore, less than half of the annual VOC emissions increases from Stage II vapor recovery equipment removal occur during the ozone season (*see* Table 1). A maximum potential annual VOC emissions increase of about one-twentieth of one percent (100 tons) is "too small to interfere with attainment or progress toward attainment."

If all Stage II vapor recovery equipment had been decommissioned by 2014, the estimated emissions impact of removing Stage II vapor recovery equipment ranges between a small emissions decrease, because IEE are reduced, to a maximum annual emissions increase of approximately 120 tons (or 49 tons in the ozone season), depending on the assumed Stage II control efficiency. (*See* Figure 1; *see also* Table D-2 of Appendix D.) By 2015, the year by which Stage II vapor recovery equipment must be removed pursuant to Public Act No. 13-120, retaining Stage II vapor recovery equipment would have resulted in an increase in refueling emissions under either Stage II control efficiency scenario. (*See* Table 1 and Table D-3 of Appendix D.)

Further, any VOC emissions increase that may have occurred in 2013 or 2014 may have been offset by a decrease in fugitive emissions as a result of increased Stage I testing frequency. Public Act No. 13-120 increases testing frequency from three-year intervals to annually. RCSA section 22a-174-30a specifies the required tests and adds recordkeeping and test results reporting requirements. More frequent testing of GDF tank pressure and other parameters that indicate the

¹⁹ Ibid, p. 5.

²⁰ 2008 National Emissions Inventory, available at: <http://www.epa.gov/ttn/chief/net/2008inventory.html>

presence of vapor leaks has the potential for significant emissions reductions, since leaks will be identified and repaired sooner.

In conclusion, these revision to Connecticut's SIP are approvable under CAA section 110(l) because any VOC emissions increase that may have occurred in 2013 or 2014 were too small to interfere with attainment and reasonable further progress towards attainment of the ozone NAAQS. By 2015, continuing a Stage II vapor recovery program would have resulted in an increase in refueling emissions due to IEE (*see* Figure 1). Preventing an increase in refueling emissions is consistent with the non-interference requirements of the CAA.

C. Satisfaction of 40 CFR 51, Appendix V, Section 2.2

DEEP offers the following information in satisfaction of 40 CFR 51, Appendix V, Section 2.2:

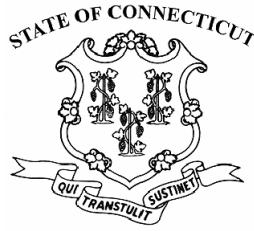
- (a) The primary regulated pollutant affected by this SIP revision is VOC. Other emissions associated with gasoline dispensing are affected in the same manner as VOC, *i.e.*, the emissions are reduced over time, as IEE are eliminated. Such other pollutants include some toxic air emissions such as benzene.
- (b) This SIP revision applies statewide.
- (c), (d) The changes in emissions resulting from this action and the demonstration concerning protection of the NAAQS and other CAA requirements are set out in preceding discussion. *See* Section II.A of this SIP revision.
- (e) Modeling information is not necessary to support this SIP revision.
- (f) Continuous emissions monitoring is not necessary to support this SIP revision.
- (g) The predicted emissions impacts of this SIP revision are contingent on decommissioning of all GDFs in Connecticut by July 1, 2015. The work practices associated with the decommissioning process are required by subsection (c) of Public Act No. 13-120. Subsections (c) and (d) of Public Act No. 13-120 require notification to DEEP of decommissioning and intent to perform a pressure decay test of Stage I vapor recovery equipment.
- (h) DEEP will track decommissioning by the submission of notifications under Public Act No. 13-120(c). DEEP maintains a database of all GDFs with installed Stage II vapor recovery equipment and uses this database to manage the periodic functional testing requirement of RCSA section 22a-174-30. Any GDF that is not decommissioned by the July 1, 2015 deadline will be examined and subjected to appropriate enforcement action by DEEP's Bureau of Air Management. During the transition prior to July 1, 2015, DEEP will continue to enforce the requirements of RCSA section 22a-174-30 at GDFs until decommissioning occurs. DEEP maintains sufficient field enforcement staff to carry out these enforcement responsibilities.
- (i) DEEP justifies this SIP revision in accordance with EPA's widespread use determination and the Guidance. *See* Section II.A and B of this SIP revision.

III. CONCLUSION

A grant of the requested action in this SIP revision will result in elimination from the SIP of the Stage II vapor recovery program in Connecticut, which will make the SIP consistent with Connecticut law requiring decommissioning of all Stage II vapor recovery equipment by July 1, 2015. Connecticut's Stage I vapor recovery program at GDFs will continue.

The emissions implications of removal of Connecticut's Stage II vapor recovery program, determined according to the Guidance, are consistent with the CAA. The loss of control from removing the Stage II vapor recovery program from the state's SIP was *de minimis* in 2013, satisfying the comparable measures requirement under CAA section 184(b)(2). Any temporary increase in VOC emissions from decommissioning Stage II vapor recovery equipment in 2013 was too small to influence ozone levels in the state and interfere with attainment and maintenance of the ozone NAAQS. Therefore, the requirements for SIP approval under CAA section 110(l) are satisfied. If Stage II vapor recovery equipment had been retained, IEE would have surpassed emissions captured from non-ORVR vehicles and area-wide refueling emissions would have increased by 2015. This action, which repeals Stage II vapor recovery requirements and maintains Connecticut's Stage I vapor recovery program, is consistent with Connecticut's air quality goals and the CAA.

Appendix A



House Bill No. 6534

Public Act No. 13-120

AN ACT CONCERNING GASOLINE VAPOR RECOVERY SYSTEMS.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. Section 22a-174e of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) [On or before July 1, 1992, the Commissioner of Energy and Environmental Protection shall adopt regulations, in accordance with the provisions of chapter 54, and in consultation with the State Fire Marshal's Office, to require the installation of a stage II gasoline vapor recovery system for all gasoline pumps at any gasoline dispensing facility newly constructed on or after said date which will dispense more than ten thousand gallons of gasoline per month, and at any such existing facility for all gasoline tanks which are replaced on or after said date. Such regulations shall provide for specifications deemed by the commissioner to be necessary to implement such a vapor recovery system at each such facility, and may require, in order to comply with the federal Clean Air Act, that any other gasoline dispensing facility which dispenses more than ten thousand gallons of gasoline per month shall implement such a vapor recovery system. On or after July 1, 1993, the Commissioner of Energy and Environmental Protection may amend such regulations to require a stage II gasoline vapor recovery system at any newly constructed fuel dispensing facility

House Bill No. 6534

which dispenses one thousand gallons or more of gasoline per month or at any existing gasoline dispensing facility for any gasoline tank which is replaced on or after July 1, 1993, where such tank has a capacity of one thousand gallons or more. The Commissioner of Energy and Environmental Protection may require, by regulation, that any vapor recovery equipment tested and approved by the California Air Resources Board, either before or after the effective date of such regulation, be required to be installed at any such fuel dispensing facility. Such regulations may require that any installed vapor recovery equipment be annually tested in accordance with functional test methods approved by the state of California Air Resources Board provided such regulations specifically set forth such methods and further provided nothing in this section shall preclude the commissioner from requiring additional testing upon the failure of any source to demonstrate compliance. Notwithstanding any regulation adopted pursuant to this chapter, a person may install a stage II gasoline vapor recovery system which has been tested and approved by the state of California Air Resources Board after November 1, 1992, provided such system utilizes only coaxial hoses.] As used in this section:

(1) "Decommission" means to render inoperable an operational stage II vapor recovery system by (A) permanently disconnecting all above-ground stage II vapor recovery equipment, and (B) sealing all above-ground and below-ground vapor or liquid paths that may release to the ambient air. Decommission does not require removal of below-ground stage II vapor recovery equipment;

(2) "Gasoline dispensing facility" means any site where gasoline is transferred to a motor vehicle from any stationary storage tank with a capacity of two hundred fifty gallons or more;

(3) "Pressure decay test" means an integrity test of the ullage portion of a gasoline storage system, during which such storage system is

House Bill No. 6534

pressurized, pressure changes are monitored for a specified period of time and the final pressure is compared to an allowable value;

(4) "Stage I vapor recovery system" means a vapor recovery system that prevents the discharge to the ambient air of gasoline vapors while gasoline is transferred between a delivery vehicle and a gasoline dispensing facility; and

(5) "Stage II vapor recovery system" or "stage II vapor recovery equipment" means a vapor recovery system that prevents the discharge to the ambient air of gasoline vapors displaced during the dispensing of gasoline into a motor vehicle fuel tank.

(b) On or before July 1, 2015, the owner of any gasoline dispensing facility shall decommission any installed stage II vapor recovery equipment in accordance with subsection (c) of this section, notwithstanding any requirements in the regulations of Connecticut state agencies adopted by the Department of Energy and Environmental Protection pertaining to stage II vapor recovery systems. On or after the effective date of this section, no owner of any gasoline dispensing facility shall install a stage II vapor recovery system.

(c) Decommissioning of a stage II vapor recovery system shall: (1) Begin after such owner has notified the commissioner of the intent to decommission; (2) be performed in accordance with Section 14 of the 2009 "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Refueling Sites" of the Petroleum Equipment Institute; and (3) be completed within one hundred days from initiation, unless the Commissioner of Energy and Environmental Protection grants an extension of time for good cause after a request for such extension by the owner of a gasoline dispensing facility. Such notification shall be made at least thirty days prior to decommissioning on a form prescribed by the commissioner.

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(d) The owner of any gasoline dispensing facility with a stage I vapor recovery system annually shall perform a pressure decay test of such system. Such owner shall notify the Commissioner of Energy and Environmental Protection at least seven business days prior to a scheduled test on a form prescribed by the commissioner.

Appendix B
Regulations of Connecticut State Agencies
Sections 22a-174-3a(a), 22a-174-20(a), (b), & (ee), 22a-174-30a,
and 22a-174-32(b)

Sec. 22a-174-3a. Permit to Construct and Operate Stationary Sources

(a) Applicability and Exemptions

(1) Applicability. Prior to beginning actual construction of any stationary source or modification not otherwise exempted in accordance with subdivision (2)(A) to (C) of this subsection, the owner or operator shall apply for and obtain a permit to construct and operate under this section for any:

- (A) New major stationary source;
- (B) Major modification;
- (C) New or reconstructed major source of hazardous air pollutants subject to the provisions of subsection (m) of this section;
- (D) New emission unit with potential emissions of fifteen (15) tons or more per year of any individual air pollutant;
- (E) Modification to an existing emission unit which increases potential emissions of any individual air pollutant from such unit by fifteen (15) tons or more per year;
- (F) Stationary source or modification that becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant;
- (G) Incinerator for which construction commenced on or after June 1, 2009, except if such incinerator is used:
 - (i) for the primary purpose of reducing, controlling or eliminating air pollution, or
 - (ii) as a solid waste incineration unit subject to an emission guideline issued pursuant to Section 129 of the Act;
- (H) New stationary source that emits, or has the potential to emit, equal to or greater than 100,000 tons per year of CO₂e and one hundred (100) tons per year of greenhouse gases;
- (I) Major stationary source when such major stationary source undertakes a physical change or change in the method of operation that will result in a net emissions increase that is equal to or greater than 75,000 tons per year CO₂e; or
- (J) Stationary source that emits, or has the potential to emit, equal to or greater than 100,000 tons per year of CO₂e and one hundred (100) tons per year of greenhouse gases, when such stationary source undertakes a physical change or change in the method of operation that will result in a net emissions increase that is equal to or greater than 75,000 tons per year CO₂e.

(2) Exemptions. Notwithstanding the provisions of subdivision (1) of this subsection, the owner or operator of a stationary source or modification may conduct activities listed in subdivision (2)(A), and may construct or operate the sources listed in subdivision (2)(B) and (2)(C) of this section, without a permit under this section:

(A) Any activity that:

- (i) adds air pollution control equipment or implements process changes to control air pollution unless the addition or implementation results in an increase in actual emissions of any individual air pollutant of fifteen (15) tons or more per year, or ten (10) tons or more per year of a hazardous air pollutant subject to the provisions of subsection (m) of this section,
- (ii) relocates a portable rock crusher which is subject to a permit or exemption letter issued by the commissioner pursuant to former section 22a-174-3 Regulations of Connecticut State Agencies, or which is registered under a general permit for such sources issued by the commissioner pursuant to section 22a-174(l) of the Connecticut General Statutes, provided the owner or operator is in compliance with any such permits and provides written notice to the commissioner prior to such relocation,
- (iii) constitutes a conversion from fuel oil to natural gas, or in addition to fuel oil, provided such conversion does not increase actual emissions of any individual air pollutant by fifteen (15) tons or more per year, unless such conversion results in reconstruction, or
- (iv) constitutes a conversion from residual fuel oil to distillate fuel oil, or in addition to residual fuel oil, provided such conversion does not increase actual emissions of any individual air pollutant by fifteen (15) tons or more per year, unless such conversion results in reconstruction;

(B) Any stationary source that is:

- (i) registered under and is in compliance with any new source review general permit to construct and operate a new or existing stationary source issued pursuant to section 22a-174(l) of the Connecticut General Statutes,
- (ii) a stripping facility used to remove VOC from contaminated groundwater or soil pursuant to an order issued by the commissioner, provided such facility has a control device with VOC removal efficiency of at least ninety-five percent (95%),
- (iii) a portable engine or boiler temporarily replacing an existing engine or boiler, provided the replacement units have a combined emission rate equal to or less than the existing units and that the number of days total that any and all such portable engines or boilers may be used does not exceed ninety (90) days in any calendar year,

- (iv) in compliance with section 22a-174-3b, section 22a-174-3c, section 22a-174-3d or section 22a-174-42 of the Regulations of Connecticut State Agencies, unless otherwise subject to this section pursuant to subdivision (7) of this subsection, or
 - (v) a “gasoline dispensing facility,” as defined in section 22a-174-30a(a)(7) of the Regulations of Connecticut State Agencies.
- (C) Any:
- (i) mobile source, or
 - (ii) non-road engine as defined in 40 CFR Part 89.
- (3) In determining the applicability of subsections (k) or (l) of this section, the owner or operator may determine the net emissions increase. However, the net emissions increase shall not be used determining the applicability of:
- (A) This section to any minor source or modification thereof; or
 - (B) Subsection (j) of this section.
- (4) This section and section 22a-174-2a of the Regulations of Connecticut State Agencies shall apply to any stationary source or modification for which a permit application pursuant to former section 22a-174-3 of the Regulations of Connecticut State Agencies was filed prior to the effective date of this section, and for which a permit has yet to be issued or denied.
- (5) Any permit modification or permit revision to a permit issued under this section shall be made as required in, and in accordance with, the provisions of this section and section 22a-174-2a of the Regulations of Connecticut State Agencies.
- (6) Pursuant to the de minimis rule under section 182(c)(6) and (f) of the Act, the owner or operator of a major stationary source shall make and keep records of actual VOC and NO_x emission increases and decreases at such source, resulting from any physical change in, or change in the method of operation of a stationary source. Such increases shall include emission increases below fifteen (15) tons per year of any individual air pollutant.
- (7) To determine if the net emission increase of a modification exceeds the major source threshold levels and is subject to subsection (k) of this section, the owner or operator shall make and keep records of actual emissions increases and decreases including those below fifteen (15) tons per year, over the five (5) consecutive calendar years preceding the completion of construction.
- (8) Any permit issued pursuant to former section 22a-174-3 of the Regulations of Connecticut State Agencies shall remain in full force and effect, in accordance with Section 22a-174-2a(i) of the Regulations of Connecticut Agencies, unless otherwise determined by the commissioner.

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Sec. 22a-174-20. Control of organic compound emissions

(a) Storage of volatile organic compounds and restrictions for the Reid vapor pressure of gasoline.

(1) Definitions. For the purposes of this subsection and subsections (b) and (c) of this section:

- (A) "Aboveground" means located on or above the surface of the ground, partially buried, bunkered or located in a subterranean vault;
- (B) "Approved control system" means, a vapor balance system or a vapor recovery system;
- (C) "Degassing" means the process of removing organic vapors from a storage tank in preparation for human entry;
- (D) "Delivery vehicle" means a tank truck, tank-equipped trailer, railroad tank car, or other mobile source equipped with a storage tank used for the transportation of gasoline from sources of supply to any stationary storage tank;
- (E) "Dispensing facility" means any site where gasoline is delivered to motor vehicles other than agricultural vehicles from any stationary storage tank with a capacity of 250 gallons or more;
- (F) "Floating roof" means a movable roof in a storage vessel consisting of a floating deck resting on the surface of the liquid contents, a continuous seal supported against the inner surface of the tank shell, and an envelope closing the gap between the floating deck and the seal. The entire deck, seal and envelope combination is free to rise and fall with the surface of the liquid during filling and emptying of the storage vessel;
- (G) "Gasoline" means any petroleum distillate or petroleum distillate and alcohol blend commercially known or sold as "gasoline" and commonly used as an internal combustion engine fuel;
- (H) "Gasoline storage tank farm" means a premises with any individual gasoline storage tank with a capacity equal to or greater than forty thousand (40,000) gallons;
- (I) "Leak-free" means a condition that exists when the reading on a portable hydrocarbon analyzer is less than 500 ppm, expressed as methane, above background, measured using EPA Method 21, as identified in 40 CFR Part 60, Appendix A, Determination of Volatile Organic Compounds Leaks;
- (J) "Loading facility" means any combination of equipment located on a premises and used to load or unload any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions;

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- (K) “Reid vapor pressure” or “RVP” means the vapor pressure of a liquid in pounds per square inch absolute at one hundred (100) degrees fahrenheit as determined by American Society for Testing and Materials method D5191-07 “Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method);”
 - (L) “Roof landing” means the reduction of the liquid level in a floating roof tank so that the floating roof is no longer floating on the surface of the stored liquid but is resting on its legs or is supported from above by cables or hangers;
 - (M) "Storage tank" means any tank, reservoir or vessel that is a container for liquids or gases, wherein:
 - (i) No manufacturing process, or part thereof, other than filling or emptying takes place, and
 - (ii) The only treatment carried out is treatment necessary to prevent change from occurring in the physical condition or chemical properties of the liquids or gases deposited into the container. Such treatment may include, but is not limited to, recirculating, agitating, maintaining the temperature of the stored liquids or gases, replacing air in the vapor space above the stored liquids or gases with an inert gas to inhibit the occurrence of a chemical reaction or adding a biocide to prevent microbial growth;
 - (N) “Throughput” means the number of gallons delivered through all equipment at a dispensing facility or a loading facility over a specified time interval;
 - (O) “Underground” means “underground” as defined in section 22a-449(d)-1(a)(2) of the Regulations of Connecticut State Agencies;
 - (P) “Vapor balance system” means a combination of pipes or hoses that creates a closed connection between the vapor spaces of an unloading tank and receiving tank such that vapors displaced from the receiving tank are transferred to the tank being unloaded and for which the vapor space connections on the unloading tank, the receiving tank and the pipes or hoses used are equipped with fittings that are vapor-tight and will automatically and immediately close upon disconnection so as to prevent the release of vapors;
 - (Q) “Vapor recovery system” means a device or system that collects vapors to prevent release into the atmosphere. Collected vapors are recovered for use or destroyed; and
 - (R) "Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.
- (2) No owner or operator shall place, store or hold in any aboveground storage tank of 40,000 gallons (150,000 liters) capacity or greater any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions unless the tank is designed and

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equipped with a vapor loss control device identified in either subparagraph (A), (B), (C) or (D) of this subdivision.

- (A) The tank is a pressure tank capable of maintaining working pressures sufficient at all times to prevent vapor or gas loss to the atmosphere;
- (B) The tank is equipped with a fixed roof and a floating roof that rests on the surface of the liquid contents and is equipped with a closure seal or seals to close the space between the roof edge and tank wall. This control equipment is not permitted if the VOC has a vapor pressure of 11.0 pounds per square inch absolute (568 mm Hg) or greater under standard conditions. The owner or operator shall operate and maintain such a tank to ensure that:
 - (i) There are no visible holes, tears or other openings in the seal or any seal fabric or materials,
 - (ii) All openings except stub drains are equipped with covers, lids or seals such that:
 - (I) The cover, lid or seal is in the closed position at all times except when in actual use,
 - (II) Automatic bleeder vents are closed at all times except when the roof is being floated off or being landed on the roof leg supports, and
 - (III) Rim vents, if provided, are set to open to the manufacturer's recommended setting when the roof is floated off the roof leg supports or cables,
 - (iii) All tank gauging and sampling devices are vapor-tight except when tank gauging or sampling is taking place, and
 - (iv) No liquid accumulates on the top of the floating roof;
- (C) The tank is equipped with a fixed roof and a vapor recovery system that is designed and operated to reduce emissions of VOCs to the atmosphere by at least 95 percent by weight. An owner or operator limiting vapor loss according to this subparagraph shall perform the following actions no later than ten years after the effective date of this subsection if the tank is in existence prior to the effective date of this subsection or by the initial fill date if a tank is constructed on or after the effective date of this subsection:
 - (i) Equip any gauging or sampling device on the tank with a leak-free cover that shall be closed at all times, with no visible gaps, except during gauging or sampling,
 - (ii) Maintain the fixed roof in a leak-free condition with no holes, tears or uncovered openings,

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- (iii) Install and maintain each roof opening in a leak-free condition at all times except when the cover is open for access or when a vent is required to be open to relieve excess pressure or vacuum in accordance with the manufacturer's design, and
 - (iv) Once per month, demonstrate compliance with this subsection by inspecting the fittings located on the roof, piping, pressure relief valves and all other valves to ensure they are leak-free using EPA Method 21 or using another method approved by the commissioner and the Administrator; or
 - (D) The tank is equipped with other equipment or means of air pollution control with an efficiency equal to or greater than that required under subparagraph (C) of this subdivision that is approved by the commissioner in a permit or order, where such permit or order has been approved by the Administrator.
- (3) An owner or operator limiting vapor loss in accordance with subdivision (2)(B) of this subsection shall conduct inspections as follows:
- (A) Once per month visually inspect the floating roof deck, deck fittings and rim seal system through the roof hatches of the fixed roof to determine compliance with the requirements of subdivision (2)(B) of this subsection; and
 - (B) Whenever the tank is emptied and degassed, but no less than once every 10 years, conduct an inspection from within the tank by:
 - (i) Visually inspecting the floating roof deck, deck fittings and rim seal system to determine compliance with the requirements of subdivision (2)(B) of this subsection and ensure that the seal between the floating roof and the tank wall is uniform, and
 - (ii) Physically measuring gaps between any deck fitting gasket, seal or wiper and any surface that such gasket, seal or wiper is intended to seal. Gaps shall not exceed 0.125 inches.
 - (C) The inspection specified in subparagraph (B) of this subdivision may be performed entirely from the top side of the floating roof as long as there is visual access to all deck components specified in subdivision (2)(B) of this subsection.
- (4) For any tank subject to subdivision (2) of this subsection, if any piping, valves, vents, seals, gaskets or covers of roof openings are found to have defects or visible gaps or the VOC control requirements of this subsection are not met, the owner or operator shall:
- (A) If the tank is not storing liquid, complete repairs or replacements prior to filling the tank;
 - (B) If the tank is storing liquid, complete repairs or replacements or remove the tank from service within 45 days after discovery of the defect or visible gap. If the owner or operator anticipates that a repair or replacement cannot be completed or

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the tank cannot be emptied within such 45 day period, the owner or operator shall notify the commissioner prior to the end of such 45 day period. The owner or operator shall make repairs or completely empty the tank as soon as possible; and

- (C) Any evidence of leakage as described in this subsection shall also be treated as a malfunction of control equipment as described in section 22a-174-7 of the Regulations of Connecticut State Agencies.

(5) No person shall place, store, or hold in any stationary storage vessel of more than 250-gallon (950 liter) capacity any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions unless such vessel is equipped with a permanent submerged fill pipe or is a pressure tank as described in subdivision (2)(A) of this subsection. Submerged fill pipes installed on or prior to the effective date of this subsection shall have a discharge point no more than 18 inches from the bottom of the storage tank or be compliant with the requirements of 40 CFR 63 Subpart CCCCC. Submerged fill pipes installed after the effective date of this subsection shall have a discharge point no more than six inches from the bottom of the storage tank.

(6) The provisions of subdivision (5) of this subsection shall not apply to the following:

- (A) Loading of VOCs into any storage vessel having a capacity of less than one-thousand (1,000) gallons installed prior to June 1, 1972;
- (B) Any underground storage vessel installed prior to June 1, 1972, where the fill pipe between the fill connection and the storage vessel is an offset fill pipe; or
- (C) Any aboveground storage tank equipped with a floating roof.

(7) The external surfaces of any storage tank containing VOCs with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions that has a maximum capacity of 2,000 gallons (7,570 liters) or greater and is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white upon the next painting of the tank or by March 7, 2024, whichever is sooner. The external surfaces of any storage tank that is brought into service after the effective date of this subdivision, that has a maximum capacity of 2,000 gallons or greater and that is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white prior to being filled with any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions. The requirement to use mill-finished aluminum or white paint shall not apply to words and logograms applied to the external surface of the storage tank for purposes of identification provided such symbols do not cover more than 20 percent of the external surface area of the tank's sides and top or more than 200 square feet (18.6 square meters), whichever is less.

(8) When performing a roof landing of a floating roof tank, the owner or operator of any tank shall:

- (A) When the roof is resting on its leg supports or suspended by cables or hangers, empty and refill the tank as a continuous process; and

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- (B) After the tank is degassed for the first time after the effective date of this subsection, any in-service roof landing shall be with the landed height of the floating roof at its minimum setting.
- (9) An owner or operator of an aboveground storage tank shall perform degassing and cleaning as set out in this subdivision.
- (A) Beginning with the first June 1 after the effective date of this subsection, an owner or operator shall not perform degassing of any aboveground storage tank subject to subdivision (2) of this subsection during the period from June 1 through August 31 of any calendar year, except as provided in subparagraph (B) of this subdivision.
 - (B) Notwithstanding subparagraph (A) of this subdivision, an owner or operator may degas an aboveground storage tank at any time for the purpose of performing a repair that is necessary for safe and proper function of the tank. An owner or operator shall notify the commissioner when a tank is emptied and degassed under this subparagraph within 72 hours of completing the degassing and repair. Such notification shall be submitted to the Compliance Assistance and Coordination Unit of the Bureau of Air Management and shall include the following information:
 - (i) Identification of the facility and the tank degassed,
 - (ii) Identification of the VOC stored,
 - (iii) An explanation of the need to degas the tank during the period from June 1 through August 31,
 - (iv) The date the owner or operator determined that degassing and repair would be necessary,
 - (v) The dates that degassing commenced and was completed, and
 - (vi) The date that inspection, repair and refilling was or is anticipated to be completed.
 - (C) An owner or operator shall clean an aboveground storage tank subject to subdivision (2) of this subsection using one or more of the following methods:
 - (i) Using any of the following cleaning agents:
 - (I) Diesel fuel,
 - (II) A solvent with an initial boiling point of greater than 302 degrees Fahrenheit,
 - (III) A solvent with a vapor pressure less than 0.5 pounds per square inch,

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- (IV) A solvent with 50 grams per liter VOC content or less, or
 - (V) Another cleaning agent approved by the commissioner and the Administrator, or
 - (ii) Steam cleaning.
- (10) Records.
- (A) An owner or operator shall maintain records including, at a minimum, the information described in subparagraph (B) of this subdivision. All such records shall be:
 - (i) Made available to the commissioner to inspect and copy upon request, and
 - (ii) Maintained for five years from the date such record is created.
 - (B) An owner or operator shall maintain records of the following information:
 - (i) For a tank equipped with a vapor loss control device specified in subdivision (2) of this subsection:
 - (I) Type of VOC stored, vapor pressure and monthly throughput,
 - (II) A Material Safety Data Sheet or Environmental Data Sheet for each VOC stored, and
 - (III) Records of the inspections conducted under subdivision (3) of this subsection including, but not limited to, date of the inspection, results and corrective actions taken, if applicable,
 - (ii) Documentation of control device efficiency and capture efficiency, if applicable, using an applicable EPA reference method or alternate method as approved by the commissioner and the Administrator,
 - (iii) Date and type of maintenance performed on air pollution control equipment, if applicable,
 - (iv) Documentation of any leak detected pursuant to subdivision (4) of this subsection, including, but not limited to, the date the leak was detected, location of the leak, type of repair made and the date of repair and explanation of the reason for delaying repair, if applicable,
 - (v) For each floating roof landing event, the tank contents before landing and after refilling, landed height of the floating roof, height of any liquid

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remaining in the bottom of the tank after landing, duration of landing and landing emissions calculated using AP-42 Chapter 7 methodology,

- (vi) Dates of all tank degassing activities performed pursuant to subparagraphs (A) or (B) of subdivision (9) of this subsection,
- (vii) Date, cleaning method and cleaning agents used for any cleaning performed pursuant to subparagraph (C) of subdivision (9) of this subsection, and
- (viii) Any approval by the commissioner or Administrator issued pursuant to this subsection.

(11) Between May 1 and September 15 the owner or operator of any gasoline storage tank farm shall not offer for sale, sell or deliver to any dispensing facility in Connecticut gasoline with a Reid Vapor Pressure in excess of 9.0 pounds per square inch.

(12) In addition to the requirements of section 22a-174-4 of the Regulations of Connecticut State Agencies, the commissioner may by permit or order require the owner or operator of any gasoline storage tank farm to provide records of the analysis of gasoline samples to determine compliance with the provisions of subdivision (11) of this subsection.

(13) Samples to be analyzed for RVP shall be collected and handled according to the applicable procedures in American Society for Testing and Materials method D 5842-95(2000), "Standard Practice for Sampling and Handling of Fuels for Volatility Measurement."

(14) RVP shall be determined using American Society for Testing and Materials method D5191-07 (2007), except that the following correlation equation shall be used:

$$\text{RVP psi} = (0.956 * X) - 0.347.$$

(b) Loading of gasoline and other volatile organic compounds.

(1) Reserved.

(2) No person shall load or permit the loading of any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions into any delivery vehicle from any loading facility with a throughput of 10,000 gallons or more in any one day unless such loading facility is equipped with a vapor collection and vapor recovery system or its equivalent, properly installed, in good working order, and in operation, and:

- (A) The vapors discharged from the delivery vehicle during loading are processed by a vapor recovery system; and
- (B) The amount of VOCs released to the ambient air is less than 80 milligrams per liter of liquid loaded over a six (6) hour period. To determine compliance with

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this requirement the reference methods and test procedures found in 40 CFR 60.503(a) and 60.503(c), respectively, shall be used.

(3) No person shall load or permit the loading of any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions into any delivery vehicle having a capacity in excess of 200 gallons (760 liters) from any loading facility with a throughput of 10,000 gallons or more in any one day unless such loading facility is equipped with a loading arm with a vapor collection adaptor, pneumatic, hydraulic, or other mechanical means to force a vapor-tight seal between the adaptor and the hatch. A means shall be provided to prevent liquid organic compounds drainage from the loading device when it is removed from the hatch of any delivery vehicle, or to accomplish complete drainage before such removal. When loading is effected through means other than hatches, all loading and vapor lines shall be equipped with fittings that make vapor-tight connections and close automatically when disconnected.

(4) Subdivisions (2) and (3) of this subsection shall apply only to the loading of VOCs with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions at a facility from which at least 10,000 gallons of such organic compounds are loaded in any one day. The applicability of subdivisions (2) and (3) of this subsection shall be based upon a thirty day rolling average, and once a loading facility exceeds this limit, the requirements of subdivisions (2) and (3) of this subsection shall apply.

(5) After April 1, 1982, no person shall transfer or allow the transfer of gasoline to or from any delivery vehicle to or from any loading facility with a throughput of less than 10,000 gallons a day and more than 4,000 gallons a day unless the transfer takes place through a submerged fill pipe and a vapor balance system is used. The throughput of a loading facility shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.

(6) Reserved.

(7) Reserved.

(8) Reserved.

(9) Reserved.

(10) The owner or operator of a delivery vehicle shall:

- (A) Ensure that the delivery vehicle is designed, operated and maintained to be vapor-tight at all times;
- (B) Keep all hatches on the delivery vehicle closed and securely fastened at all times during loading and unloading operations;
- (C) Set the pressure relief valves to release at no less than 0.7 pounds per square inch;
- (D) Refill the vapor laden delivery vehicle only at facilities which meet the requirements of subdivisions (2) or (5) of this subsection;

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- (E) Properly connect all hoses in the vapor balance system prior to loading and unloading;
 - (F) Maintain all vapor return hoses, couplers and adapters used in gasoline delivery to be vapor-tight;
 - (G) Ensure all delivery vehicle vapor return equipment is compatible in size and forms a vapor-tight connection with the vapor balance equipment on the dispensing facility storage tank;
 - (H) Dispense gasoline to a stationary storage tank having an approved control system in a manner that does not interfere with the collection efficiency of the control system;
 - (I) Load and unload in a manner that does not cause the delivery vehicle tank to be subject to a pressure in excess of 18 inches of water or a vacuum in excess of 6 inches of water; and
 - (J) Not transfer or allow the transfer of gasoline from a delivery vehicle to a dispensing facility stationary storage tank if there are leaks in pressure/vacuum relief valves or hatch covers of the delivery vehicle, in the truck tanks or in associated vapor and liquid lines.
- (11) Reserved.
- (12) Any owner or operator of a delivery vehicle that receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of section 22a-174-30a of the Regulations of Connecticut State Agencies shall not cause or permit such delivery vehicle to load or unload gasoline unless:
- (A) The owner or operator tests the tank on such delivery vehicle once every twelve (12) months in accordance with Method 27 as set forth in Appendix A of Title 40 CFR 60 or another manner accepted by the Administrator and approved by the Commissioner in accordance with section 22a-174-5 of the Regulations of Connecticut State Agencies;
 - (B) During the test specified in subparagraph (A) of this subdivision, the tank sustains a pressure change of no more than three (3) inches of water in five (5) minutes when pressurized to a gauge pressure of eighteen (18) inches of water or when evacuated to a gauge pressure of six (6) inches of water;
 - (C) The delivery vehicle displays a marking near the U.S. Department of Transportation markings required by Title 49 CFR 177.824 which shows the initials "DEEP" or "DEP" and the date of the last test or comparable markings as required by either the Connecticut Department of Transportation or the Connecticut Department of Motor Vehicles; and
 - (D) Records of all tests performed under this subdivision are maintained for a minimum of five (5) years from the date of such tests and made available to the

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Commissioner within three (3) business days after the Commissioner requests such records.

(13) The owner or operator of any delivery vehicle that fails to meet the requirements of subdivision (12) of this subsection shall repair and retest such vehicle within fifteen (15) days or take such vehicle out of service. Prior to returning such vehicle to service, the owner or operator shall repair and retest the vehicle.

(14) Any person who performs a test or retest required by subdivision (12) or (13) of this subsection shall notify the Department's Bureau of Air Management, Field Operations Section of the time and location of the test or retest at least forty-eight (48) hours in advance.

(15) The Commissioner may test a delivery vehicle during loading and unloading operations to evaluate its vapor-tightness by measuring the vapor concentration at a distance of one inch from the source with a combustible gas detector, calibrated with propane using the test procedure described in CARB TP-204.3, *Determination of Leaks*. Equipment is vapor-tight when a measured vapor concentration is less than 14,000 parts per million.

(16) The owner or operator of any loading facility or delivery vehicle subject to the provisions of this subsection shall:

- (A) Develop a written operation and maintenance (O&M) plan for any equipment used to load or unload gasoline;
- (B) Develop a formal training program implementing the O&M plan for any person who receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of section 22a-174-30a of the Regulations of Connecticut State Agencies or any loading facility subject to subdivision (5) of this subsection;
- (C) Maintain a copy of the O&M plan and training program materials at the subject facility; and
- (D) Maintain monthly records demonstrating implementation of the O&M plan, including records of persons completing the training program required by subparagraph (B) of the subdivision, at the subject facility. All such records shall be:
 - (i) Made available to the Commissioner to inspect and copy upon request, and
 - (ii) Maintained for five (5) years from the date such record is created.

Section 22a-174-20(ee)

(ee) Reasonably Available Control Technology for large sources. The owner or operator of any premises with potential emissions of volatile organic compounds shall use Reasonably Available Control Technology in accordance with the provisions of section 22a-174-32 of the Regulations of Connecticut State Agencies on each source to limit the discharge of volatile organic compounds unless all the sources emitting volatile organic compounds at such premises are regulated by:

- (1) any one of the following subsections of section 22a-174-20 of the Regulations of Connecticut State Agencies: (a), (b), (l) through (y) or (ff) through (jj);
- (2) section 22a-174-30a of the Regulations of Connecticut State Agencies; or
- (3) an order to implement reasonably available control technology issued by the Commissioner pursuant to this subsection prior to November 15, 1992 and approved by the Administrator prior to May 31, 1995. An order or permit to limit potential emissions of volatile organic compounds to less than 100 tons per year for any twelve (12) consecutive months shall not be considered an order to implement Reasonably Available Control Technology.

Section 22a-174-30a. Stage I Vapor Recovery.

(a) **Definitions.** For the purposes of this section, the definitions provided in this subsection shall apply. Terms used in this section that are not defined in this subsection are as defined in section 22a-174-1 of the Regulations of Connecticut State Agencies.

- (1) “CARB” means the State of California Air Resources Board;
- (2) “CARB-approved” means a Stage I vapor recovery system or system component that is or has been tested and approved by CARB as an individual component or as part of an approved system or that is or has been tested and approved by another state using testing methods approved by CARB;
- (3) “Construct” means to install or replace all storage tanks with a capacity greater than 250 gallons, the product piping and the vent piping at a GDF during a single project;
- (4) “Delivery elbow” means a quick connect/disconnect type coupler that joins a hose from a delivery vehicle to a GDF’s storage tank riser pipe adaptor or coupler;
- (5) “Delivery vehicle” means a tank truck, tank-equipped trailer, railroad tank car, or other mobile source equipped with a storage tank used for the transportation of gasoline from a source of supply to any stationary storage tank;
- (6) “Gasoline” means any petroleum distillate or petroleum distillate and alcohol blend commercially known or sold as “gasoline” and commonly used as an internal combustion engine fuel;
- (7) “Gasoline dispensing facility” or “GDF” means any site where gasoline is transferred to motor vehicles from a stationary storage tank with a capacity of 250 gallons or more;
- (8) “Modified” means the addition, alteration, replacement or retrofit of a gasoline storage tank located at a GDF or any component fixed to such gasoline storage tank including, but not limited to, piping that contains gasoline or gasoline vapors and containments located over or on the gasoline storage tank;
- (9) “Stage I vapor recovery system” means a combination of pipes and hoses that create a closed system between the vapor spaces of an unloading delivery vehicle and a receiving GDF storage tank such that vapors displaced from the GDF storage tank are transferred to the delivery vehicle tank;
- (10) “Throughput” means the number of gallons of gasoline delivered into motor vehicles at a GDF over a specified period of time;
- (11) “Two-point Stage I vapor recovery system” means a GDF storage tank possessing an entry port for a gasoline fill pipe and a separate exit port for a vapor-return connection; and
- (12) "Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.

(b) Applicability.

- (1) This section applies to the owner or operator of any GDF that has a monthly throughput of 10,000 gallons or more on or after July 1, 2015. If a GDF ever exceeds a monthly throughput of 10,000 gallons, the requirements of this section shall thereafter apply.
- (2) Monthly throughput shall be calculated by adding the volume of gasoline dispensed at the GDF during the current day with the volume of gasoline dispensed at the GDF during the previous 364 days, and dividing that sum by 12. For any GDF constructed after July 1, 2014, the initial calculation of monthly throughput shall be performed on or after 365 days after the date the GDF starts dispensing gasoline to motor vehicles.
- (3) For a GDF with multiple storage tanks, the requirements of this section apply only to a storage tank with a capacity of 250 gallons or greater.
- (4) The owner or operator of a GDF that does not meet the monthly throughput requirements of subdivision (1) of this subsection shall maintain a chronological register of daily throughput of gasoline to demonstrate that this section does not apply. Such records shall be maintained for five (5) years from the date of creation and be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner or the Administrator no later than three (3) business days after receiving such a request.

(c) Requirements.

- (1) No owner or operator of a GDF shall transfer or allow the transfer of gasoline between a delivery vehicle and a GDF stationary storage tank unless such stationary storage tank is equipped with a Stage I vapor recovery system that includes:
 - (A) A CARB-approved fill adapter; and
 - (B) A pressure/vacuum vent valve on each GDF storage tank vent pipe.
- (2) Any pressure/vacuum vent valve installed on and after July 1, 2015 shall be a CARB-approved pressure/vacuum vent valve.
- (3) The pressure specifications for any pressure/vacuum vent valve shall be as follows:
 - (A) For any pressure/vacuum vent valve installed prior to July 1, 2015:
 - (i) A positive pressure setting of:
 - (I) 3.0 inches of water, plus or minus 0.5 inch, or
 - (II) 2.5 to 6.0 inches of water, and
 - (ii) A vacuum setting of 8.0 inches of water, plus or minus 2.0 inches; and
 - (B) For any pressure/vacuum vent valve installed on and after July 1, 2015:
 - (i) A positive pressure setting of 2.5 to 6.0 inches of water,
 - (ii) A negative pressure setting of 6.0 to 10.0 inches of water, and

- (iii) The total leak rate of all pressure/vacuum vent valves at an affected facility, including connections, shall not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water.
- (4) Except as provided in subdivision (5) of this subsection, a GDF storage tank shall be equipped with a two-point Stage I vapor recovery system. The vapor exit port of the two-point Stage I vapor recovery system shall be designed and maintained to seal in a manner that will prevent the discharge of gasoline vapors to the atmosphere when the vapor return hose is disconnected.
- (5) An owner or operator of any GDF storage tank that does not have an available port to install a two-point Stage I vapor recovery system shall install a two-point Stage I vapor recovery system when the GDF storage tank is replaced or when the product in the tank is switched from any other fuel to gasoline.
- (6) In addition to the requirements of subdivisions (1) to (5), inclusive, of this subsection, an owner or operator of any GDF that has a monthly throughput of 100,000 gallons or more shall install, operate and maintain a Stage I vapor recovery system that meets the requirements of subparagraphs (A) to (F), inclusive, of this subdivision. If a GDF ever exceeds a monthly throughput of 100,000 gallons, the requirements of this subdivision shall thereafter apply.
 - (A) All vapor line connections on the GDF storage tank shall be equipped with closures that seal upon disconnect;
 - (B) The Stage I vapor control system shall be designed such that the pressure in the delivery vehicle tank does not exceed 18 inches water pressure or 5.9 inches water vacuum during product transfer;
 - (C) The vapor recovery and product adaptors and the method of connection with the delivery elbow shall be designed to prevent the over-tightening or loosening of fittings during normal delivery operations;
 - (D) If a gauge well is separate from the fill tube, the gauge well shall be provided with a submerged drop tube that extends the same distance from the bottom of the storage tank as the fill pipe;
 - (E) Liquid fill connections and vapor couplings shall be equipped with vapor-tight caps; and
 - (F) The Stage I vapor recovery system shall be capable of meeting the static pressure performance requirement of the following equation when pressure decay testing is performed as required by subsection (d) of this section:

$$Pf = 2e^{-500.887/v}$$

Where:

Pf = Minimum allowable final pressure, inches of water

v = Total ullage affected by the test, gallons

e = Dimensionless constant equal to approximately 2.718.

(d) Testing.

- (1) The owner or operator of any GDF shall conduct each of the following tests at least once per calendar year:
 - (A) For every pressure/vacuum vent valve, a pressure/vacuum vent valve test as specified in subdivision (4) of this subsection;
 - (B) A pressure decay test as specified in subdivision (5) of this subsection; and
 - (C) A vapor-space tie-in test as specified in subdivision (7) of this subsection.
- (2) The owner or operator of any GDF constructed on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of initial operation.
- (3) The owner or operator of any GDF modified on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of completion of the modification.
- (4) Pressure/vacuum vent valve tests shall be conducted according to the current version of CARB TP-201.1E, *Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
- (5) Pressure decay tests shall be conducted according to the current version of CARB TP-201.3, *Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
- (6) The owner or operator of any GDF subject to 40 CFR 63.11120 may use the test methods specified in 40 CFR 63.11120 in lieu of the method specified in subdivision (4) or subdivision (5) of this subsection.
- (7) Vapor-space tie-in tests shall be conducted according to the current version of CARB TP-201.3C, *Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)*, as may be revised from time to time, or another method test approved by the Commissioner and the Administrator.
- (8) The owner or operator of any GDF who has installed a pressure management or vapor control device on a storage tank with a capacity of 250 gallons or greater, other than a device that is required to be installed and tested by this section, shall test such device annually by a method approved by the commissioner. At least sixty (60) days prior to conducting an annual test, the owner or operator shall submit a test protocol for review and approval on a form provided by the commissioner.
- (9) Any owner or operator of any GDF shall:

- (A) Notify the Department's Bureau of Air Management, Field Operations Section in writing of the time and location of a test required by this subsection at least seven (7) business days in advance; and
 - (B) Submit a copy of the test report on a form provided by the Department to the Department's Bureau of Air Management, Field Operations Section within ten (10) days after performing a test required by this subsection.
- (10) If an owner or operator of any GDF fails any test required by this subsection, the owner or operator shall take corrective actions and retest no later than sixty (60) days after failing the test.
- (e) Record keeping.**
- (1) Any owner or operator of a GDF shall maintain the following records:
 - (A) All licenses, as defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
 - (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
 - (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance or repair performed, identification of any part repaired or replaced on such Stage I vapor recovery system, the dates the maintenance or repair was performed, and a general description of the location of any part repaired or replaced;
 - (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF;
 - (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator; and
 - (F) A chronological register of daily throughput.
 - (2) In addition to the applicable records required by subdivision (1) of this subsection, any owner or operator of a GDF constructed after July 1, 2014 shall maintain records of the dates of the construction and the date gasoline was first dispensed to a motor vehicle.
 - (3) Records required by this subsection shall be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner or the Administrator no later than three (3) business days after receiving such a request.
 - (4) Records shall be maintained for five (5) years from the date of creation.
 - (5) An owner or operator shall display in a conspicuous location at the GDF the address at which the records required by subdivision (1) of this subsection are maintained.

Section 22a-174-32(b)

(b) Applicability.

(1) Subject to the limitations set forth in subdivision (4) of this subsection, the provisions of this section shall apply to:

- (A) except as provided in subparagraphs (C) and (D) of this subdivision, the owner or operator of a premises with potential VOC emissions of fifty (50) tons or more per calendar year in a serious nonattainment area for ozone;
- (B) except as provided in subparagraphs (C) and (D) of this subdivision, the owner or operator of a premises with potential VOC emissions of twenty five (25) tons or more per calendar year in a severe nonattainment area for ozone;
- (C) the owner or operator of wood furniture manufacturing operations with potential VOC emissions of twenty-five (25) tons or more per calendar year; or
- (D) the owner or operator of aerospace manufacturing and rework operations with potential VOC emissions of twenty-five (25) tons or more per calendar year.

(2) When calculating potential emissions for the purposes of this section, any limitation on the capacity of a source to emit VOCs, including air pollution control equipment, or any restriction which limits maximum rated capacity shall be treated as part of the design of the source, only if such limitation or restriction or the effect that such limitation or restriction would have on VOC emissions is federally enforceable.

(3) When calculating potential emissions to determine the applicability of this section, the owner or operator of a premises shall include potential emissions of volatile organic compounds from all sources located at such premises excluding those sources which are:

- (A) subject to regulation under 40 CFR 61 and 63;
- (B) required to use Best Available Control Technology or Lowest Achievable Emission Rate for VOCs pursuant to a federally enforceable order or permit which contains specific VOC emission limitations;
- (C) subject to regulation under 40 CFR 264, Subparts AA or BB, or 40 CFR 265, Subparts AA or BB;
- (D) fuel burning equipment; or
- (E) subject to Reasonably Available Control Technology required pursuant to:
 - (i) any one of the following subsections of section 22a-174-20 of the Regulations of Connecticut State Agencies: (a), (b), (l) through (y), or (ff) through (jj),
 - (ii) section 22a-174-30a of the Regulations of Connecticut State Agencies, or
 - (iii) an order or permit requiring the implementation of Reasonably Available Control Technology issued by the commissioner prior to November 15, 1992 and approved by the Administrator prior to May 31, 1995.

(4) Except for subparagraph (B) of subdivision (d)(2) and subsections (f) and (g) of this section, no other provisions of this section shall apply to the owner or operator of VOC emitting equipment which is identified in, or subject to any requirement set forth in, subparagraphs (A) through (E) of subdivision (3) of this subsection.

Appendix C

dKC de la Torre Klausmeier Consulting

1401 Foxtail Cove
Austin, TX 78704
(512) 447-3077
E-mail: delaklaus@aol.com

FINAL REPORT
ANALYSIS OF FUTURE OPTIONS FOR CONNECTICUT'S GASOLINE
DISPENSING FACILITY VAPOR CONTROL PROGRAM

June 4, 2012

Prepared for:
Connecticut Department of Energy and Environmental Protection
79 Elm St.
Hartford, CT 06106-5127

Prepared by:
Rob Klausmeier
de la Torre Klausmeier Consulting, Inc.

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1. INTRODUCTION

Under purchase order # DEPM1-0000031039, de la Torre Klausmeier Consulting, Inc. (dKC) is assisting the Connecticut Department of Energy and Environmental Protection (DEEP) in evaluating the Gasoline Dispensing Facility (GDF) Vapor Control Program. Onboard refueling vapor recovery (ORVR) systems were phased into the motor vehicle fleet beginning with the 1998 model year, and ORVR technology is now in widespread use throughout the motor vehicle fleet for purposes of controlling motor vehicle refueling emissions. EPA has determined that emission reductions from ORVR are essentially equal to and will soon surpass the emission reductions achieved by Stage II vapor recovery systems alone. Due to these findings, EPA is waiving the Stage II requirements, and as of May 16, 2012, states that are implementing mandatory Stage II programs under section 182(b)(3) of the CAA may submit revisions to their SIPs to remove this program. Connecticut is subject to the Ozone Transport Commission's (OTC) control measures, and must await EPA's issuance of guidance listing the requirements for emissions reduction comparable measures prior to submitting amendments to its State Implementation Plan (SIP).

The primary objectives of this project are listed below:

- Determine when ORVR systems in Connecticut's vehicle fleet have met a particular threshold described as widespread use (WSU).
- Estimate the cost and benefits of terminating or enhancing the Stage II vapor recovery program.
- Estimate the cost and benefits of enhancing the Stage I vapor recovery program to achieve additional volatile organic compound (VOC) reductions.
- Determine the preferred way to decommission Stage II systems.

This report presents the results of this project.

Summary of Results: Considering two known definitions of WSU and the assumed effectiveness of Stage II systems, Connecticut has passed or will soon pass the WSU threshold. Continuing the current program beyond WSU will achieve minimal emission reductions, and will in fact increase emissions after 2015. In addition, these findings suggest that, adopting the Stage II provisions of the California Enhanced Vapor Recovery program (CA EVR) would not be cost effective. Once EPA has issued its guidance on developing and submitting approvable SIP revisions, DEEP should consider regulations to phase-out the Stage II program. Connecticut, however, will still remain subject to the OTC control measures, which may allow for Stage I improvements to compensate for any backsliding due to the phasing out of the Stage II program. This study has also revealed that the Stage I systems currently in use are falling short of their assumed efficacy, resulting in a far lower reduction of emissions than that previously committed to in Connecticut's SIP. In collaboration with EPA, DEEP intends to discuss possible measures to be taken in order to address the current shortcomings of the Stage I systems. Enhancing DEEP's Stage I program may provide an opportunity to significantly reduce VOC emissions from GDFs for a reasonable cost, and bring the Stage I program up to the levels committed to in Connecticut's SIP, while offsetting any potential backsliding caused by the phasing out of Stage II systems. It

may also be a cost effective risk reduction strategy that helps reduce exposure to air toxics, particularly in host communities. DEEP should evaluate the feasibility, reliability and cost effectiveness of improving its Stage I control program. At a minimum, this should involve evaluating vapor leak detection and monitoring systems, and pressure management systems.

2. SUMMARY OF GDF SURVEY

In order to collect data on the characteristics of GDFs in Connecticut, dKC contracted Eastern Research Group (ERG) to conduct a comprehensive survey. ERG designed the survey sample from GDF data obtained from the Connecticut DEEP. ERG filtered out facilities that were closed or inactive, or only handled non-gasoline materials. Two thousand and thirty-three surveys were mailed out on February 17, 2011. Of these, 23 were undeliverable.

Complete survey responses were received for a total of 851 GDFs located in Connecticut. Based on the number of delivered surveys (i.e., 2,010 surveys), the survey response rate was 43.4%. For purposes of comparison, a survey was conducted for a similar GDF sample size in Texas in 2008 and the return rate was only 27.4%.¹ The high survey response rate increases confidence that the findings of this study are applicable to GDFs across the entire state of Connecticut.

ERG designed a Microsoft Access database to house the received survey data. All survey information sent via mail, fax, or PDF format was entered into the database manually. Significant findings are shown below:

- The 96 facilities that do not have Stage II vapor control are limited to the smallest throughput classification.
- The facilities that did not identify whether or not they have Stage II vapor control are primarily limited to the smallest throughput classification (i.e., 73 out of 80 non-respondents to this question).
- Of the facilities that did identify that Stage II vapor control was present, 80% (i.e., 540 out of 675 facilities) had vacuum-assist systems, while the remaining 20% (i.e., 135 facilities) had balance systems.
- The facilities that had balance Stage II vapor control systems were concentrated primarily in the smaller throughput classifications.

The overall yearly gasoline throughput derived from the survey results was estimated to be 745,413,813 gallons, which is about half annual fuel consumption. The disaggregation of this based upon Stage II control technology is as follows:

- Vacuum-assist – 696,954,309 gallons (93.5% of total)
- Balance – 38,502,475 gallons (5.2% of total)
- Do not know – 6,966,505 gallons (0.9% of total)
- None – 2,990,523 gallons (0.4% of total)

¹ *Stage I and Stage II Gasoline Dispensing Emissions Inventory*. Prepared for the Texas Commission on Environmental Quality by Eastern Research Group, Inc. (ERG), Sacramento, CA. August 31, 2008.

Another way of interpreting the results is to note that vacuum-assist systems account for 94% of the gasoline dispensed at GDFs with Stage II systems.

The survey helps us describe the distribution of GDFs in terms of gasoline throughput. This distribution is used later in this report to evaluate the possible costs and effectiveness of enhancements to the State's Stage I and Stage II programs. We calculated two distributions of the GDFs. Results shown in Table 1 are disaggregated into five monthly facility throughput classifications that have previously been used in Stage II analyses conducted by the California Air Resources Board (CARB).² Results shown in Table 2 are disaggregated into 15 yearly facility throughput classifications that have previously been used in Stage I analyses conducted by the New York Department of Environmental Conservation (DEC)³. As shown in Tables 1 and 2, 336 out of 908 GDFs (37%) fell into the smallest gasoline throughput group, less than 300,000 gallons per year (less than 25,000 gallons per month).

² *Enhanced Vapor Recovery Technology Review*. Staff Report. Prepared by the California Air Resources Board, Monitoring and Laboratory Division. October 2002.

³ Stage I and Stage II Vapor Recovery Analyses. PowerPoint presentation. Prepared by the New York Department of Environmental Conservation.

Table 1 – Summary of Survey Results – CARB Facility Throughput Classifications

Group	Average Monthly Throughput by Facility (gal)	Number of Facilities	Stage II Present?			Type of Stage II System		Number of USTs					
			Yes	No	Do Not Know	Vacuum-Assist	Balanced	1	2	3	4	5	Blank
1	0-25,000	336	167	96	73	70	97	221	48	54	4	1	8
2	25,001-50,000	98	95	0	3	78	17	3	45	45	4	0	1
3	50,001-100,000	213	209	0	4	193	16	3	92	110	7	0	1
4	100,001-200,000	127	127	0	0	122	5	1	51	72	3	0	0
5	> 200,000	77	77	0	0	77	0	0	43	31	3	0	0

Table 2 – Summary of Survey Results – New York DEC Facility Throughput Classifications

Group (gal)	Yearly Throughput by Facility (gal)	Number of Facilities	Stage II Present?			Type of Stage II System		Number of USTs					
			Yes	No	Do Not Know	Vacuum-Assist	Balanced	1	2	3	4	5	Blank
A (120,000)	0-300,000	336	167	96	73	70	97	221	48	54	4	1	8
B (400,000)	300,001-500,000	71	69	0	2	55	14	3	33	30	4	0	1
C (600,000)	500,001-700,000	71	68	0	3	65	3	1	31	36	2	0	1
D (800,000)	700,001-900,000	75	75	0	0	65	10	0	33	40	2	0	0
E (1,000,000)	900,001-1,100,000	60	60	0	0	56	4	2	27	29	2	0	0
F (1,200,000)	1,100,001-1,300,000	51	49	0	2	46	3	1	21	27	2	0	0
G (1,400,000)	1,300,001-1,500,000	31	31	0	0	29	2	0	14	16	1	0	0
H (1,600,000)	1,500,001-1,700,000	22	22	0	0	21	1	0	10	12	0	0	0
I (1,800,000)	1,700,001-1,900,000	25	25	0	0	24	1	0	9	16	0	0	0
J (2,000,000)	1,900,001-2,100,000	15	15	0	0	15	0	0	5	10	0	0	0
K (2,400,000)	2,100,001-2,700,000	36	36	0	0	36	0	0	13	22	1	0	0
L (3,000,000)	2,700,001-3,300,000	19	19	0	0	19	0	0	12	6	1	0	0
M (3,600,000)	3,300,001-3,900,000	15	15	0	0	15	0	0	11	4	0	0	0
N (4,000,000)	3,900,001-4,100,000	7	7	0	0	7	0	0	3	4	0	0	0
O (5,000,000)	>4,100,000	17	17	0	0	17	0	0	9	6	2	0	0

3. WIDESPREAD USE (WSU) ANALYSIS

WSU occurs when ORVR systems provide the same benefits as Stage II systems. dKC has determined when GDFs in Connecticut pass the WSU threshold. Appendix A presents the WSU analysis report dKC provided DEEP. Results of the WSU analysis are summarized below:

3.1 Condition of Vapor Recovery Systems

The WSU date is sensitive, and relies on the assumed effectiveness of the Stage II systems. Data from Connecticut and other states indicate that Stage II systems quickly develop leaks and other malfunctions that cause them to fail system performance tests. It's unlikely that Stage II systems have the 86% control efficiency assumed in Connecticut's State Implementation Plan (SIP). The actual Stage II control efficiency may actually be 60% or less, based on GDF inspections in Connecticut. dKC used these two estimates of Stage II effectiveness: (i.e., 86% and 60%). Corrected for rule penetration and rule effectiveness, this translates into an overall Stage II effectiveness of 82% and 57%.

- **Connecticut Test Results** – dKC reviewed two sources of information on the condition of GDFs in Connecticut: results of official certification tests and results of additional GDF tests performed by dKC.
 - Table 3 summarizes the initial results of GDF inspections that were witnessed by DEEP since December 20, 2010. Overall, 70% of the GDFs failed inspection. The most sources of failure were the tank decay test (45%), followed by air/liquid (A/L) test (14%).
 - dKC commissioned additional GDF tests to help determine when key components of the vapor control system start to deteriorate. These tests were performed approximately two months and four months after the station received its certification test. Two stations participated: one is a government station with a balance system and the other is a private station with a vacuum-assist system. Table 4 summarizes the results of these tests. None of the tests had an overall result of pass.

Table 3 – Results of Triennial GDF Inspections in Connecticut

Parameter	Number and Percent of Failures						
	Fail for Any Item	Decay	Dry Blockage	Wet Blockage	P/V Cap	A/L	6 Click
Number	111	72	5	6	10	23	13
Percent of Tests	70	45	3	4	6	14	8

Table 4 – Results of Bi-monthly GDF Testing Study in Connecticut

Station/Stage II Type	Test Date	Overall Result	Failed Items
J and A Gas/ Vacuum-Assist	6/2/11	Fail	A/L Test
	8/23/11	Fail	A/L Test
DOT Newington/ Balance	4/25/11	Fail	P/V valve
	7/14/11	Fail	Decay, P/V valve, torn hose
	11/9/11	Fail	Decay, P/V valve

- **Massachusetts Test Results** – Massachusetts DEP requires GDFs to report the initial results of their annual Stage II Certification tests. Table 5 summarizes the percent of stations that failed their initial Stage II test in Massachusetts. Facilities that fail the initial tests are required to repair and retest with passing results before submitting an annual certification form. As shown, from 2001 through 2010, 66% to 82% of the GDFs failed the initial annual certification tests. The primary test failures were pressure decay and A/L. Pressure decay tests failed mostly because of leaking hanging hardware components or leaking tank top components. The A/L tests failed mostly because of broken or improperly calibrated dispenser vacuum motors or defective nozzles.
 - Massachusetts required new GDFs with vacuum-assist Stage II systems or significantly modified GDFs with vacuum-assist systems to receive a certification test 120 days after their initial certification. Massachusetts gathered Stage II “120 day” test reports from the Stage II testing companies for the period of May 2002 through October 2003 and the results of these tests are shown on Table 6. Results indicate that over half (56%) of the recently certified GDFs failed certification tests 120 days later. The most common failure was for the pressure decay test.

Table 5 – Results of Initial Annual GDF Certification Tests in Massachusetts

Year	% Fail
2001	82
2002	78
2003	75
2004	67
2005	76
2006	78
2007	78
2008	73
2009	71
2010	66

Table 6 – Results of 120 Day GDF Certification Tests in Massachusetts

Failure Reason	Number	% Fail
Air/Liquid Ratio	17	17
Pressure Decay	45	46
P/V Cap	2	2
Any Failure	55	56

- **New Hampshire Test Results** – According to vapor release research conducted by New Hampshire, Stage II repairs last an average of 58 days. Overall, New Hampshire’s research found:
 - Inspections and testing failed to fix key leaks.
 - Most leaks required the station to upgrade the hardware (i.e. hoses, nozzles, breakaways).
 - Gasoline deliveries triggered leaks.

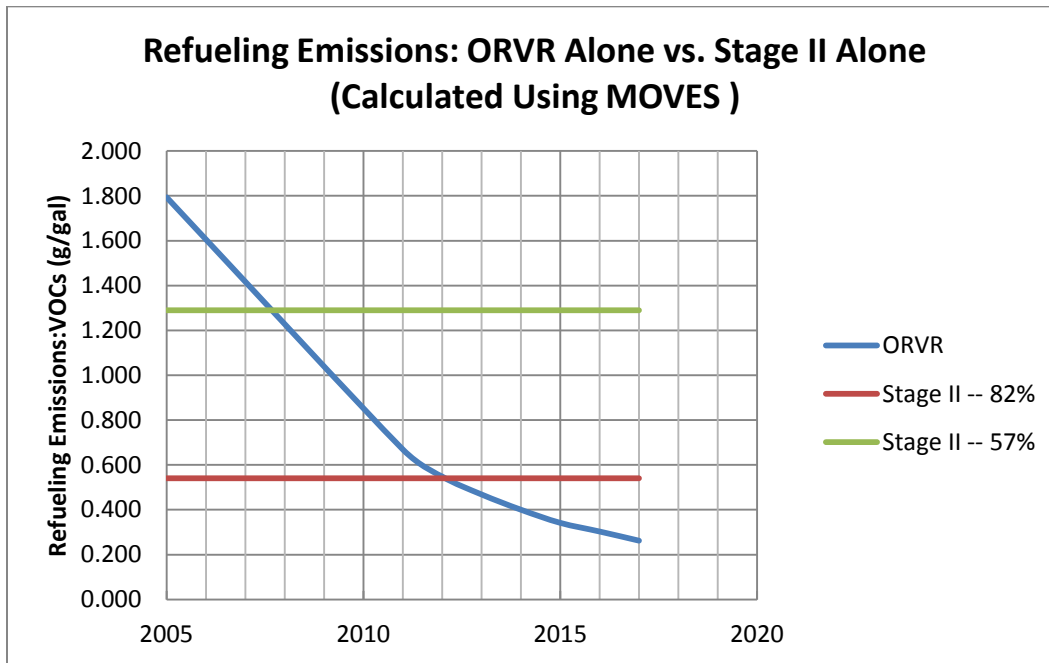
3.2 EPA’s WSU Determination

Effective May 16, 2012, EPA published a Final Rule on WSU determination for ORVR systems. The rule considers that Stage II and ORVR emission control systems are redundant, and the EPA has determined that emission reductions from ORVR are essentially equal to and will soon surpass the emission reductions achieved by Stage II alone; however, since there are older vehicles that remain on the road, and the emissions generated by refueling these vehicles benefit from Stage II systems, the gap fill must be calculated and offset to prevent backsliding. In the absence of state specific analysis, EPA has set a WSU date as of the issuance of its final ruling.

dKC used EPA’s current emission factor model, MOVES, to determine a state specific analysis of WSU dates for Connecticut. The following are estimates, based on MOVES, of when emissions with Stage II systems alone will equal emissions using ORVR alone:

- 82% Stage II efficiency: July 2012
- 57% Stage II efficiency: 2007-2008
- Figure 1 shows gram per gallon emission estimates for ORVR alone by model year vs. Stage II alone. WSU occurs when VOC emissions for ORVR alone drop below the Stage II lines.

Figure 1



3.3 Implications of EPA's WSU Rule

EPA's WSU rule has implications for this analysis and future strategies for controlling emissions at GDFs in Connecticut:

- **Stage II Effectiveness:** EPA lists the effectiveness of Stage II as follows:
 - **Semi-annual inspections:** 92%
 - **Annual inspections:** 86%
 - **Minimal or less frequent inspections:** 62%

EPA assumes that 90% of gasoline is dispensed at GDFs with Stage II systems. ERG's GDF survey determined that, in Connecticut, 99% of gasoline is dispensed at GDFs with Stage II systems. Based on GDF tests in Connecticut, Massachusetts, and New Hampshire, Stage II effectiveness is likely to be lower than EPA's estimates.

- **ORVR/Stage II Incompatibility:** The EPA rule acknowledges the incompatibility between ORVR and vacuum-assist Stage II systems, noting that it reduces the effectiveness of Stage II by 1-10%. Incompatibility was not considered in the WSU determination, but EPA did mention that states should require Stage II system upgrades for ORVR compatibility if they opt to continue the Stage II program. Emissions resulting from the incompatibility between ORVR and vacuum-assist Stage II systems are termed incompatibility excess emissions (IEE). Published IEE rates vary from a low of 0.42 lbs/1000 gal to a high of 1.5 lbs/1000 gal. dKC used 0.86 lbs (California's estimate) in its IEE calculations.

- **Backsliding:** The EPA rule says that ozone non-attainment areas must make up for any emission reductions that are lost due to terminating Stage II programs. The rule does not specifically state how IEE can be factored into calculations of lost emissions reductions. If IEE is considered, continuing the current Stage II program without ORVR compatibility provides minimal benefits and, in fact, may increase emissions in the future. Accounting for IEE, Connecticut must make up 0.48 tons per day VOCs in 2013. By 2015, emissions increase if Stage II is continued due to IEE. Without considering IEE, Connecticut must make up 1.8 tons per day in 2013 and 1.3 tons per day in 2015. IEE is discussed in greater detail below.
- **Stage I Improvements:** EPA has stated that states can make up for the shortfall by improving Stage I systems, even if these improvements only bring the system up to assumed SIP effectiveness.

4. POSSIBLE STAGE II ENHANCEMENTS

If DEEP decides to continue the Stage II program it should consider the following enhancements:

4.1 End ORVR Incompatibility

Currently, vacuum-assist Stage II systems in Connecticut are not compatible with ORVR. When a vehicle with ORVR is refueled at a GDF with a vacuum-assist system, ambient air from the vicinity of the GDF nozzle will be drawn back into the GDF storage tank. This air dilutes the concentration of gasoline vapors in the headspace of the storage tank, causing some of the liquid gasoline in the storage tank to evaporate, which increases the storage tank pressure. If the tank pressure increases above the positive setting of the P/V valve, the storage tank will vent to the atmosphere. As mentioned earlier, the increased emissions that occur due to dilution of the storage tank with air from ORVR vehicles is termed incompatibility excess emissions (IEE). IEE is limited to vacuum-assist systems. Balance systems are generally compatible with ORVR systems. Almost all (94%) of the gasoline dispensed in Connecticut is dispensed at GDFs with vacuum-assist systems.

IEE can be mitigated or eliminated by the following measures:

- a. Install nozzles that sense ORVR vehicles,
- b. Add devices called processors to capture or incinerate vapors at the vent, or
- c. Convert to balance type systems.

4.2 Other Possible Stage II Enhancements

In addition to addressing IEE with vacuum-assist systems, other enhancements could be made to Stage II systems. These enhancements have been included in California's Enhanced Vapor Recovery (CA EVR) program, and are listed below:

- CA EVR Module 2 – General Stage II improvements and tightened performance standards. The Stage II improvements outlined in Module 2 aim to reduce fugitive emissions by establishing GDF tank pressure limits. The

tightened performance standards require including fugitive emissions in system efficiency calculations.

- CA EVR Module 6 – In-Station Diagnostics (ISD): ISD require GDFs to install systems that monitor tank pressure and A/L, and set alarms when there are problems that could lead to excessive emissions. ISD is similar in concept to onboard diagnostic (OBD) systems that have been on vehicles since 1998. A lot of concerns have been raised by industry over the reliability of ISD with regard to monitoring A/L. Monitoring GDFs for the presence of vapor leaks appears to be reliable. Data from Veeder-Root, which installs ISD systems in California, indicate that A/L alarms occur much more frequently than alarms for GDF vapor leaks. The effectiveness of alarms for vapor leaks (and A/L) has not been conclusively demonstrated in areas with winter weather similar to Connecticut's.

4.3 Gasoline Dispensing Improvements

The CA EVR program includes two modules that are theoretically applicable to GDFs with and without Stage II systems:

- CA EVR Module 4 – Liquid Retention and Spitting: This module aims to reduce emissions associated with liquid retention and spitting. Liquid detention occurs when liquid gasoline contained in the hanging hardware (nozzles, hoses, etc.) on the dispenser is allowed to evaporate into the atmosphere between vehicle refuelings, while the nozzle is hung on the dispenser. Nozzle spitting is defined as the release of liquid when the nozzle trigger is depressed with the dispenser not actuated.
- CA EVR Module 5 – Dripleless Nozzles: This module aims to reduce dripping from the nozzle after it dispenses fuel.

Based on discussions with CARB, manufacturers expect to have systems that meet requirements for Modules 4 and 5 this year.

Appendix B summarizes the CA EVR program.

5. POSSIBLE STAGE I ENHANCEMENTS

DEEP's Stage I control program may be improved by implementing measures that go beyond current Stage I requirements:

5.1 Add Vapor Leak Monitoring System

Continuous monitoring of GDF tank pressure and other parameters that indicate the presence of vapor leaks has the potential for significant emissions reductions. Based on GDF inspections, actual Stage I control efficiencies are much lower than the 96% control efficiency assumed in the SIP. In addition, the control efficiencies for breathing losses assumed for Pressure Vacuum (P/V) valves are likely to be lower than the 90% control efficiency assumed in the SIP. This measure could reduce State oversight costs if it were coupled with self-certification of compliance. Requiring these systems also will help assure the State that any leaks resulting from removing or capping Stage II

systems will be promptly identified and repaired, should the State decide to terminate the Stage II program.

These systems have not been used on GDFs outside of California, so there is some uncertainty about how well they will work on GDFs in Connecticut’s harsher climate.

5.2 Add Pressure Management System (Emissions Processors)

Managing the pressure with a vapor processor reduces breathing losses and maintains the tank pressure close to ambient to avoid fugitive and vent cap emissions. Several vendors offer tank pressure control systems that minimize venting losses.

5.3 Additional Enhancements

In addition to the above options, the CA EVR program outlines additional Stage I improvements in Module 1. GDFs in Connecticut have most of these improvements. The following are additional enhancements included in CA EVR Module 1 that could be made to Connecticut’s Stage I program:

- **Spill Containment Boxes** – California requires spill containment boxes to meet leak rate limits and prohibit standing fuel. Vendors have developed double-wall spill containers that meet CA EVR requirements.
- **Drop Tube with Overfill Protection Specification** – California requires drop tubes to be equipped with devices that shut off liquid flow when the underground storage tank is being filled. These drop tubes also must meet leak rate specifications.

6. POTENTIAL EMISSION REDUCTIONS FOR STAGE I AND STAGE II SYSTEM IMPROVEMENTS

6.1 Gasoline Consumption

- Emissions and emission reductions are proportional to gasoline consumption
- Statewide consumption is based on Department of Revenue reports.

Table 7 – Statewide Gasoline Consumption (2010)

MONTH	GALLONS CONSUMED
JAN	119,417,253
FEB	109,313,343
MAR	124,366,769
APR	124,549,371
MAY	132,812,176
JUN	129,606,224
JUL	134,879,449
AUG	130,328,001
SEP	125,097,789
OCT	130,473,564
NOV	124,071,272
DEC	129,706,355
TOTAL	1,514,621,566

6.2 Current Stage II program

- dKC estimated emissions reductions for:
 - Continuing the current Stage II program
 - Decommissioning the current Stage II program, with ORVR solely providing vapor recovery.
- Note on Figure 2 that continuing Stage II (without ORVR compatible nozzles) increases emissions after 2015 due to IEE.

Figure 2

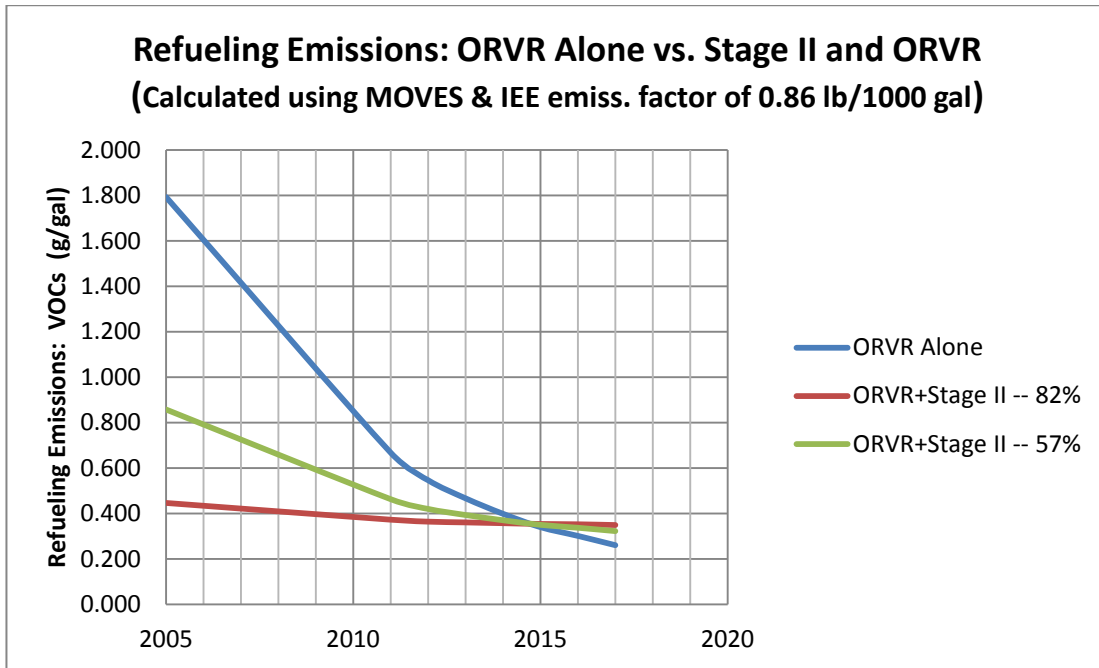


Table 8 – VOC Emission Reductions (tons/day) for Continuing Current Stage II Controls (Negative values mean that keeping current systems increases emissions due to IEE⁴)

Year	ORVR only	Additional Reductions with Stage II	
		82% Control Efficiency	57% Control Efficiency
2012	11.194	0.833	0.579
2013	11.558	0.485	0.337
2014	11.869	0.189	0.131
2015	12.137	-0.063	-0.044
2016	12.313	-0.233	-0.162
2017	12.500	-0.405	-0.281

⁴ IEE: Incompatibility Excess Emissions (California's estimated value of 0.86 lb/1000 gal)

6.3 Making All Stage II Systems in CT ORVR Compatible

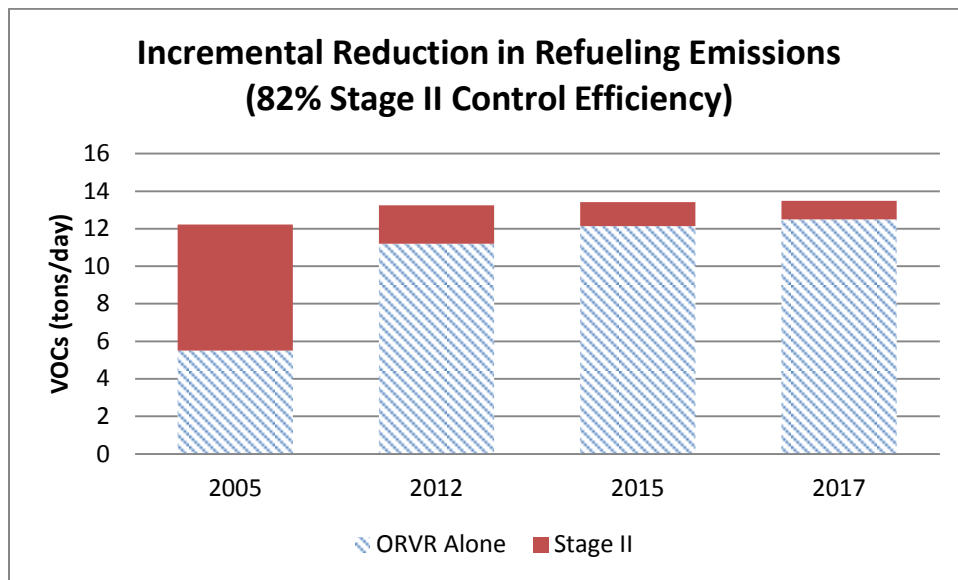
Two Stage II control scenarios were evaluated:

- **Upgrading nozzles in the current program to be ORVR compatible.** With this option, the current program will remain with the additional requirement that stations must upgrade to ORVR compatible nozzles.
 - This option eliminates IEE.
 - Control efficiencies are based on current program data.
 - Two efficiencies were modeled: 82% and 57%.

Emission estimates were calculated by multiplying gram per gallon estimates without Stage II (derived from MOVES) times annual gasoline consumption times estimated control efficiency.

- By 2015, ORVR compatible Stage II systems have minimal benefits, as shown in Figure 3.

Figure 3



- **Add CA EVR elements that pertain to Stage II, including ORVR compatibility and in-station diagnostics (ISD).**
 - This option eliminates IEE.
 - Control efficiency based on CA EVR corrected for rule effectiveness.
 - 90% control efficiency was modeled.
 - This option gets slightly greater emission reductions than adding ORVR compatibility to the current Stage II program, as shown on Table 9 below.

Table 9 – Emission Reductions from Enhancing Stage II Systems to Add ORVR Compatibility and Other Enhancements (tons/day)

Year	ORVR Alone	Stage II Efficiency (increase over ORVR alone)		
		90% (CA EVR)	82%	57%
2012	11.194	2.252	2.052	1.426
2013	11.558	1.924	1.753	1.219
2014	11.869	1.644	1.498	1.041
2015	12.137	1.403	1.279	0.889
2016	12.313	1.245	1.134	0.788
2017	12.500	1.077	0.981	0.682

6.4 Stage I Improvements

- **Continuous monitoring for GDF vapor leaks** – The emission reductions from real-time monitoring for vapor leaks were estimated as follows:
 - **Reduction in Tank Filling Losses** – To estimate the reduction in tank filling losses, the estimated improvement in Stage I efficiency was applied to emission estimates for GDF tank filling losses. Assumptions are shown in Table 10. No data has been identified on the improvement in Stage I efficiency from eliminating leaks; 10% is assumed. As previously mentioned, GDF tanks quickly develop leaks that impact vapor containment, and increase filling losses.

Table 10 – Assumptions for Determining Reductions in Tank Filling Losses for Continuous Monitoring for Vapor Leaks

Parameter	Value
Uncontrolled Tank Filling losses (g/gal)	3.314
Stage I Efficiency Improvement (%)	10

- **Reduction in Breathing Losses** – The reduction in breathing losses from continuously monitoring GDF tanks for vapor leaks was estimated by adjusting the benefit for P/V valves that is assumed in Connecticut’s SIP by the fraction of GDFs that are expected to have uncontrolled breathing losses because they have tank vapor leaks. Based on guidance from EPA⁵ in 2008, uncontrolled breathing losses are 1lb/1000 gal of gasoline dispensed. Connecticut’s SIP assumes that P/V valves reduce breathing losses by 90%. The fraction of GDFs that are expected to have uncontrolled breathing losses because they have tank vapor leaks is assumed to equal the fraction that failed their periodic certification test for pressure decay and/or P/V valve. Based upon the inspections of GDFs in Connecticut that are witnessed by DEEP, 45% of the GDFs fail the pressure decay test and an additional 6% fail the P/V valve test. Assuming that continuous vapor leak monitoring systems prevent these leaks, they are expected to reduce

⁵ AP42 -- Transportation And Marketing Of Petroleum Liquids – USEPA, 6/2008

breathing losses by 0.46 lbs/1000 gal. Assumptions are summarized in Table 11. Calculated benefits are shown in Table 12.

Table 11 – Assumptions for Determining Reductions in Breathing Losses for Real Time Monitoring of Tank Pressure

Parameter	Value
Breathing losses –EPA emission factor	1.0 lbs VOCs/1000 gal
P/V Effectiveness	90%
Fraction of GDFs with vapor leaks	51%
Benefit for continuous vapor leak monitoring systems	0.46 lbs VOCs/1000 gal

Table 12 – Breathing Loss Reductions for Continuous Monitoring for Vapor Leaks (EPA Emission Factor of 1.0 lbs VOCs/1000 gal)

Yearly Throughput Intervals	Number of gas stations	Gasoline Dispensed (gal/yr)	Estimated Benefit (tons/yr)
<300,000	803	42,046,727	9.65
300,000-500,000	170	57,352,380	13.16
500,000-700,000	170	88,851,668	20.39
700,000-900,000	179	122,804,840	28.18
900,000-1,100,000	143	122,319,593	28.07
1,100,000-1,300,000	122	122,447,946	28.10
1,300,000-1,500,000	74	87,092,836	19.99
1,500,000-1,700,000	53	72,108,116	16.55
1,700,000-1,900,000	60	90,859,668	20.85
1,900,000-2,100,000	36	61,102,131	14.02
2,100,000-2,700,000	86	174,333,304	40.01
2,700,000-3,300,000	45	114,832,693	26.35
3,300,000-3,900,000	36	108,866,784	24.98
3,900,000-4,100,000	17	56,848,291	13.05
>4,100,000	41	192,754,588	44.24
TOTAL	2,033	1,514,621,566	348

About 40% of the GDFs dispense less than 300,000 gallons per year. As shown in Table 13, exempting the GDFs from these requirements reduces estimated benefits by about 3%.

Table 13 – Statewide Emission Reductions for Continuous Monitoring for Vapor Leaks (tons/day)

Pollution Source	All GDFs	GDFs with >300,000 gal/yr
Filling losses	1.51	1.47
Tank Breathing	0.95	0.93
Total	2.47	2.40

- **Alternative estimates of the reduction in breathing losses from continuous vapor leak monitoring systems** – Veeder-Root, a vendor of continuous vapor leak monitoring systems, and representatives of the oil industry have provided alternative estimates of the reduction in breathing losses from continuous vapor leak monitoring systems.
 - **Veeder-Root** – Table 14 presents Veeder-Root’s estimates of the impact of continuous vapor leak monitoring systems on breathing losses. Using emission factors provided by Veeder-Root, the benefits are calculated to be 441 tons per year vs. 348 tons per year when the estimate is based on EPA’s emission factors and the percentage of GDFs with vapor leaks. Veeder-Root predicts greater reductions in breathing losses for the smaller stations in terms of lbs/1000 gal.

Table 14 – Veeder-Root Estimates of Breathing Loss Reductions for Continuous Monitoring for Vapor Leaks

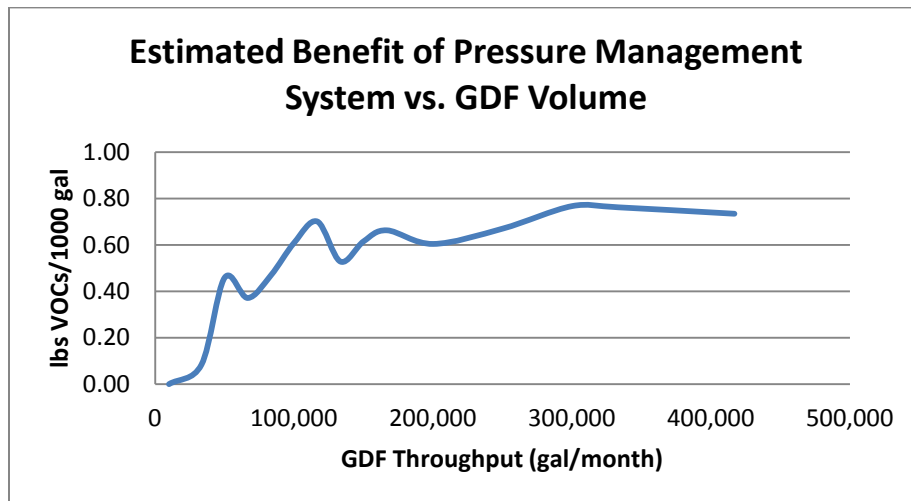
Yearly Throughput Intervals	Number of gas stations	Emissions (lbs/1000 gal)	Gasoline Dispensed (gal/yr)	Estimated Benefit (tons/yr)
<300,000	803	2.22	42,046,727	46.7
300,000-500,000	170	1.06	57,352,380	30.5
500,000-700,000	170	0.65	88,851,668	29.0
700,000-900,000	179	0.76	122,804,840	46.7
900,000-1,100,000	143	0.67	122,319,593	40.8
1,100,000-1,300,000	122	0.55	122,447,946	33.6
1,300,000-1,500,000	74	0.45	87,092,836	19.7
1,500,000-1,700,000	53	0.60	72,108,116	21.7
1,700,000-1,900,000	60	0.53	90,859,668	24.1
1,900,000-2,100,000	36	0.47	61,102,131	14.5
2,100,000-2,700,000	86	0.54	174,333,304	47.4
2,700,000-3,300,000	45	0.48	114,832,693	27.5
3,300,000-3,900,000	36	0.38	108,866,784	20.8
3,900,000-4,100,000	17	0.38	56,848,291	10.8
>4,100,000	41	0.29	192,754,588	27.7
TOTAL	2,033	0.58	1,514,621,566	441

- **Connecticut Petroleum Council (CPC)** – The CPC suggested that the emissions factor for uncontrolled breathing losses be

reduced to 0.76 lbs/1000 gal to reflect reduced gasoline volatility during the summer months. EPA's recommended emission factor of 1.0 lb/1000 gal is based on tests performed in the 1960s, when the RVP⁶ was higher than now. CPC also suggested that a lower emission factor be used for high volume GDFs, since the high volume limits vapor growth. CPC did not offer revised estimates of the emission benefits of continuous vapor leak monitoring systems. The cost-effectiveness calculations for continuous vapor leak monitoring systems use two breathing loss emission factors: 0.76 and 1.0 lb/1000 gal.

- **Require pressure management system (emissions processors)** – EPA has not prepared estimates of the benefits for requiring pressure management systems, so dKC based benefit estimates on information provided by vendors of these systems. Two vendors provided estimates: Veeder-Root and ARID Technologies.
 - **Veeder-Root** – Based on information from Veeder-Root, GDFs will have breathing losses corresponding to the amount of air ingested in the tank and the evaporation rate.
 - Based on in-house tests, estimated benefits from requiring pressure management systems are greatest in stations that dispense a lot of gasoline, where benefits are around 0.7 lbs/1000 gal (see Figure 4 and Table 15).
 - Exempting stations that dispense less than 1,100,000 gallons per year will reduce benefits from 1.2 to 1.0 tons per day (See Table 16).

Figure 4



⁶ Fuel volatility and accordingly the potential to emit is based on Reid Vapor Pressure (RVP).

Table 15 – Veeder-Root Estimates of the Emission Benefits for Pressure Management Systems

Yearly Throughput Intervals (gal)	Number of Gas Stations	VOC Emissions (lbs /1000 gal)	Gasoline Dispensed (gal/yr)	Estimated Benefit (tons/yr)
<300,000	803	0.00	42,046,727	0
300,000-500,000	170	0.08	57,352,380	2
500,000-700,000	170	0.46	88,851,668	20
700,000-900,000	179	0.37	122,804,840	23
900,000-1,100,000	143	0.47	122,319,593	29
1,100,000-1,300,000	122	0.61	122,447,946	37
1,300,000-1,500,000	74	0.70	87,092,836	31
1,500,000-1,700,000	53	0.53	72,108,116	19
1,700,000-1,900,000	60	0.62	90,859,668	28
1,900,000-2,100,000	36	0.66	61,102,131	20
2,100,000-2,700,000	86	0.60	174,333,304	53
2,700,000-3,300,000	45	0.67	114,832,693	39
3,300,000-3,900,000	36	0.77	108,866,784	42
3,900,000-4,100,000	17	0.76	56,848,291	22
>4,100,000	41	0.73	192,754,588	71
TOTAL	2,033	0.57	1,514,621,566	435

Table 16 – Breathing Loss Reductions for Pressure Management Controls Based on Data from Veeder-Root

Scenario	tons/day
All GDFs	1.2
GDFs with throughput >1,100,000 gal/yr	1.0

- **ARID Technologies** – ARID Technologies (ARID) provided estimates of the benefits of its Permeator system on GDFs with and without Stage II systems. ARID did not break-out breathing loss reductions (fugitive losses) from reductions in venting emissions through the tank vent. In addition, ARID assumed that GDFs without Stage II have the same breathing and venting losses as stations with Stage II. Also, ARID assumed that GDFs did not have P/V valves. ARID projects a benefit between 3.3 and 3.6 lbs/1000 gal.
- dKC believes that additional research must be performed to better evaluate pressure management control systems options.
- **Other Stage I Enhancements** – Data was not available on the emission reductions from CA EVR requirements for spill containment boxes and specifications to reduce leaks in drop tubes with overfill protection devices installed. These measures are likely to reduce tank leaks that would be identified by continuous vapor leak monitoring systems, so they are unlikely to result in significant additional benefits over vapor leak monitoring systems. This does not mean these measures do not have merit. GDFs could install

CA EVR approved drop tubes and spill containment devices to reduce incidents of vapor leak monitoring alarms.

6.5 Impact on Air Toxics

The primary air toxic of concern with GDF operations is benzene. dKC used MOVES to estimate benzene emissions in vehicle refueling vapors. According to MOVES, benzene is 0.54% (mass percent) of refueling vapor. Reducing or increasing gasoline vapor emissions will have a proportional impact on benzene emissions.

7. IMPLEMENTATION AND OPERATING COSTS FOR CONTROL ALTERNATIVES

7.1 Current Costs

- **Costs to Continue Stage II Systems**
 - Annual cost for continuing Stage II are based on the following sources:
 - New York State: \$2,000 per GDF
 - API: \$4,410 per GDF
 - EPA: \$3,277 per GDF

Table 17 -- Annual Costs to GDFs for Continuing Current Stage II Program

	Low: New York State ⁷	High: API ⁸	EPA ⁹
Annual Stage II Cost/Station	\$2,000	\$4,410	\$3,277
Total Annual Stage II Cost	\$3,559,728	\$7,849,343	\$5,832,614

7.2 Cost to Make All Stage II Systems in Connecticut ORVR Compatible

Costs to make Stage II systems compatible with ORVR systems are based on EPA’s estimate to continue Stage II plus OPW’s (equipment vendor) estimates to upgrade the nozzles in stations with vacuum-assist systems. Costs are detailed below:

- OPW’s cost quotes were used as the basis of the costs for upgrading equipment to be compatible with ORVR systems. Upgrade costs are estimated to be \$2,000 to \$14,000 per GDF¹⁰. Annualized costs assume three years of life for the nozzles and 10% interest.
- Costs to continue the program with ORVR compatibility are based on EPA’s cost estimate for continuing the current program plus the cost for ORVR upgrades based on OPW’s cost quotes.

⁷ Part 230 -- Gasoline Dispensing Sites and Transport Vehicles, Stakeholder Meeting; New York Department of Environmental Protection, December 7, 2010.

⁸ REFUELING EMISSION CONTROLS AT RETAIL GASOLINE DISPENSING STATIONS AND COST-BENEFIT ANALYSIS OF STAGE II IN CONNECTICUT; Tech Environmental, Inc., September 24, 2007

⁹ Widespread Use for Onboard Refueling Vapor Recovery and Stage II Waiver; USEPA, July 8, 2011.

¹⁰ Personal Communication between Rob Klausmeier, dKC and Jeff Steel, OPW, August 8, 2011

Table 18 – Annual Costs for ORVR Compatible Stage II Systems

Cost Component	Annual Cost
Cost for Continuing Current Program (EPA estimate; not including DEEP oversight)	\$5,832,614
ORVR Upgrade (source OPW)	\$3,797,338
Total	\$9,629,951

7.3 Costs for Enhanced Stage II Systems: ORVR Compatibility plus CA EVR Enhancements

The CA EVR spreadsheet¹¹ was used as the basis for the costs of a higher efficiency program that includes all the CA EVR Stage II upgrades. Costs were calculated as follows:

- CA EVR costs per GDF were summed for the modules that affected Stage II (i.e., Modules 2, 3, and 6).
- Balance 1 and Assist 1 costs applied to Balance and Assist Stage II systems in Connecticut.
- California’s costs per GDF in different monthly throughput categories were multiplied times the projected number of GDFs in Connecticut in these categories to estimate total costs.
- Costs were increased by 33% to account for inflation since 2001, when the CA EVR spreadsheet was last updated.

**Table 19 – Fixed Costs per GDF for Enhanced Stage II Systems
(Source: CA EVR Spreadsheet)**

Group	Average Monthly Throughput by Facility (gal)	Vacuum-Assist	Balance
1	0-25,000	\$22,678	\$23,360
2	25,001-50,000	\$24,056	\$25,086
3	50,001-100,000	\$29,305	\$31,365
4	100,001-200,000	\$34,549	\$37,638
5	> 200,000	\$39,549	\$41,783

¹¹ **EVR Cost Analysis Spreadsheet**; California Air Resources Board, October 16, 2002. Results adjusted for inflation using Marshall and Swift Equipment Cost Index.

**Table 20 – Total Annual Costs to CT GDFs for Enhanced Stage II Systems
(Source: CA EVR Spreadsheet)**

Group	Average Monthly Throughput by Facility (gal)	Total Annual Cost
1	0-25,000	\$2,844,983
2	25,001-50,000	\$1,723,774
3	50,001-100,000	\$5,028,657
4	100,001-200,000	\$3,820,741
5	> 200,000	\$2,885,281
	TOTAL	\$16,303,440

7.4 Costs for Improving DEEP’s Stage I Control Program by Implementing Measures that go Beyond Current Stage I Requirements

- **Requiring continuous monitoring for GDF vapor leaks**

Three sources were used to define the costs for real-time monitoring for GDF vapor leaks:

- Veeder-Root: Supporting data provided for proposed New York Part 230 Regulation¹².
- Franklin Fueling Systems: Cost estimates for the vapor leak monitoring portion of its California In-station Diagnostic (ISD) system¹³.
- CA EVR spreadsheet: Costs for the vapor leak monitoring portion of the CA EVR program.

Table 21 -- Fixed Costs for Continuous Monitoring for Vapor Leaks

Source	Fixed Cost
Veeder-Root	\$6,000 (includes \$1000 for installation)
Franklin Fuel Systems	\$5,000 (includes \$1000 for installation)
CA EVR Spreadsheet	\$6,105 (includes installation)

dKC used the Veeder-Root costs as the basis for the cost-effectiveness analysis. Annual costs are shown in Table 22. As discussed above, exempting GDFs that dispense less than 300,000 gallons per year reduces emission reductions of this measure by 3%. Exempting these GDFs reduces costs for this measure by 39%.

¹² Personal Communication between Rob Klausmeier, dKC and Kristine Anderson, Veeder Root, Vapor Emissions Workbook, November 8, 2011

¹³ Personal Communication between Rob Klausmeier, dKC and Dan Marston, Franklin Fuel Systems, February 29, 2011

Table 22 – Annual Costs for Continuous Monitoring for Vapor Leaks

Parameter	Annualized Equip Costs	Fuel Savings	Net Cost
Annual cost per GDF (Based on Veeder-Root) ¹⁴	\$1,476		
Costs for installing at all GDFs	\$3,001,668	\$1,186,745	\$1,814,923
Costs for installing at GDFs with throughput >300,000 gal/yr	\$1,816,521	\$1,153,800	\$662,721

- **Requiring GDF Tank Pressure Control Systems**

Costs for requiring GDFs to be equipped with tank pressure control systems are based on estimates prepared by Veeder-Root for New York State DEC. Total costs are reduced 72% by exempting stations that dispense less than 1,100,000 gallons per year. This exemption reduces emission benefits by 16%.

Table 23 -- Fixed Costs for GDF Tank Pressure Control Systems

Parameter	Costs
Fixed cost per GDF	\$12,250
Costs for installing at all GDFs	\$24,904,250
Costs for installing at GDFs with throughput >1,100,000 gal/yr	\$6,964,996

Table 24 – Annual Costs for GDF Tank Pressure Control Systems

Parameter	Annualized Equip Costs	Fuel Savings	Net Cost
Annual cost per GDF (based on Veeder-Root) ¹⁵	\$3,219		
Costs for installing at all GDFs	\$6,543,477	\$573,374	\$5,970,103
Costs for installing at GDFs with throughput >1,100,000 gal/yr	\$1,830,021	\$475,408	\$1,354,613

8. COST PER TON OF POLLUTANT REDUCTIONS FOR CONTROL ALTERNATIVES

8.1 Making Current Stage II Systems in Connecticut ORVR Compatible

Table 25 shows the calculation of the emission reductions from improving Stage II systems to make them ORVR compatible. Emission estimates were calculated by multiplying gram per gallon estimates without Stage II (derived from MOVES) times annual gasoline consumption times estimated control efficiency. Two Stage II control efficiencies were modeled: 82% and 57%. Regardless of the assumed control

¹⁴ \$6,000 times 0.1627 (capital recovery factor assuming 10% interest and 10 year life) plus 10% (annual maintenance factor) times \$5,000.

¹⁵ \$12,250 times 0.1627 (capital recovery factor assuming 10% interest and 10 year life) plus 10% (annual maintenance factor) times \$12,250.

efficiency, by 2015 this option is expensive and results in relatively few emission reductions.

Table 25 – Cost Effectiveness of Improving Stage II Systems to Make Them Compatible with ORVR Systems

Year	g/gal without Stage II (MOVES)	Annual Cost (2011\$) (includes DEEP oversight)	Reduction (tons/yr)		Fuel Savings (\$/yr)		\$/ton	
			82%	57%	82%	57%	82%	57%
2011	0.669	\$10,448,781	914	636	\$1,205,203	\$837,763	\$10,108	\$15,120
2012	0.547	\$10,448,781	749	521	\$986,968	\$686,063	\$12,635	\$18,755
2013	0.468	\$10,448,781	640	445	\$843,418	\$586,278	\$15,010	\$22,171
2014	0.400	\$10,448,781	547	380	\$720,661	\$500,948	\$17,791	\$26,172
2015	0.341	\$10,448,781	467	324	\$615,095	\$427,566	\$21,071	\$30,890
2016	0.303	\$10,448,781	414	288	\$545,486	\$379,179	\$23,928	\$35,000
2017	0.262	\$10,448,781	358	249	\$471,845	\$327,990	\$27,868	\$40,668

8.2 Enhanced Stage II Systems: ORVR Compatibility plus CA EVR

dKC assumes that Stage II, with all the CA EVR enhancements, has a 90% control efficiency. This option results in slightly greater emission reductions than those gained by only making Stage II systems compatible with ORVR systems, and is more costly in terms of dollars per ton.

Table 26 – Cost Effectiveness of Implementing CA EVR Enhancements Including ORVR Compatibility – 90% Overall Control Efficiency

Year	g/gal	Annual Cost (2011\$) (includes DEEP oversight)	Reduction (tons/yr)	Fuel Savings (\$/yr)	\$/ton
2011	0.669	\$17,122,269	1,004	\$1,322,784	\$15,742
2012	0.547	\$17,122,269	822	\$1,083,258	\$19,514
2013	0.468	\$17,122,269	702	\$925,702	\$23,060
2014	0.400	\$17,122,269	600	\$790,970	\$27,212
2015	0.341	\$17,122,269	512	\$675,104	\$32,109
2016	0.303	\$17,122,269	454	\$598,704	\$36,374
2017	0.262	\$17,122,269	393	\$517,879	\$42,257

8.3 Enhance Stage I: Requiring Real-time Monitoring of GDFs for Vapor Leaks

The calculation of the cost-effectiveness of real-time monitoring for vapor leaks is shown in Table 27. Cost effectiveness and emission reductions are shown graphically in Figure 5. Exempting GDFs that dispense less than 300,000 gallons per year reduces cost per ton from \$2,016 to \$757.

As mentioned above, dKC did not have access to data on the reduction in filling losses from real-time monitoring for vapor leaks. Emission reductions assume a 10% reduction in filling losses. In addition, the petroleum industry has raised concerns that EPA's recommended emission factor of 1.0 lb/1000 gal does not reflect current fuel volatility, and that the emission factor should be 0.76 lbs/1000 gal. Table 28 presents the cost-effectiveness of this measure when the only benefit is reduction in breathing losses. Cost-effectiveness is calculated for two breathing loss emission factors: 0.76 and 1.0 lb/1000 gal. This measure still appears to be cost-effective for GDFs that dispense greater than 300,000 gallons per year with costs ranging between \$4,000 and \$5,700 per ton of VOCs reduced.

Table 27 – Cost per Ton Estimates for Vapor Leak Monitoring Systems

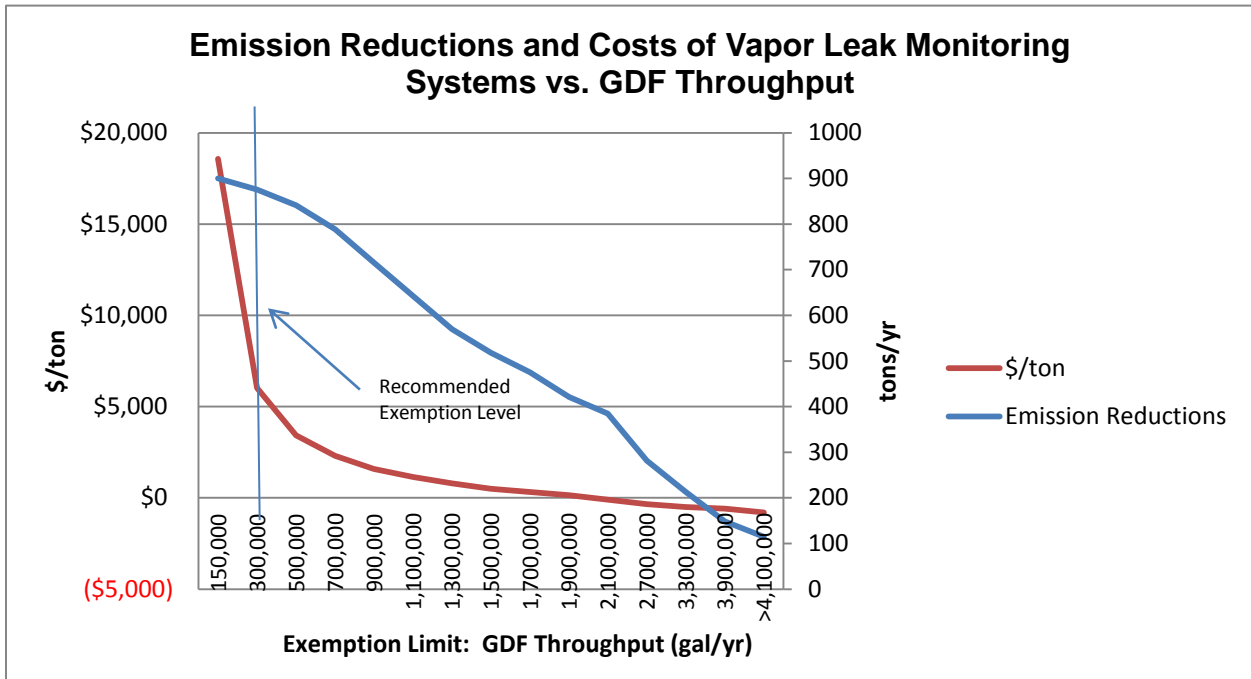
Yearly Throughput Intervals (gal)	Number of gas stations	\$/yr Pressure Monitoring	Cumul. \$/yr (%)	Filling Loss Reduction from Pressure Monitoring (tons VOCs/yr)	Breathing Loss Reduction from Pressure Monitoring (tons VOCs/yr)	Total Emissions Reduction from Pressure Monitoring (tons VOCs/yr)	Cumulative Reductions from Pressure Monitoring (%)	Fuel Savings from Pressure Monitoring	\$/ton Pressure Monitoring
<300,000	803	\$1,185,148	39	15	10	25	3	\$32,945	\$18,565
300,000-500,000	170	\$250,433	48	21	13	34	7	\$44,937	\$6,027
500,000-700,000	170	\$250,433	56	32	20	53	12	\$69,618	\$3,423
700,000-900,000	179	\$264,542	65	45	28	73	21	\$96,221	\$2,306
900,000-1,100,000	143	\$211,633	72	45	28	73	29	\$95,841	\$1,592
1,100,000-1,300,000	122	\$179,888	78	45	28	73	37	\$95,941	\$1,153
1,300,000-1,500,000	74	\$109,344	82	32	20	52	42	\$68,239	\$794
1,500,000-1,700,000	53	\$77,599	84	26	17	43	47	\$56,499	\$492
1,700,000-1,900,000	60	\$88,181	87	33	21	54	53	\$71,191	\$315
1,900,000-2,100,000	36	\$52,908	89	22	14	36	57	\$47,875	\$139
2,100,000-2,700,000	86	\$126,980	93	64	40	104	69	\$136,595	-\$93
2,700,000-3,300,000	45	\$67,017	95	42	26	68	76	\$89,974	-\$336
3,300,000-3,900,000	36	\$52,908	97	40	25	65	84	\$85,300	-\$500
3,900,000-4,100,000	17	\$24,691	98	21	13	34	87	\$44,542	-\$587
>4,100,000	41	\$59,963	100	70	44	115	100	\$151,028	-\$795
Total All	2,033	\$3,001,668		553	348	900		\$1,186,745	\$2,016
Total > 300,000	1,230	\$1,816,521		537	338	875		\$1,153,800	\$757

Table 28 – Cost/Ton Estimates for Vapor Leak Monitoring Systems Assuming Only Benefit is Reduction in Breathing Losses

Yearly Throughput Intervals	Number of gas stations in CT	\$/yr Pressure Monitoring	Breathing Loss Reduction from Pressure Monitoring (tons/yr ¹⁶)		Fuel Savings from Pressure Monitoring		\$/ton Pressure Monitoring	
			0.76 lb/1000 gal	1.0 lb /1000 gal	0.76 lb/1000 gal	1.0 lb /1000 gal	0.76 lb/1000 gal	1.0 lb /1000 gal
<300,000	803	\$1,185,148	7	10	\$9,666	\$12,718	\$25,162	\$25,097
300,000-500,000	170	\$250,433	10	13	\$13,184	\$17,347	\$23,717	\$17,708
500,000-700,000	170	\$250,433	15	20	\$20,425	\$26,875	\$14,842	\$10,963
700,000-900,000	179	\$264,542	21	28	\$28,230	\$37,145	\$11,032	\$8,068
900,000-1,100,000	143	\$211,633	21	28	\$28,119	\$36,998	\$8,602	\$6,221
1,100,000-1,300,000	122	\$179,888	21	28	\$28,148	\$37,037	\$7,105	\$5,083
1,300,000-1,500,000	74	\$109,344	15	20	\$20,021	\$26,343	\$5,880	\$4,153
1,500,000-1,700,000	53	\$77,599	13	17	\$16,576	\$21,811	\$4,852	\$3,371
1,700,000-1,900,000	60	\$88,181	16	21	\$20,887	\$27,482	\$4,246	\$2,911
1,900,000-2,100,000	36	\$52,908	11	14	\$14,046	\$18,482	\$3,646	\$2,455
2,100,000-2,700,000	86	\$126,980	30	40	\$40,075	\$52,731	\$2,858	\$1,856
2,700,000-3,300,000	45	\$67,017	20	26	\$26,398	\$34,734	\$2,028	\$1,225
3,300,000-3,900,000	36	\$52,908	19	25	\$25,026	\$32,929	\$1,468	\$800
3,900,000-4,100,000	17	\$24,691	10	13	\$13,068	\$17,195	\$1,172	\$575
>4,100,000	41	\$59,963	34	44	\$44,310	\$58,303	\$466	\$38
Total All	2,033	\$3,001,668	264	348	\$348,178	\$458,129	\$10,044	\$7,317
Total 300,000+	1,230	\$1,816,521	257	338	\$338,513	\$445,411	\$5,754	\$4,057

¹⁶ Two breathing loss emission factors are used: 0.76 and 1.0 lb/1000 gal. Total benefit equals breathing loss emission factor times the fraction of GDFs that are estimated to have vapor leaks times gasoline throughput.

Figure 5



8.4 Enhance Stage I: Requiring GDF Tank Pressure Control Systems

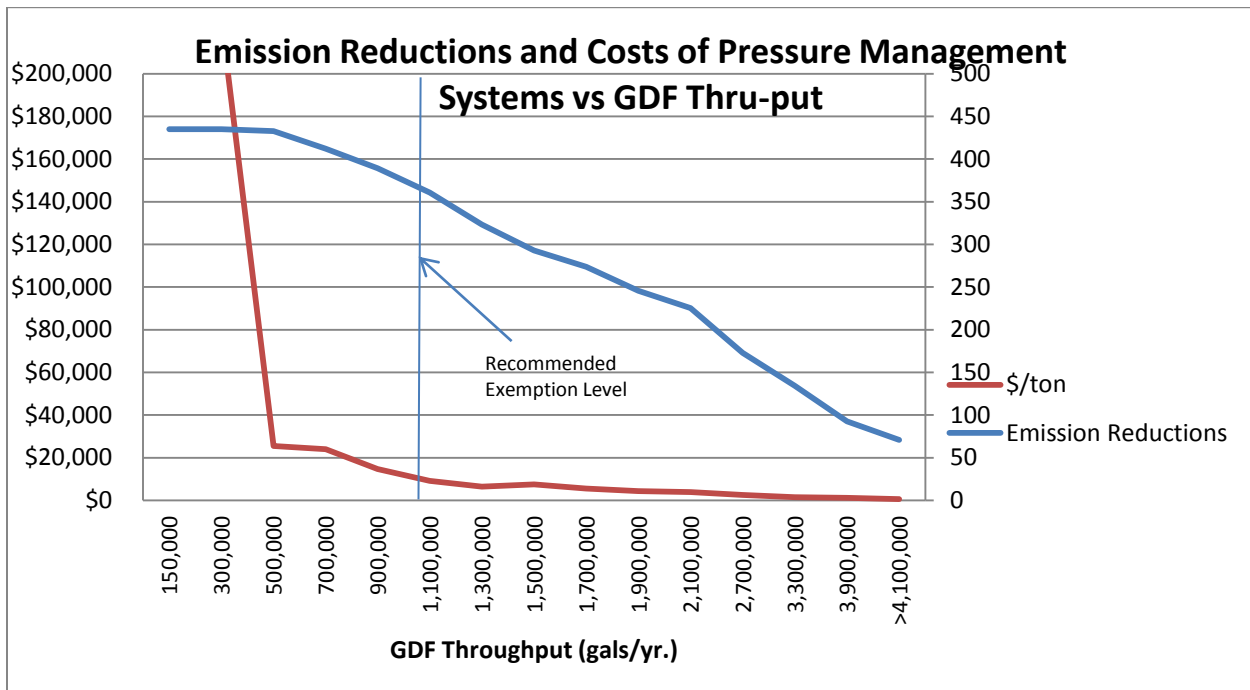
The calculation of the cost-effectiveness of tank pressure control systems is shown in Table 29. Cost effectiveness and emission reductions are shown graphically in Figure 6. Exempting GDFs that dispense less than 1,100,000 gallons per year reduces costs by about 72% while emission reductions are reduced by only 16%, so cost per ton is reduced from \$14,000 to \$3,800.

As mentioned previously, dKC believes that additional data must be collected from GDFs in Connecticut to better define the benefits and cost-effectiveness for tank pressure control systems.

**Table 29 -- Cost per Ton Estimates for Tank Pressure Control Systems
(Data Source: Veeder-Root)**

Yearly Throughput Intervals	Number of gas stations	Additional from PMC (tons/yr)	Cumulative Reductions from PMC (%)	\$/yr PMC	Cumul. \$/yr (%)	Fuel Savings (\$/yr)	\$/ton PMC
<300,000	803	0	0%	\$2,583,558	39%	\$0	NM
300,000-500,000	170	2	1%	\$545,931	48%	\$3,172	\$225,517
500,000-700,000	170	20	5%	\$545,931	56%	\$26,876	\$25,454
700,000-900,000	179	23	10%	\$576,687	65%	\$30,065	\$23,962
900,000-1,100,000	143	29	17%	\$461,350	72%	\$37,853	\$14,745
1,100,000-1,300,000	122	37	26%	\$392,147	78%	\$49,202	\$9,186
1,300,000-1,500,000	74	31	33%	\$238,364	82%	\$40,257	\$6,486
1,500,000-1,700,000	53	19	37%	\$169,162	84%	\$25,118	\$7,558
1,700,000-1,900,000	60	28	44%	\$192,229	87%	\$36,889	\$5,550
1,900,000-2,100,000	36	20	48%	\$115,337	89%	\$26,715	\$4,372
2,100,000-2,700,000	86	53	60%	\$276,810	93%	\$69,462	\$3,934
2,700,000-3,300,000	45	39	69%	\$146,094	95%	\$50,758	\$2,475
3,300,000-3,900,000	36	42	79%	\$115,337	97%	\$55,096	\$1,441
3,900,000-4,100,000	17	22	84%	\$53,824	98%	\$28,568	\$1,165
>4,100,000	41	71	100%	\$130,716	100%	\$93,344	\$528
Total All	2,033	435	-	\$6,543,477	-	\$573,374	\$13,723
Total 1,100,000+	569	361	-	\$1,830,021	-	\$475,408	\$3,755

Figure 6



9. RECOMMENDED PROCEDURES FOR DECOMMISSIONING STAGE II SYSTEMS

The following is a summary of how to decommission the major components of Stage II vapor recovery systems:

- Vapor recovery piping
- Hanging hardware for dispenser
- Dispenser decals for instructions and proper use
- Vacuum pump (only for vacuum-assist systems)
- Liquid drop-out tank (if necessary)

The vacuum pump is a component unique to vacuum-assist systems. Aside from the disabling of these pumps, the steps to decommission both vacuum-assist and balance systems are congruent.

Drawn from implemented procedures in Vermont and New York, as well as standard protocols from the Petroleum Equipment Institute's (PEI) *Recommend Practices for Installation and Testing of Vapor-Recovery Systems at Vehicle-Fueling Sites* PEI RP 300-09, the steps to decommission each component of Stage II vapor recovery systems are summarized below.

a. Vapor recovery piping

1. Disconnect piping from dispenser(s). Purge any liquid from piping. Seal with vapor-tight cap or plug.
2. If accessible without excavation, disconnect piping from tank and seal. Check for liquids and, if necessary, discard properly. Remove piping.
3. If tank is not accessible, leave piping in place (i.e., connected to tank) until next excavation.

b. Liquid drop-out tank

1. Some GDFs, where the slope between the dispensers and tanks is not sufficient, require a drop-out tank to collect any liquid accumulated in the Stage II vapor recovery piping.
2. Either remove or decommission the tank (i.e., remove any liquid, disconnect the line, and seal).

c. Vacuum pump

1. For systems with pumps for each dispenser:
 - i. Disconnect all electronic wiring for pump.
 - ii. Reprogram dispenser electronics to deactivate Stage II vapor recovery.

- iii. Drain any liquids from pump. If no gasoline remains in the pump, it can be left in place. Otherwise, remove pump.
 - 2. For systems with a central pump:
 - i. Remove the vacuum pump.
 - ii. Seal vapor piping previously attached to pump.
- d. **Hanging hardware**
 - 1. Drain liquid from hardware.
 - 2. Replace Stage II hanging hardware with conventional hardware and adjust adaptors.
- e. **Dispenser decals** -- Remove Stage II operating instructions from dispenser.
- f. **Final checks and tests**
 - 1. Confirm overfill protection device is fully functional. If the Stage II vapor piping is still connected to the tank and the protection device is not operating correctly, gasoline may be released. If the device is found faulty, it must be reinstalled.
 - 2. Complete pressure decay and P/V valve test to ensure all components are vapor-tight.
 - 3. Once passed, complete a tie-tank test per CARB procedure TP-201.3C to confirm all vents are functional.
- g. **Checklist and documentation**
 - 1. Complete form with GDF information and checklist.
 - 2. Submit to necessary authorities.

The above procedures should only be administered by trained technicians. Though represented in the summary, we recommend Connecticut refer to PEI RP 300 for detailed steps on decommissioning Stage II systems.

Next Steps – dKC recommends that the following steps be taken if the State adopts regulations to remove the requirement for Stage II:

- 1. Immediately exempt new or significantly modified GDFs from Stage II requirements.
- 2. Give priority to decommissioning Stage II in stations with vacuum-assist systems. Decommission Stage II in GDFs with balance systems after vacuum-assist systems are decommissioned.

10. CONCLUSIONS/RECOMMENDATIONS

Table 30 summarizes estimates of the emission reductions and cost effectiveness of Stage I and Stage II options for calendar year 2015.

Table 30 – Estimates of Emission Reductions and Cost Effectiveness of Stage I and Stage II Options (2015)

Control Measure	Emission Reductions (tons/day)	Cost/Ton
Decommission Stage II Program	0.04 to 0.06	Cost Savings
Make Current Stage II ORVR Compatible	0.9 to 1.3	\$21,000 to \$31,000
Upgrade Stage II to CA EVR Requirements	1.4	\$32,000
Enhance Stage I: GDF Vapor Leak Monitoring System (exempt GDFs <300,000gal/yr)	0.7 to 2.4	\$760 to \$5,700
Enhance Stage I: GDF Tank Pressure Control System	To be determined	To be determined

Conclusions

The following are the primary conclusions of this project:

- Widespread use (WSU) in Connecticut will take place, at the latest, by summer 2012. The State could argue that WSU has already occurred. There are minimal benefits and, in fact, after 2014 there will be increases in emissions if GDFs must keep current Stage II systems beyond the WSU date.
- If Connecticut chooses to phase-out current Stage II requirements, the State has several options to continue the reduction of VOCs from GDFs.
- Enhancing Stage II systems to make them compatible with ORVR systems is estimated to result in 0.9 to 1.3 tons per day emission reductions in 2014. This measure, however, is expensive at a cost of \$21,000 to \$31,000 per ton. Adopting Stage II improvements included in the CA EVR program increases benefits by 0.1 to 0.5 tons per day at a cost of \$32,000 per ton.
- Enhancing Stage I systems to require continuous monitoring of GDFs for vapor leaks appears to be effective and relatively inexpensive. This measure is estimated to result in 0.7 to 2.4 tons per day emission reductions in 2015 at a cost of \$760 to \$5,700 per ton. Exempting GDFs that dispense less than 300,000 gallons per year would significantly improve the cost-effectiveness of this measure, while decreasing emissions reductions by only 3%. In addition, requiring these systems will help assure the State that any leaks that result from the removal or capping of Stage II systems will be promptly identified and repaired, should the State decide to phase-out the Stage II program. Continuous vapor leak monitoring systems however, have not been used on GDFs outside of California. Due to Connecticut's colder climate, there is some uncertainty about how well these systems will work on Connecticut's GDF's during the winter months.

- The addition of GDF tank pressure control systems may also be cost effective, but additional data is needed to determine the costs and effectiveness of this measure. Currently, there is only limited data regarding the impact of these systems on GDFs without Stage II systems.

Recommendations

dKC recommends that DEEP pursue the following actions:

1. Connecticut should submit a revision to their SIP in order to remove Stage II vapor recovery systems once EPA issues its guidance on developing and submitting approvable SIP revisions, because these systems will soon become less effective in providing continued emissions reduction.
2. DEEP should continue with its plans to waive requirements for the installation of Stage II vapor recovery systems at newly constructed gasoline stations.
3. DEEP should work with stakeholders to design a plan for Stage II vapor control system phase-out at existing gasoline stations, starting with GDFs that currently have vacuum-assist Stage II systems.
4. DEEP should initiate a pilot study of continuous vapor leak monitoring systems and tank pressure control systems. The following are suggested goals for the study:
 - a. Assess the feasibility of continuous vapor leak monitoring systems and pressure control systems in Connecticut's climate, specifically during the winter months.
 - b. Assess emission reductions, reliability, action levels and cost-effectiveness of continuous vapor leak monitoring systems and pressure control systems.
 - c. Develop minimum specifications for continuous vapor leak monitoring and pressure control systems.
 - d. Define monitoring, inspection, repair, and reporting requirements.
 - e. Determine throughput thresholds for requiring continuous vapor leak and tank pressure control systems.
 - f. Define the implementation schedule for continuous vapor leak monitoring systems and pressure control systems, assuming studies indicate that they are feasible and cost-effective.

APPENDIX A: REPORT ON ANALYSIS OF WIDESPREAD USE (WSU) IN CONNECTICUT

INTRODUCTION

As part of a task to assist the Connecticut Department of Energy and Environmental Protection (DEEP) in evaluating the Gasoline Dispensing Facility (GDF) Vapor Control Program, dKC determined when onboard refueling vapor recovery (ORVR) systems in Connecticut's vehicle fleet have met a particular threshold described as widespread use (WSU). ORVR systems were phased into the motor vehicle fleet beginning with the 1998 model year. After Connecticut reaches WSU, EPA will allow the State to submit a revision to its SIP which will phase-out the Stage II portion of the Vapor Recovery program, provided the State can achieve emission reductions through other means.

Results of the WSU analysis are summarized below:

- a. Vacuum assist systems are used in 80% of the GDFs with Stage II systems. From a gasoline throughput standpoint, vacuum assist systems account for 94% of the gasoline dispensed at GDFs with Stage II systems.
- b. Data from Connecticut and other states indicate that Stage II systems quickly develop leaks and other malfunctions that cause them to fail system performance tests. It is unlikely that Stage II systems have the 86% control efficiency that is assumed in Connecticut's State Implementation Plan. The actual control efficiency is likely to be 60% or less.
- c. Recent correspondence between EPA and other states indicates that EPA will consider that WSU has occurred when emissions with Stage II systems alone equal emissions with ORVR alone. dKC used EPA's current emission factor model, MOVES, and the NESCAUM WSU spreadsheet to determine WSU dates using this and other WSU criteria. The following are estimates of when emissions with Stage II systems alone equal emissions with ORVR alone:
 - MOVES:
 - 86% Stage II efficiency: 2012
 - 60% Stage II efficiency: 2007-2008
 - NESCAUM SPREADSHEET:
 - 86% Stage II efficiency: 2011
 - 60% Stage II efficiency: 2007

This report presents the results of the WSU analysis. First, we summarize the results of a survey of GDFs in Connecticut. The survey provides key inputs into the WSU analysis. Next, we review information on the condition of vapor recovery systems in GDFs in Connecticut and nearby states. We then use different methods to assess if or when WSU has occurred.

RESULTS OF GDF SURVEY

Eastern Research Group (ERG) conducted a comprehensive survey of GDFs located in Connecticut. ERG designed the survey sample from GDF data obtained from the Connecticut DEEP. ERG filtered out facilities that were closed or inactive, or that were only handling non-gasoline materials. Two thousand and thirty-three surveys were mailed out on February 17, 2011. Of these, 23 were undeliverable.

Survey responses were received for a total of 908 GDFs located in Connecticut. Based on the number of delivered surveys (i.e., 2,010 surveys), the survey response rate was 43.4%. For purposes of comparison, a comparable survey was conducted for a similar GDF sample size in Texas in 2008 and the return rate was only 27.4%.¹⁷ The high survey response rate increases confidence that the findings of this study are applicable to GDFs across the entire state of Connecticut.

ERG designed a Microsoft Access database to house the received survey data. All survey returns that were sent in via mail, fax, or PDF format were input into the database manually. Significant findings are shown below:

- The 96 facilities that do not have Stage II vapor control are limited to the smallest throughput classification.
- The facilities that did not identify whether or not they have Stage II vapor control are primarily limited to the smallest throughput classification (i.e., 73 out of 80 non-respondents to this question).
- Of the facilities that did identify that Stage II vapor control was present, 80% (i.e., 540 out of 675 facilities) had vacuum-assisted systems, while the remaining 20% (i.e., 135 facilities) had balance systems.
- The facilities that had balance Stage II vapor control systems were concentrated primarily in the smaller throughput classifications.

The overall yearly gasoline throughput derived from the survey results was estimated to be 745,413,813 gallons. The disaggregation of this based upon Stage II control technology is as follows:

- Vacuum-assisted – 696,954,309 gallons (93.5% of total)
- Balance – 38,502,475 gallons (5.2% of total)
- Do not know – 6,966,505 gallons (0.9% of total)
- None – 2,990,523 gallons (0.4% of total)

Another way of interpreting the results is to note that vacuum assist systems account for 94% of the gasoline dispensed at GDFs with Stage II systems.

CONDITION OF VAPOR CONTROL SYSTEMS

As part of this project, dKC is collecting information on the condition of Stage I/II vapor control systems in Connecticut. DEEP is providing dKC with the initial results of the

¹⁷ *Stage I and Stage II Gasoline Dispensing Emissions Inventory*. Final. Prepared for the Texas Commission on Environmental Quality by Eastern Research Group, Inc. (ERG), Sacramento, CA. August 31, 2008.

triennial GDF inspections. In addition, dKC is commissioning additional GDF tests to help determine when key components of the vapor control system start to deteriorate. dKC also has compiled information from other states on vapor control system deterioration rates.

Connecticut Test Results – Table 1a summarizes the initial results of GDF inspections that were witnessed by DEEP since December 20, 2010. Overall, 79% of the GDFs failed inspection. The most common sources of failure were the tank decay test (50%), followed by A/L (25%) and P/V cap test (21%).

Table 1a – Results of Triennial GDF Inspections in Connecticut

Parameter	Number and Percent of Failures						
	System Pass/Fail	Decay	Dry Blockage	Wet Blockage	P/V Cap	A/L	6 Click
Number	111	72	5	6	10	23	13
Percent of Tests	70	45	3	4	6	14	8

dKC commissioned additional GDF tests to help determine when key components of the vapor control system start to deteriorate. These tests were performed approximately two months and four months after the station received its certification test. Two stations participated: one is a government station with a balance system; the other is a private station with a vacuum assist system. Table 1b summarizes the results of these tests. None of the tests had an overall result of pass.

Table 1b – Results of Bi-monthly GDF Inspections in Connecticut

Station/Stage II Type	Test date	Overall Result	Failed items
J and A Gas Vacuum Assist	6/2/11	Fail	A/L Test
	8/23/11	Fail	A/L Test
DOT Newington Balance	4/25/11	Fail	P/V valve
	7/14/11	Fail	Decay, P/V valve, torn hose
	11/9/11	Fail	Decay, P/V valve

Massachusetts Test Results – Other states and organizations have reported on the reliability of vapor control systems. Massachusetts DEP requires GDFs to report the initial results of their annual Stage II Certification tests. Table 2 summarizes the percent of stations that fail their initial Stage II tests in Massachusetts. As shown, from 2001 through 2010, 66% to 82% of the GDFs fail the initial annual Certification tests. The primary problem causing test failures were seal caps and fittings that needed tightening. Note that Massachusetts required GDFs with vacuum assist systems to implement by July 2004 enhancements to improve the integrity of Stage I/II systems (e.g., product and vapor swivel adaptors). It’s hard to tell if these enhancements have lowered the failure rate.

Table 2 – Results of Annual GDF Certification Tests in Massachusetts

Year	Percent Fail
2001	82
2002	78
2003	75
2004	67
2005	76
2006	78
2007	78
2008	73
2009	71
2010	66

From May 2002 through October 2003, Massachusetts required new GDFs with vacuum assist Stage II systems or significantly modified GDFs with vacuum assist systems to receive a certification test 120 days after they were initially certified. The results of these tests are shown on Table 3. Results indicate that over half (56%) of the recently certified GDFs failed Certification tests 120 days later. The most common failure was for the pressure decay test.

Table 3 – Results of 120 Day GDF Certification Tests in Massachusetts

Failure Reason	Number	Percent Fail
Air/Liquid Ratio	17	17
Pressure Decay	45	46
P/V Cap	2	2
Any Failure	55	56

New Hampshire Test Results – According to vapor release research conducted by New Hampshire, Stage II repairs last an average of 58 days. Overall, New Hampshire’s research found:

1. Inspections and testing failed to fix key leaks
2. Most leaks required the station to upgrade the hardware (i.e., hoses, nozzles, breakaways)
3. Gasoline deliveries triggered leaks

Summary – Based on available data, it’s unlikely that Stage II systems in Connecticut are achieving the 86% control efficiency assumed in Connecticut’s State Implementation Plan (SIP). Data were not available that relate specific failure modes to a reduction in control efficiency. Assuming stations that fail GDF inspections see a 50%

drop in control efficiency, the actual control efficiency is less than 60%. The WSU analysis uses a range between 60% and 86% for control efficiency.

PREDICTIONS OF WHEN WSU OCCURS

Definition of Widespread Use

Four general definitions have been proposed to determine when WSU has occurred:

- a. When “x” percent of the vehicles in service are ORVR-equipped. 75% and 85% have been proposed for “x”.
- b. When “x” percent of the vehicle miles traveled (VMT) are from ORVR-equipped vehicles.
- c. When total VOC emissions with ORVR-equipped vehicles are equal to total VOC emissions with Stage II VRS programs:
 1. When emissions with Stage II alone equal emissions with ORVR alone.
 2. When emissions with Stage II and ORVR combined including Incompatibility Excess Emissions (IEE) equal emissions with ORVR alone.
- d. When “x” percent of gasoline sold is dispensed to ORVR-equipped vehicles.

EPA’s recent WSU analysis is based on definition c.1 (when emissions with Stage II alone equal emissions with ORVR alone). dKC calculated WSU using all of the above methods.

Incompatibility Excess Emissions (IEE) Factors -- The assumed IEE factor is a key parameter in estimating when WSU occurs using method c.2. (when emissions with Stage II and ORVR combined including IEE equal emissions with ORVR alone). IEE refers to the increase in GDF emissions from using vacuum assist systems to refuel vehicles with ORVR systems. When a vehicle with ORVR is refueled at a GDF with a vacuum assist system, ambient air from the vicinity of the GDF nozzle will be drawn back into the GDF storage tank. This air dilutes the concentration of gasoline vapors in the headspace of the storage tank, causing some of the liquid gasoline in the storage tank to evaporate, which increases the storage tank pressure. If the tank pressure increases above the positive setting of the P/V valve, the storage tank will vent to the atmosphere. Almost all (94%) of the gasoline dispensed in Connecticut is dispensed at GDFs with vacuum assist systems.

Table 4 documents different estimates of IEE. Based on their research, California Air Resources Board uses an IEE factor for vacuum assist systems of 0.86 lbs/1000 gal of fuel dispensed. The American Petroleum Institute (API) believes that the IEE factor should be lower based on their studies. Recent tests by Veeder-Root place the IEE factor between 1.5 and 2.5 lbs/1000 gal. dKC analyzed WSU using two IEE factors: 0.42 lbs/1000 gal and 0.86 lbs/1000 gal.

Table 4 – IEE Factors¹⁸

Data Collected by	Nozzle Type	Excess Emissions (lbs/1000 gal)
CARB	Standard (no boot)	0.86
CARB	Mini-booted	0.43
API	Standard (no boot)	0.72
API	Standard (no boot)	0.42*
API	Mini-booted	0
Veeder-Root	Not-specified	1.5-2.5 (2.0 most likely)

*Rate is for total incompatibility emissions. Total incompatibility emissions are the difference between all refueling emissions (pressure-related fugitives, P/V valve and fill pipe emissions) for an ORVR vehicle versus a non-ORVR vehicle.

Estimating When WSU Occurs

dKC took two approaches to estimate when WSU occurs:

1. Modify and run the NESCAUM WSU spreadsheet.
2. Use EPA’s latest vehicle emissions model, MOVES, to determine refueling emissions with and without Stage II.

WSU Spreadsheet – The Northeast States for Coordinated Air Use Management (NESCAUM) developed a spreadsheet model for calculating when WSU occurs. NESCAUM modified a model that was initially developed by Todd Tamura who was a consultant for the American Petroleum Institute (API). The model calculates refueling emissions using algorithms from EPA’s MOBILE 6 model. It also calculates IEE. The model calculates composite refueling emissions in grams per gallon and total emissions in tons per day. The spreadsheet model has been used by NESCAUM and other organizations for ORVR WSU analyses. In 2007, Ariel Garcia updated the spreadsheet with Connecticut-specific parameters. These parameters include Stage II effectiveness and vehicle registration distributions. The vehicle registration distribution was based on 2007 Connecticut vehicle registration data from the Department of Motor Vehicles (DMV).

dKC has updated the spreadsheet model using 2009 vehicle registration data and the fraction of gasoline dispensed at vacuum assist stations, based on results of the recently completed survey of GDFs in Connecticut.

MOVES – dKC also used EPA’s latest emission factor model, MOVES, to estimate when WSU occurs based on definition c): *When total VOC emissions with ORVR-equipped vehicles are equal to total VOC emissions with Stage II VRS programs.* EPA is now requiring states to use MOVES to estimate vehicle emissions and the impact of controls such as Stage II and Inspection/Maintenance (I/M) programs. MOVES is much

¹⁸ Reference: **REFUELING EMISSION CONTROLS AT RETAIL GASOLINE DISPENSING STATIONS AND COST-BENEFIT ANALYSIS OF STAGE II IN CONNECTICUT**, Tech Environmental, Inc., September 24, 2007.

different than EPA’s past “MOBILE” models, and requires complex data input files. DEEP provided dKC with MOVES input files by county for years 2007, 2013, 2017, and 2020. For this analysis, dKC modified 2013 input files for Fairfield County for all the years evaluated. Using information outputted by MOVES, dKC calculated composite refueling emissions in grams per gallon.

WSU Predictions based on NESCAUM Spreadsheet

dKC used the NESCAUM spreadsheet to determine WSU dates based on the percent of vehicles with ORVR and emissions with and without Stage II.

WSU based on the Percent of Vehicles with ORVR – Table 5 presents the WSU dates (in calendar year) based on the WSU spreadsheet for definitions:

- a) percent of vehicles,
- b) percent of VMT, and
- d) percent of gasoline consumed.

Table 6 shows the ORVR percentages by calendar year.

Table 5 – Widespread Use (WSU) Dates Based on Percent of Vehicles, VMT, and Gasoline Sales

Method	Calendar Year
a. When “x” percent of the vehicles in service are ORVR-equipped	
75%	2012-2013
85%	2015-2016
b. When “x” percent of the vehicle miles traveled (VMT) are from ORVR-equipped vehicles	
75%	2009-2010
85%	2012
d. When “x” percent of gasoline sold is dispensed to ORVR-equipped vehicles	
75%	2010-2011
85%	2012-2012

Table 6 – Fraction of Fleet with ORVR

Calendar Year	Vehicle Basis, Definition a	VMT Basis, Definition b	Fuel Usage Basis, Definition d
2001	13%	17%	14%
2002	18%	22%	19%
2003	23%	28%	25%
2004	29%	35%	31%
2005	35%	43%	39%
2006	42%	51%	47%
2007	49%	58%	55%
2008	55%	65%	62%
2009	61%	71%	69%
2010	66%	77%	74%
2011	70%	81%	79%
2012	74%	85%	83%
2013	78%	88%	87%
2014	81%	91%	89%
2015	83%	93%	92%
2016	85%	94%	93%
2017	87%	96%	95%
2018	88%	96%	96%
2019	89%	97%	96%
2020	90%	97%	97%

WSU Based on Emissions with and without Stage II – In addition to the three methods based on the percent of vehicles, VMT or gasoline consumption for ORVR equipped vehicles, a fourth method has been proposed for WSU determination. With this method, WSU is said to occur when total VOC emissions with ORVR-equipped vehicles are equal to total VOC emissions with Stage II vapor recovery programs. Two ways of doing this calculation have been proposed:

1. When emissions with Stage II alone equal emissions with ORVR alone.
2. When emissions with Stage II and ORVR including IEE equal emissions with ORVR alone.

As mentioned earlier, EPA appears to be leaning towards definition 1 for WSU determination.

The WSU spreadsheet allows users to input Stage II control efficiencies. Connecticut’s State Implementation Plan (SIP) assumes that the Stage II systems have 86% control efficiency. The SIP also assumes that Rule Penetration for Stage II is 99% and that Rule Effectiveness is 96.8%. Based on information on the condition of the Stage II systems at representative GDFs, dKC believes that the Stage II effectiveness factor for Connecticut should be lower than 86%. For the WSU analysis, dKC used two control

efficiency factors: 86% and 60%. When these factors are adjusted for Rule Effectiveness and Rule Penetration, the overall control efficiencies for the two scenarios are 82% and 57%.

Table 7 presents the calculated WSU dates when WSU is defined as when emissions with Stage II systems alone equal emissions with ORVR alone. This calculation is not affected by the assumed IEE factor. As shown, with 86% Stage II effectiveness, the WSU date is 2011; with 60% effectiveness the WSU date is 2007. Figure 1 shows refueling emissions in grams per gallon for ORVR alone and Stage II alone.

Table 7 – WSU Date When Emissions with Stage II Systems Alone Equal Emissions with ORVR Systems Alone (Definition c.1) – Spreadsheet Results

Assumed Stage II Effectiveness	WSU Date
82% (86% Adjusted for Rule Penetration and Effectiveness)	2011
57% (60% Adjusted for Rule Penetration and Effectiveness)	2007

Figure 1

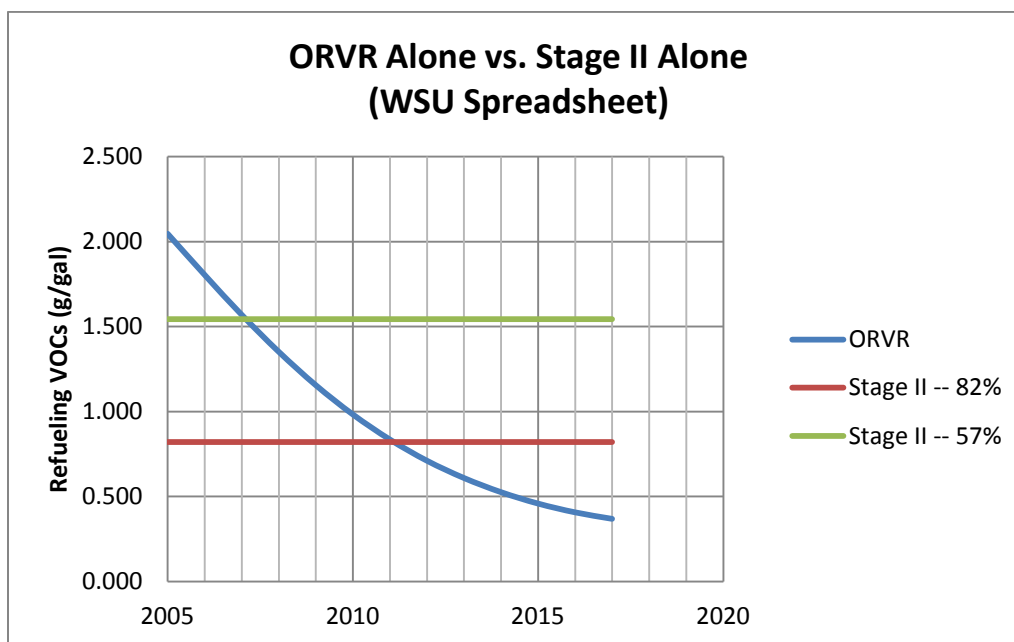


Table 8 presents the calculated WSU dates, defining WSU as the date when emissions with Stage II and ORVR combined (including IEE) equal emissions with ORVR alone. This definition determines the time when overall VOC emissions will increase due to IEE. It assumes that ORVR compatible Stage II systems are not used in Connecticut. Total IEE are sensitive to the assumed percentage of balance vs. vacuum assist systems. Based on ERG’s survey of GDFs, dKC assumes that 94% of the gasoline is dispensed at stations using vacuum assist systems and 6% is dispensed at stations using balance systems. dKC analyzed WSU using two IEE factors, 0.42 lbs/1000 gal

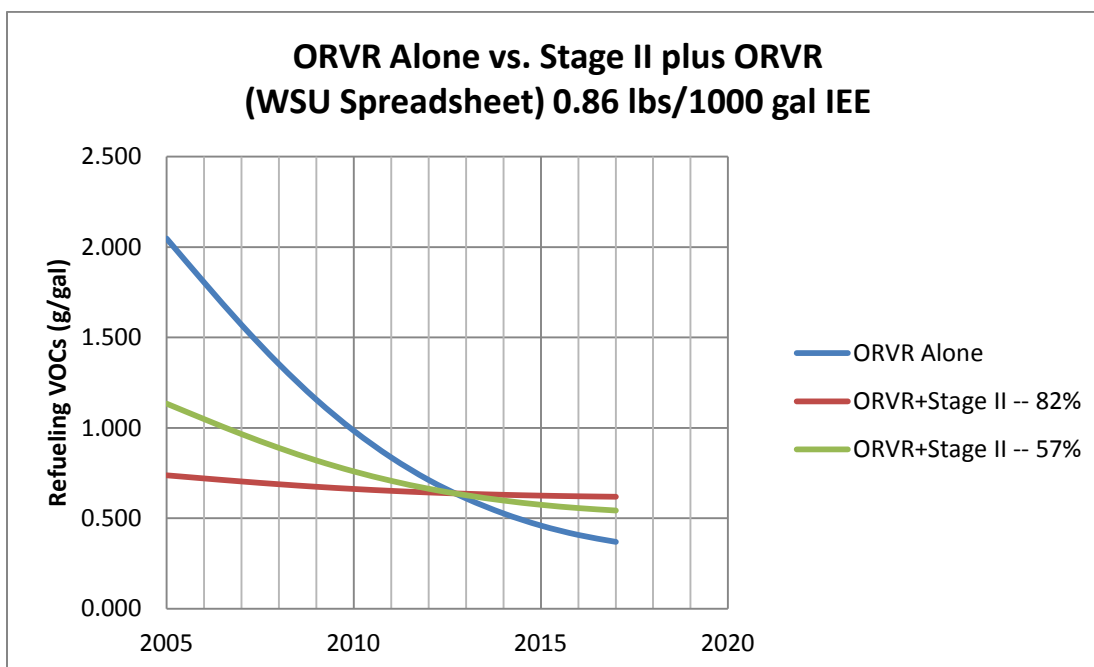
and 0.86 lbs/1000 gal, and two Stage II effectiveness factors, 82% and 57%. As shown in Table 8, the WSU date by this definition is affected by the IEE factor, but not the assumed Stage II effectiveness factor.

Figure 2 shows refueling emissions in grams per gallon for ORVR alone and Stage II plus ORVR (including IEE) when an IEE factor of 0.86 lbs/1000 gal is input into the spreadsheet. After approximately 2013, emissions for the Stage II plus ORVR scenarios are greater than for the ORVR only scenario.

Table 8 – WSU Date When Emissions with Stage II Systems plus ORVR Equal Emissions with ORVR Systems Alone (Definition c.2)

Assumed Stage II Effectiveness	Assumed Incompatibility Excess Emissions (IEE) (lbs VOCs/1000 gal)	
	0.86	0.42
82%	2013	2015
57%	2013	2015

Figure 2



WSU Predictions Based on MOVES

MOVES can be used to determine when WSU occurs according to definition c, when emissions with Stage II equal emissions with ORVR alone. To use MOVES to estimate emissions for the different WSU scenarios, dKC did the following:

1. Developed input files. DEEP provided input files for different counties and calendar years. dKC used the 2013 Fairfield County file with appropriate

calendar year modifications for all the MOVES runs. Fairfield County has the most vehicles miles traveled (VMT) in Connecticut. All runs were made for July.

2. Ran MOVES for the following scenarios:
 - a. ORVR only: Compared refueling emissions estimates in grams per gallon with uncontrolled estimates.
 - i. Uncontrolled estimates in grams per gallon were derived by running MOVES for calendar year 1990 without vapor controls.
 - ii. Emissions with ORVR only (no Stage II) were estimated for calendar years 2005, 2011, 2012, 2013, 2014, 2015, 2016, and 2017. dKC edited the *County Year* file in the MOVES database to set the vapor control program effectiveness to 0%.
 - b. Stage II plus ORVR with appropriate effectiveness inputs: dKC ran the same years using the following Stage II effectiveness factors.
 - i. 57% Stage II effectiveness (60% adjusted for Rule Penetration and Effectiveness)
 - ii. 82% Stage II effectiveness (86% adjusted for Rule Penetration and Effectiveness)
3. Using the following procedure based on energy consumption estimates outputted by MOVES, dKC calculated IEE:
 - a. Calculate gasoline consumption (1 gallon = 115,000 MMBtu).
 - b. Calculate IEE for a range of IEE factors:
 - i. 0.42 lbs/1000 gal
 - ii. 0.86 lbs/1000 gal
 - c. Add IEE to the estimates for the Stage II plus ORVR scenario.

Predictions of when ORVR alone provides the same emission reductions as Stage II – MOVES offers a means of calculating when ORVR alone will provide the same emission reductions as Stage II alone. The user can set the effectiveness of a region’s vapor control program to 0% and calculate refueling emissions. The drop in refueling emissions will be due to phase-in of vehicles with ORVR.

Table 9 shows the WSU date for this definition based on MOVES. Table 10 presents MOVES estimates for refueling emissions in grams per gallon for the non-Stage II scenarios. The percent control column can be directly compared to Stage II control efficiency. For example, in 2012, ORVR alone provides 82% control efficiency, which is equivalent to applying 82% efficient Stage II controls to a non-ORVR fleet. Results for the ORVR alone case are compared with the two Stage II effectiveness scenarios on Figure 3.

Table 9 – WSU Date When Emissions with Stage II Systems Alone Equal Emissions with ORVR Systems Alone (Definition c.1) – MOVES Results

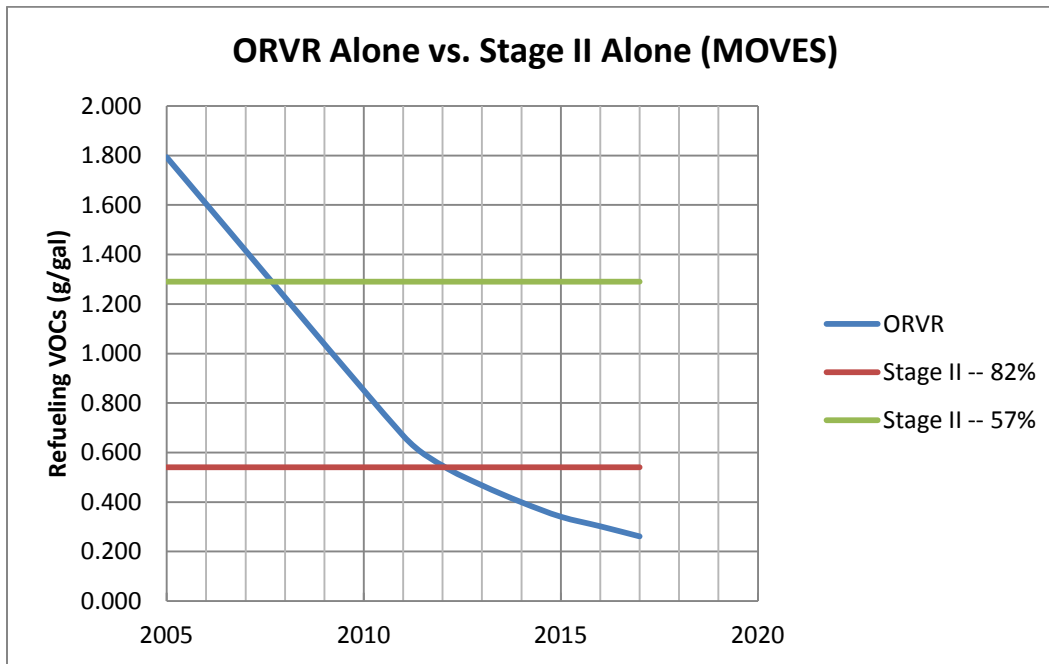
Assumed Stage II Effectiveness	WSU Date
82% (86% Adjusted for Rule Penetration and Effectiveness)	2012
57% (60% Adjusted for Rule Penetration and Effectiveness)	2007-2008

Table 10 – MOVES Refueling Emission Estimates – ORVR Alone

Year	Refueling Vapor (lbs)	Distance (mi)	g/mi	gal	MPG	g/gal	Control (%)
1990	328,677	696,461,824	0.2143	49,790,737	13.988	2.997	0
2005	158,985	695,594,368	0.1038	40,254,445	17.280	1.793	40
2011	58,217	695,284,544	0.0380	39,534,749	17.587	0.669	78
2012	46,982	695,322,688	0.0307	38,959,823	17.847	0.547	82
2013	39,571	695,322,688	0.0258	38,399,333	18.108	0.468	84
2014	33,168	695,334,432	0.0217	37,668,001	18.460	0.400	87
2015	27,780	695,346,176	0.0181	36,964,029	18.811	0.341	89
2016	24,048	695,301,600	0.0157	36,081,156	19.270	0.303	90
2017	20,316	695,257,024	0.0133	35,239,367	19.73	0.262	91

As shown in Table 9 and Figure 3, the WSU date is between 2007 and 2008 for the 57% Stage II effectiveness case, and 2012 for the 82% Stage II effectiveness case. These are about one year higher than the WSU dates derived from the WSU spreadsheet. Note that the WSU spreadsheet uses 2009 registration data, while the MOVES files provided by DEEP appear to use 2007 registration data. In December of 2010, when dKC investigated the sensitivity of the WSU dates to the registration data, we found that using 2009 data lowered WSU dates by about one year, because the 2009 data projected a younger light-truck fleet.

Figure 3



Predictions of when ORVR alone provides the same emission reductions as Stage II plus ORVR – In order to use MOVES to determine when emissions with ORVR alone are lower than emissions with Stage II plus ORVR, it is necessary to separately calculate IEE. MOVES estimates petroleum energy consumption from which we derive estimated gasoline consumption. Then, IEE factors are applied to gasoline consumption estimates to estimate total IEE. Total IEE is then added to MOVES estimates of refueling emissions with Stage II controls.

Table 11 shows WSU dates for the scenario where emissions with Stage II begin to increase over the ORVR scenario alone. Table 12 shows the calculation of total refueling emissions for the Stage II plus ORVR scenario, accounting for IEE. Results are shown graphically in Figure 4. The WSU date using an IEE factor of 0.86 lbs/1000 gal is between 2014 and 2015. The WSU date using an IEE factor of 0.42 lbs/1000 gal is estimated to be 2018. The WSU date by this definition is not sensitive to the assumed Stage II effectiveness factor.

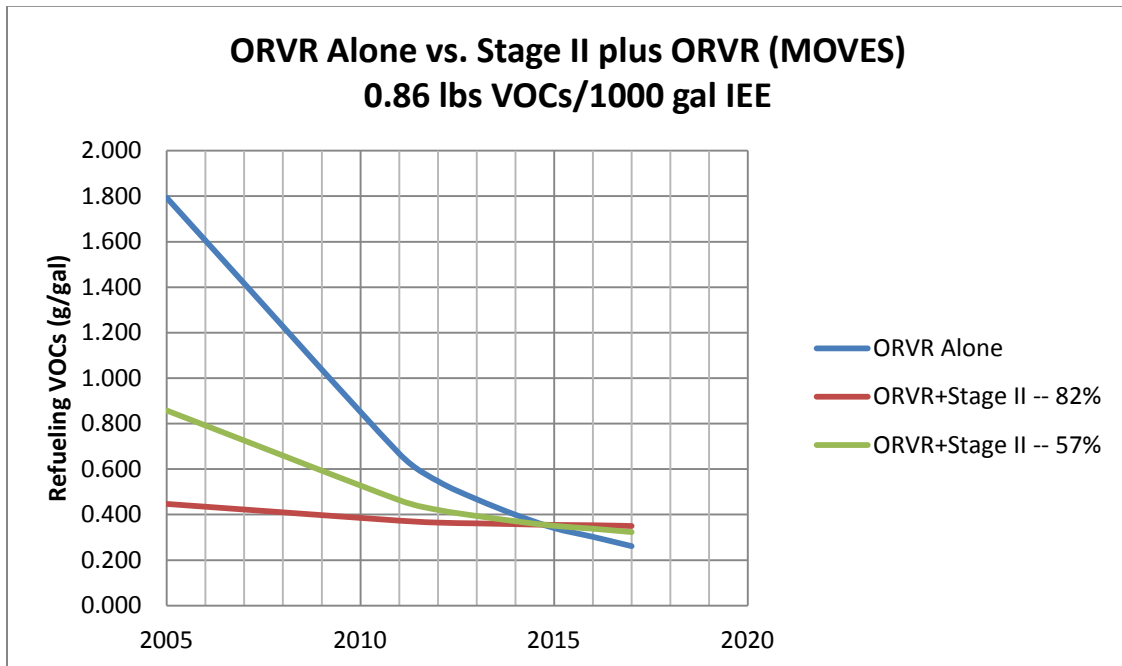
Table 11 – WSU Date Based on MOVES when Emissions with Stage II Systems plus ORVR Exceed Emissions with ORVR Systems Alone (Definition c.2)

Assumed Stage II Effectiveness	Assumed Incompatibility Excess Emissions (IEE) (lbs VOCs/1000 gal)	
	0.86	0.42
82%	2014-2015	2018
57%	2014-2015	2018

Table 12 – MOVES Refueling Emission Estimates – ORVR Alone vs. Stage II plus ORVR -- with Incompatibility Excess Emissions (IEE)

Scenario	Year	Refueling Vapor ORVR only (lbs)	Refueling Vapor ORVR only (g/gal)	Refueling Vapor Stage II. Plus ORVR (g/gal) No IEE	gal	% ORVR	IEE (g/gal)		Total Refueling Stage II with IEE (g/gal)	
							0.42	0.86	0.42	0.86
82% Control	2005	158,985	1.793	0.323	40,254,445	39	0.061	0.125	0.3837	0.4476
	2011	58,217	0.669	0.120	39,534,749	79	0.124	0.253	0.2441	0.3738
	2012	46,982	0.547	0.099	38,959,823	83	0.130	0.267	0.2288	0.3653
	2013	39,571	0.468	0.084	38,399,333	87	0.136	0.278	0.2198	0.3618
	2014	33,168	0.400	0.072	37,668,001	89	0.140	0.286	0.2119	0.3584
	2015	27,780	0.341	0.061	36,964,029	92	0.143	0.294	0.2048	0.3550
	2016	24,048	0.303	0.054	36,081,156	93	0.146	0.299	0.2006	0.3536
2017	20,316	0.262	0.047	35,239,367	95	0.148	0.303	0.1952	0.3503	
57% Control	2005	158,985	1.793	0.771	40,254,445	39	0.042	0.087	0.8134	0.8578
	2011	58,217	0.669	0.287	39,534,749	79	0.086	0.176	0.3735	0.4637
	2012	46,982	0.547	0.235	38,959,823	83	0.091	0.185	0.3260	0.4208
	2013	39,571	0.468	0.201	38,399,333	87	0.094	0.193	0.2954	0.3941
	2014	33,168	0.400	0.172	37,668,001	89	0.097	0.199	0.2691	0.3710
	2015	27,780	0.341	0.147	36,964,029	92	0.100	0.204	0.2464	0.3508
	2016	24,048	0.303	0.130	36,081,156	93	0.102	0.208	0.2317	0.3380
2017	20,316	0.262	0.113	35,239,367	95	0.103	0.211	0.2155	0.3233	

Figure 4



APPENDIX B: DESCRIPTION OF CALIFORNIA ENHANCED VAPOR RECOVERY PROGRAM (CA EVR)

Module 1: Phase I Vapor Recovery

CARB staff propose to increase efficiency requirements to gain additional emission reductions as well as require more stringent leak requirements for Phase I components to ensure these efficiencies are achievable at all installations. The proposed certification requirements for Phase I vapor recovery system certification are set forth in CP-201, "Certification Procedure for Vapor Recovery Systems for Gasoline Dispensing Facilities." Proposed changes to Phase I certification consist of an increase in the efficiency requirement from 95% to 98%, a new specification for Phase I couplers to reduce leaks, new performance specifications for drain valves in spill containment boxes and other improved Phase I equipment specifications.

A. Increase from 95% Efficiency to 98% Efficiency Standard

B. Phase I Adaptor Specifications: Phase I adaptors are the connection points for the cargo tank truck to the service station underground storage tank. The adaptors tend to become loose during the bulk drop as the cargo tank driver connects and disconnects the hoses for the fuel transfer. This is one of the commonly identified causes of leaks from vapor recovery systems, as well as a contributing factor to reduced effectiveness of the Phase I system. Staff has added a requirement for 360 degree rotatable Phase I vapor and product adaptors.

C. Drop Tube with Overfill Protection Specification: A new specification is proposed to reduce leaks in drop tubes with overfill protection devices installed. These devices are installed in the Phase I drop tube and use a valve to shut off liquid flow when the underground storage tank is being filled. The moving parts and the fasteners, which connect the flapper valve to the drop tube, can result in holes that can lead to air ingestion during the bulk drop. All drop tubes with overfill protection will be required to meet a pressure vs. flow specification of < 0.17 CFH at 2.0 inches water column.

D. Pressure/Vacuum Relief Valves (P/V Valves) on Vent Pipes: Vent pipes are required for gasoline underground storage tanks to allow venting of vapors if the underground tanks develop significant pressure. The EVR proposal requires P/V valves for all systems.

E. Spill Containment Boxes: Spill containment boxes are required by the State Water Resources Control Board (SWRCB) to contain any spills which occur during the bulk drop. CARB staff has added product containment box standards which limit the leak rate to < 0.17 CFH at 2.0 inches water column and prohibit any standing fuel in the containment box of product connectors. Drain valves would be prohibited in the spill boxes of vapor connectors under this proposal. In addition, any application for certification of a drain valve that requires unreasonable maintenance shall be deemed unacceptable.

F. Connectors and Fittings: Loose connectors and fittings can also lead to leaks in the underground tank vapor. This new specification explicitly states that connectors and fittings shall be leak-free as determined by either leak detection solution or by bagging the fittings and observing inflation of the bag.

G. Fuel Blend Compatibility: Phase I components must be demonstrated to be compatible with fuel blends approved for use and commonly used in California, including fuels meeting the recently adopted Phase III fuels requirements.

Module 2: Phase II Vapor Recovery

Field inspections conducted jointly by CARB and district staff have uncovered many deficiencies with installed Phase II systems. CARB staff are working with the districts and equipment manufacturers to resolve these problems; however, it became clear that many reliability concerns could be addressed during the certification process. Staff have proposed extending the certification tests and expanding on the tests required during certification to thoroughly address durability and reliability issues. Staff have also identified new emission points for gasoline vapor emissions and proposed new standards to control these emissions.

Fugitive leaks from the underground storage tank are a concern with existing systems. Staff have proposed pressure profiles that would limit underground storage tank pressures and assess leaks in the vapor space. Increased use of processors is expected to maintain desired underground storage tank pressures, but concerns have been raised regarding toxics in the exhaust of combustion processors. New limits for selected hazardous air pollutants are included in the proposal. Another proposal to address system deficiencies is to limit the certification to four years with renewal contingent on successfully addressing any problems that have been documented during the four-year period. Currently, certifications have no expiration date.

A. Include Pressure-Related Fugitives in Efficiency Standard Calculation

B. Replace Efficiency Requirement with Emission Limit

C. Compatible with Phase I System: Staff propose a new standard requiring that Phase II vapor recovery systems shall not cause excess emissions from Phase I systems.

D. Underground Storage Tank Pressure Limits

E. Nozzle/Dispenser Compatibility: Staff propose a new standard for nozzle/dispenser compatibility to verify that the vapor check valve and hold-open latch are closed when the nozzle is properly hung on the dispenser.

F. Unihose MPD Configuration: Gasoline dispensers may have three hoses per fueling point (one for each grade of gasoline) or just one hose for all grades, which is known as a unihose configuration. The unihose configuration reduces the number of hoses, nozzles and other hanging hardware by two-thirds. As this equipment has leak sources, such as check valves, the less hanging hardware, the less potential exists for leaks. Staff propose that all systems have unihose dispensers to reduce the potential number of leak sources.

G. Liquid Removal

H. Vapor Return Piping: Staff propose to establish the maximum allowable pipe run lengths during the certification process.

I. Liquid Condensate Traps: A new standard is proposed for liquid condensate traps (also known as knockout pots). These traps are used to keep the vapor lines clear when it is not possible to achieve the minimum slopes for the vapor recovery piping as discussed above.

J. Connections and Fittings: This new specification explicitly states that connectors and fittings shall be leak-free as determined by either leak detection solution or by bagging the fittings and observing inflation or deflation of the bag when the underground storage tank vapor space is under pressure or vacuum.

Sections K through M- Proposed new standards applicable to balance systems:

K. Balance nozzles: Staff propose that the balance nozzle check valve be located in the nozzle to reduce vapor emissions which result if the check valve is present in another location between the nozzle and the underground storage tank. A new specification is proposed to determine nozzle bellows insertion force. This will allow a check that the production nozzles are consistent with the nozzle certified as well as provide an evaluation of nozzle bellows durability.

L. Dynamic Backpressure: Staff propose to modify the existing backpressure requirements to remove the limit at 40 CFH.

M. Component Pressure Drop Limits: New standards are proposed for individual balance system components to ensure the overall dynamic backpressure requirements discussed above are met. This is necessary as certified balance system equipment is currently specified in a matrix that allows different combinations of certified balance system components. Staff has learned that some combinations of balance system components are not able to meet the dynamic backpressure limits described above. A pressure drop budget has been suggested to resolve this problem. Staff has developed component pressure drop limits with input from several vapor recovery equipment manufacturers. The proposed individual component pressure drops are listed below.

N. Assist Nozzles: Staff propose that all “bootless” assist nozzles be equipped with a vapor guard. This is a small cup or mini-boot at the base of the nozzle that assists in routing the vapor back through the nozzle. Each assist nozzle must have a vapor check valve. The purpose of the check valve is to keep vapors from exiting the underground vapor space through the vapor return line when the nozzle is not in operation.

O. Air to Liquid Ratio Limits: Staff propose a new limit on air to liquid ratio (A/L) for assist systems.

P. Assist Systems with Common Collection Device: Staff propose new specifications for assist systems utilizing a common collection device. This means that there is one vacuum source for the entire station rather than a separate vacuum pump in each dispenser.

Q. Assist Systems with Destructive Processors: New performance standards provide limits on criteria (CO, NO_x) and hazardous air pollutant (HAP) emissions for destructive processors.

Module 3 – ORVR Compatibility

The goal of the ORVR compatibility standard is to eliminate the excess emissions which can occur during fueling of an ORVR vehicle with a Phase II vapor recovery system. Phase II systems must demonstrate during the certification test period that the Phase II system is

compatible with ORVR vehicles. Compatibility is determined by verifying that the Phase II system can refuel ORVR vehicles and that the refueling does not cause the vapor recovery system emissions to exceed the 0.38 lbs/1000 gal standard. The statewide emission reductions (in California) for ORVR compatibility were estimated at 6.3 tons per day.

There are several certified systems that achieve ORVR compatibility. These are the balance system and the Healy system. These systems do not ingest “excess air” when fueling ORVR vehicles and thus do not cause excess emissions. No modifications are necessary for the balance system to achieve ORVR compatibility, as the passive system design only collects vapor actually displaced by fueling of the vehicle. Since the ORVR vehicles collect the vapor in the canister, the dispensing facility with a balance system will dispense fuel without replacing it with vapor, thus leading to negative pressure in the underground storage tank. Even if the balance system station has some leaks, field data shows the underground storage tank tends to maintain negative UST pressure. This was demonstrated during a CARB field test of a balance system at which 32% of the fuel was dispensed in ORVR simulation. The underground storage tank pressure was less than 0.10 inches water for 99% of the test, including the bulk delivery periods.

The Healy assist-type vapor recovery system recognizes ORVR vehicle fuelings by means of a pressure-sensing diaphragm in the nozzle that prevents the ingestion of air when fueling an ORVR vehicle. Other system manufacturers are exploring hydrocarbon sensing technology. Both of these systems illustrate how differences in the vapor return line can be monitored to detect ORVR vehicles and adjust the vapor collection of the system.

Assist systems with processors may be compatible with ORVR. For example, ARID’s Permeator system has been certified for use with vacuum assist systems.

Module 4: Liquid Retention and Spitting

Staff are proposing standards for liquid retention and “nozzle spitting”. Liquid retention occurs when liquid gasoline contained in the hanging hardware (nozzles, hoses, etc.) on the dispenser is allowed to evaporate into the atmosphere between vehicle fuelings while the nozzle is hung on the dispenser. Nozzle spitting is defined as the release of liquid when the nozzle trigger is depressed with the dispenser not actuated.

Module 5: Spillage and Dripless Nozzle

Staff propose to reduce the spillage limit from 0.42 lbs/1000 gal to 0.24 lbs/1000 gal limit. Staff also propose to limit the number of drops to two drops per fueling event.

Module 6: In-Station Diagnostics (ISD)

The goal of ISD is to provide continuous monitoring of important emission-related vapor recovery system parameters and to alert the station operator when a failure mode is detected so that corrective action can be taken. It is similar in concept to the current CARB on-board diagnostics regulations for motor vehicles, where every emission-related component or system must be regularly monitored for proper operation.

General requirements for ISD systems include:

- a) Diagnostics that alert the owner/operator to potential problems

- b) Provide audible and visible alarms upon detection of defect
- c) Prohibit dispensing if an identified defect is not repaired within a reasonable period of time
- d) Monitor critical component performance
- e) Provide record of system performance

ISD designs are expected to be specific to vapor recovery system type. However, certain minimum design parameters, such as calibration of monitors, frequency of data collection, type of data storage and accessibility, criteria for determining warning and failure conditions and other parameters shall be proposed by the applicant and will be evaluated and verified during the certification process. Other criteria proposed for ISD systems are discussed below.

UST pressure monitoring will be required for all vapor recovery systems. These monitors will detect leaks in the underground storage space indicated by long periods that the tank remains at atmospheric pressure. Pressure monitors can also indicate if the gasoline delivery was conducted correctly. For example, connecting the product hose, but failing to connect the vapor return hose, would generate a large pressure spike which would lead to escape of the vapors out the vent pipe. Stations which remain at high pressures for significant periods would signal an investigation to correct system operations so that pressure-related fugitive emissions are minimized.

Additional requirements for ISD vary depending on the type of vapor recovery system. The three system categories are balance, assist, and assist with processor.

A. Balance Systems: In addition to the pressure monitor, balance systems would be required to check for liquid blockage at each dispensing point. A high pressure drop would indicate a blockage problem. Another approach is to measure the vapor to liquid ratio (V/L) (also referred to as A/L) in each dispenser with a flow meter. The flow meter installed in each dispenser, would measure the amount of vapor flow during every fueling episode without reducing the vapor recovery system's efficiency. A consistent lack of flow, or low flow, would indicate a blockage.

B. Assist Systems: Assist systems would also be required to monitor the V/L in a way that would detect a failure mode at individual dispensers. Recent inspections have discovered that vapor pumps were not operating at some dispensers although gasoline fueling was normal. Staff propose that when the monitor detects an A/L of zero, which would mean no vapor recovery, the dispenser be shut down.

C. Assist Systems with a Processor: In addition to monitoring the V/L, vapor recovery systems with processors must have additional ISD sensors to ensure the processors are operating correctly. The hydrocarbon concentration, the flow rate, and other parameters unique to each processor will need to be continuously monitored. This is already required for current systems with thermal processors. For vapor recovery systems certified to operate at a continuous vacuum, a pressure switch is used to detect insufficient vacuum. An alarm signals the station operator when the system fails to achieve the certified vacuum level after a prescribed time interval, indicating insufficient system leak integrity or a system failure.

Appendix D – Calculations

Table D-1: 2013 Stage II calculations

		Actual efficiency	SIP efficiency	Source
η_{uSII}	Stage II in-use control efficiency	57%	82%	dKC report(pg 44)
Q_{SII}	Fraction of gas through Stage II	99%	99%	dKC report (pg 5)
Q_{SIIva}	Fraction of gas through Vac-assist	94%	94%	dKC report (pg 5)
VMT_{orvr}	ORVR vehicle miles traveled	88%	88%	dKC report, Table A-6, p 43
CF_{VMT}	Compatibility factor (VMT)	0.067	0.067	$CF_{VMT} = 0.0764 \times VMT_{orvr}$
CF_{Q-orvr}	Compatibility factor (ORVR)	0.068	0.068	$CF_{Q-orvr} = 0.0777 \times Q_{orvr}$
EE_{VMT}	Excess emissions (incompatibility)	0.511	0.511	$EE_{VMT} = 0.581 \times VMT_{orvr}$
EE_{Q-orvr}	Excess emissions (incompatibility)	0.514	0.514	$EE_{Q-orvr} = 0.591 \times Q_{orvr}$
Q_{orvr}	Fraction of gas to ORVR vehicles	87%	87%	dKC report, Table A-6, p 43
η_{orvr}	In-use ORVR control efficiency	98%	98%	EPA guidance, Table 2
EF	Uncontrolled displacement emission factor	3.0	3.0	EPA guidance, Table A-7
GC_{O_3}	Gasoline consumed in O ₃ season (gal)	617,871,575	617,871,575	2013 Fed Hwy Administration
GC_{annual}	Annual Gasoline consumed (gal)	1,438,624,705	1,438,624,705	2013 Fed Hwy Administration
Increment (VMT)		1.0%	4.3%	EPA guidance, Equation 1
Increment (Q-orvr)		1.0%	4.2%	EPA guidance, Equation 1
O ₃ -season VOC inventory impact-increment (VMT) (Tons)		21.26	87.11	EPA guidance, Equation 3
O ₃ -season VOC inventory impact-increment (Q-orvr) (Tons)		20.75	86.49	EPA guidance, Equation 3
Annual VOC inventory impact-increment (VMT) (Tons)		49.74	202.82	EPA guidance, Equation 3
Annual VOC inventory impact-increment (Q-orvr) (Tons)		48.31	201.38	EPA guidance, Equation 3

EPA guidance, Equation 1

$$\text{Increment} = (Q_{SII})(1-Q_{ORVR})(\eta_{uSII}) - (Q_{SIIva})(CF)$$

EPA guidance, Equation 3

$$\text{VOC inventory impact} = (\text{Increment})(GC)(EF)$$

Table D-2: 2014 Stage II calculations

		Actual efficiency	SIP efficiency	Source
η_{uSII}	Stage II in-use control efficiency	57%	82%	dKC report(pg 44)
Q_{SII}	Fraction of gas through Stage II	99%	99%	dKC report (pg 5)
Q_{SIIva}	Fraction of gas through Vac-assist	94%	94%	dKC report (pg 5)
VMT_{orvr}	ORVR vehicle miles traveled	91%	91%	dKC report, Table A-6, p 43
CF_{VMT}	Compatibility factor (VMT)	0.070	0.070	$CF_{VMT} = 0.0764 \times VMT_{orvr}$
CF_{Q-orvr}	Compatibility factor (ORVR)	0.069	0.069	$CF_{Q-orvr} = 0.0777 \times Q_{orvr}$
EE_{VMT}	Excess emissions (incompatibility)	0.529	0.529	$EE_{VMT} = 0.581 \times VMT_{orvr}$
EE_{Q-orvr}	Excess emissions (incompatibility)	0.526	0.526	$EE_{Q-orvr} = 0.591 \times Q_{orvr}$
Q_{orvr}	Fraction of gas to ORVR vehicles	89%	89%	dKC report, Table A-6, p 43
η_{orvr}	In-use ORVR control efficiency	98%	98%	EPA guidance, Table 2
EF	Uncontrolled displacement emission factor	3.0	3.0	EPA guidance, Table A-7
GC_{O_3}	Gasoline consumed in O ₃ season (gal)	613,356,397	613,356,397	2014 Fed Hwy Administration
GC_{annual}	Annual Gasoline consumed (gal)	1,434,866,878	1,434,866,878	2014 Fed Hwy Administration
Increment (VMT)		-0.3%	2.4%	EPA guidance, Equation 1
Increment (Q-orvr)		-0.3%	2.5%	EPA guidance, Equation 1
O ₃ -season VOC inventory impact-increment (VMT) (Tons)		(6.03)	49.19	EPA guidance, Equation 3
O ₃ -season VOC inventory impact-increment (Q-orvr) (Tons)		(5.24)	49.98	EPA guidance, Equation 3
Annual VOC inventory impact-increment (VMT) (Tons)		(14.11)	115.07	EPA guidance, Equation 3
Annual VOC inventory impact-increment (Q-orvr) (Tons)		(12.27)	116.92	EPA guidance, Equation 3

Table D-3: 2015 Stage II calculations

		Actual efficiency	SIP efficiency	Source
η_{Usii}	Stage II in-use control efficiency	57%	82%	dKC report(pg 44)
Q_{SII}	Fraction of gas through Stage II	99%	99%	dKC report (pg 5)
Q_{SIIva}	Fraction of gas through Vac-assist	94%	94%	dKC report (pg 5)
VMT_{orvr}	ORVR vehicle miles traveled	93%	93%	dKC report, Table A-6, p 43
CF_{VMT}	Compatibility factor (VMT)	0.071	0.071	$CF_{VMT} = 0.0764 \times VMT_{orvr}$
CF_{Q-orvr}	Compatibility factor (ORVR)	0.071	0.071	$CF_{Q-orvr} = 0.0777 \times Q_{orvr}$
EE_{VMT}	Excess emissions (incompatibility)	0.540	0.540	$EE_{VMT} = 0.581 \times VMT_{orvr}$
EE_{Q-orvr}	Excess emissions (incompatibility)	0.544	0.544	$EE_{Q-orvr} = 0.591 \times Q_{orvr}$
Q_{orvr}	Fraction of gas to ORVR vehicles	92%	92%	dKC report, Table A-6, p 43
η_{orvr}	In-use ORVR control efficiency	98%	98%	EPA guidance, Table 2
EF	Uncontrolled displacement emission factor	3.0	3.0	EPA guidance, Table A-7
GC_{O_3}	Gasoline consumed in O ₃ season (gal)	614,878,674	614,878,674	2012 Fed Hwy Admin/eia index
GC_{annual}	Annual Gasoline consumed (gal)	1,450,185,560	1,450,185,560	2012 Fed Hwy Admin/eia index
Increment (VMT)		-2.1%	-0.15%	EPA guidance, Equation 1
Increment (Q-orvr)		-2.2%	-0.19%	EPA guidance, Equation 1
O ₃ -season VOC inventory impact-increment (VMT) (Tons)		(43.38)	(3.12)	EPA guidance, Equation 3
O ₃ -season VOC inventory impact-increment (Q-orvr) (Tons)		(44.11)	(3.85)	EPA guidance, Equation 3
Annual VOC inventory impact-increment (VMT) (Tons)		(102.31)	(7.35)	EPA guidance, Equation 3
Annual VOC inventory impact-increment (Q-orvr) (Tons)		(104.04)	(9.08)	EPA guidance, Equation 3

Table D-4: 2016 Stage II calculations

		Actual efficiency	SIP efficiency	Source
η_{Usii}	Stage II in-use control efficiency	57%	82%	dKC report(pg 44)
Q_{SII}	Fraction of gas through Stage II	99%	99%	dKC report (pg 5)
Q_{SIIva}	Fraction of gas through Vac-assist	94%	94%	dKC report (pg 5)
VMT_{orvr}	ORVR vehicle miles traveled	94%	94%	dKC report, Table A-6, p 43
CF_{VMT}	Compatibility factor (VMT)	0.072	0.072	$CF(VMT) = 0.0764 \times VMT(orvr)$
CF_{Q-orvr}	Compatibility factor (ORVR)	0.072	0.072	$CF(Q-orvr) = 0.0777 \times Q(orvr)$
EE_{VMT}	Excess emissions (incompatibility)	0.546	0.546	$EE(VMT) = 0.581 \times VMT(orvr)$
EE_{Q-orvr}	Excess emissions (incompatibility)	0.550	0.550	$EE(Q-orvr) = 0.591 \times Q(orvr)$
Q_{orvr}	Fraction of gas to ORVR vehicles	93%	93%	dKC report, Table A-6, p 43
η_{orvr}	In-use ORVR control efficiency	98%	98%	EPA guidance Table 2
EF	Uncontrolled displacement emission factor	3.0	3.0	EPA guidance Table A-7
GC_{O3}	Gasoline consumed in O ₃ season (gal)	614,872,526	614,872,526	2012 Fed Hwy Admin/eia index
GC_{annual}	Annual Gasoline consumed (gal)	1,450,171,060	1,450,171,060	2012 Fed Hwy Admin/eia index
Increment (VMT)		-2.8%	-1.0%	calculated (Equation 1)
Increment (Q-orvr)		-2.8%	-1.1%	calculated (Equation 1)
O ₃ -season VOC inventory impact-increment (VMT) (Tons)		(56.31)	(21.08)	calculated (Equation 3)
O ₃ -season VOC inventory impact-increment (Q-orvr) (Tons)		(57.06)	(21.83)	calculated (Equation 3)
Annual VOC inventory impact-increment (VMT) (Tons)		(132.80)	(49.71)	calculated (Equation 3)
Annual VOC inventory impact-increment (Q-orvr) (Tons)		(134.58)	(51.50)	calculated (Equation 3)

	Energy Use : Total : Motor Gasoline (quad Btu)	Energy Use : Total : Motor Gasoline Indexed to 2012 as value
2016	0.761	0.012
2015	0.763	0.013
2014	0.765	0.015
2013	0.761	0.011
2012	0.749	0

Note:

2012 – 2013 is historical data

2014 – 2016 is projected data

Source: U.S. Energy Information Administration. Annual Energy Outlook 2015

Table: Energy Consumption by Sector and Source

<http://www.eia.gov/beta/aeo/>, accessed July 27, 2015

Table D-6: Statewide Gasoline Consumption (gallons)

MONTH	2012	2013	2014	2015	2016
JAN	114,839,195	115,751,875	114,212,331		
FEB	111,585,999	102,996,826	103,221,193		
MAR	119,066,469	119,534,678	120,104,088		
APR	116,134,800	118,345,531	117,228,438		
MAY	124,560,882	127,127,979	125,944,042		
JUN	124,785,711	124,257,087	122,249,671		
JUL	124,437,615	124,619,766	124,182,525		
AUG	125,032,066	124,778,616	123,912,091		
SEP	115,982,476	117,088,127	117,068,068		
OCT	126,974,480	124,984,167	125,040,248		
NOV	121,942,046	119,194,808	119,173,275		
DEC	124,655,321	119,945,245	122,530,908		
TOTAL	1,449,997,060	1,438,624,705	1,434,866,878		
O3 season	614,798,750	617,871,575	613,356,397		
Projections:					
eia index	0	0.011	0.015	0.013	0.012
Total		1,450,156,560	1,450,214,560	1,450,185,560	1,450,171,060
O3 season		614,866,378	614,890,970	614,878,674	614,872,526

Source of 2012 – 2014 data: Federal Highway Administration - Monthly Motor Fuel Reported by States

http://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm, accessed July 27, 2015

Attachment B

State of Connecticut
REGULATION
of the

NAME OF AGENCY:

Energy and Environmental Protection

Concerning

SUBJECT MATTER OF REGULATION:

Amendment of Section 22a-174-20
Repeal of Section 22a-174-30
Adoption of Section 22a-174-30a
of the
Regulations of Connecticut State Agencies (RCSA)
Control of Organic Compound Emissions

Section 1. Subdivision (7) of subsection (a) of section 22a-174-20 of the Regulations of Connecticut State Agencies is amended to read as follows:

(7) The external surfaces of any storage tank containing VOCs with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions that has a maximum capacity of 2,000 gallons (7,570 liters) or greater and is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white upon the next painting of the tank[,] or [upon being returned to service after being out of service for the first time after the effective date of this subsection] by March 7, 2024, whichever is sooner[, and no less than 10 years after the effective date of this subsection, except the]. The external surfaces of any storage tank that is brought into service after the effective date of this subdivision, that has a maximum capacity of 2,000 gallons or greater and that is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white prior to being filled with any VOC with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions. The requirement to use mill-finished aluminum or white paint shall not apply to words and logograms applied to the external surface of the storage tank for purposes of identification provided such symbols do not cover more than 20 percent of the external surface area of the tank's sides and top or more than 200 square feet (18.6 square meters), whichever is less.

Sec 2. Subdivisions (6) through (16) of subsection (b) of section 22a-174-20 of the Regulations of Connecticut State Agencies are amended to read as follows:

(6) [By December 31, 1982, any person who owns or operates any dispensing facility with a stationary storage tank for gasoline having a capacity of more than two thousand (2,000) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period shall install at each stationary storage tank an approved control system. The applicability of this subdivision shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(7) [After December 31, 1982, no person shall install any stationary storage tank for gasoline with a capacity of more than two hundred fifty (250) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period unless the tank has an approved control system. The throughput of a loading facility shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(8) [Effective May 31, 1983, no person shall transfer or allow the transfer of gasoline from a delivery vehicle to a stationary storage tank subject to the provisions of subdivisions (6) or (7) of this subsection unless:

- (A) the transfer is made through a properly maintained and operated approved control system which is in good working order, connected and operating; and
- (B) there are no leaks in pressure/vacuum relief valves and hatch covers of the delivery vehicle, nor in the truck tanks, storage tank or associated vapor and liquid lines during loading or unloading.] Reserved.

(9) [No person shall dispense gasoline to a stationary storage tank having an approved control system in such a manner as to impair the collection efficiency of the control system.] Reserved.

(10) The owner or operator of a delivery vehicle shall [ensure that]:

- (A) Ensure that the delivery vehicle is designed, operated and maintained to be vapor-tight at all times;
- (B) Keep [the] all hatches [are] on the delivery vehicle closed and securely fastened at all times during loading and unloading operations;
- (C) Set the pressure relief valves [are set] to release at no less than 0.7 pounds per square inch; [and]
- (D) Refill the vapor laden delivery vehicle [is refilled] only at facilities which meet the requirements of subdivisions (2) or (5) of this subsection[.];
- (E) Properly connect all hoses in the vapor balance system prior to loading and unloading;
- (F) Maintain all vapor return hoses, couplers and adapters used in gasoline delivery to be vapor-tight;
- (G) Ensure all delivery vehicle vapor return equipment is compatible in size and forms a vapor-tight connection with the vapor balance equipment on the dispensing facility storage tank;
- (H) Dispense gasoline to a stationary storage tank having an approved control system in a manner that does not interfere with the collection efficiency of the control system;
- (I) Load and unload in a manner that does not cause the delivery vehicle tank to be subject to a pressure in excess of 18 inches of water or a vacuum in excess of 6 inches of water; and
- (J) Not transfer or allow the transfer of gasoline from a delivery vehicle to a dispensing facility stationary storage tank if there are leaks in pressure/vacuum relief valves or hatch covers of the delivery vehicle, in the truck tanks or in associated vapor and liquid lines.

(11) [The Commissioner may provide an exemption to the provisions of subdivisions (5) or (6) of this subsection for economic or technological impracticability. Any exemption granted under this subdivision shall require the approval of the Administrator.] Reserved.

(12) Any owner or operator of a delivery vehicle that receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies [or any loading facility subject to subdivision (5) of this subsection] shall not cause or permit [a such delivery vehicle to load or unload gasoline unless:

- (A) [such] The owner or operator tests the tank on such delivery vehicle once every twelve (12) months in accordance with Method 27 as set forth in Appendix A of Title 40 [Code of Federal Regulations Part] CFR 60 or another manner accepted by the Administrator and approved by the Commissioner in accordance with section 22a-174-5 of the Regulations of Connecticut State Agencies;
- (B) [Repealed;
- (C) during] During the test specified in subparagraph (A) of this subdivision, the tank sustains a pressure change of no more than three (3) inches of water in five (5) minutes when pressurized to a gauge pressure of eighteen (18) inches of water or when evacuated to a gauge pressure of six (6) inches of water; [and]
- ~~[(D)]~~(C) [the] The delivery vehicle displays a marking near the U.S. Department of Transportation markings required by Title 49 [of the Code of Federal Regulations Section] CFR 177.824 which shows the initials "DEEP" or "DEP" and the date of the last test or comparable markings as required by either the Connecticut Department of Transportation or the Connecticut Department of Motor Vehicles[.]; and
- (D) Records of all tests performed under this subdivision are maintained for a minimum of five (5) years from the date of such tests and made available to the Commissioner within three (3) business days after the Commissioner requests such records.

(13) The owner or operator of any delivery vehicle [which] that fails to meet the requirements of [subdivisions] subdivision (12) [or (14)] of this subsection shall repair and retest such vehicle within fifteen (15) days or take such vehicle out of service. Prior to returning such vehicle to service, the owner or operator shall repair and retest the vehicle.

(14) Any person who performs a test or retest required by subdivision (12) or (13) of this subsection shall[:

- (A)] notify the Department's [Air Compliance Unit] Bureau of Air Management, Field Operations Section of the time and location of the test or retest at least forty-eight (48) hours in advance[; and
- (B) submit a copy of the test report to the Commissioner within ten (10) days after performing a test].

(15) [The owner or operator of any delivery vehicle subject to the provisions of subdivision (12) of this subsection shall ensure that:

- (A) during loading and unloading operations the tank is not subject to a pressure in excess of eighteen (18) inches of water, nor a vacuum in excess of six (6) inches of water;
- (B) during loading and unloading operations there are no visible liquid leaks and there is never a reading equal to or greater than the Lower Explosive Limit (LEL, measured as propane) at one (1) inch from any source of potential leaks as detected by a combustible gas detector using the test procedure described in Appendix B to “Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems” (EPA-450/2-78-051); and
- (C) records of all tests performed under subdivision (12) of this subsection are maintained for a minimum of five (5) years.] The Commissioner may test a delivery vehicle during loading and unloading operations to evaluate its vapor-tightness by measuring the vapor concentration at a distance of one inch from the source with a combustible gas detector, calibrated with propane using the test procedure described in CARB TP-204.3, *Determination of Leaks*. Equipment is vapor-tight when a measured vapor concentration is less than 14,000 parts per million.

(16) The owner or operator of any loading facility[, dispensing facility] or delivery vehicle subject to the provisions of this subsection shall:

- (A) [within six (6) months of the effective date of this subdivision, develop] Develop a written operation and maintenance (O&M) plan for any equipment used to load or unload gasoline;
- (B) [within twelve (12) months of the effective date of this subdivision, develop] Develop a formal training program implementing the O&M plan for any person who receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies or any loading facility subject to subdivision (5) of this subsection;
- (C) Maintain a copy of the O&M plan and training program materials at the subject facility; and
- [(C)] (D) [make and keep] Maintain monthly records demonstrating implementation of the O&M plan, including records of persons completing the training program required by subparagraph (B) of the subdivision, at the subject facility[; and]. All such records shall be:
 - (i) Made available to the Commissioner to inspect and copy upon request, and
 - (ii) Maintained for five (5) years from the date such record is created.

- [(D) maintain such records at the subject facility for a period of five [(5)] years, and provide such records to the commissioner upon request.]

Sec. 3. The Regulations of Connecticut State Agencies are amended by adding section 22a-174-30a as follows:

(NEW)

Section 22a-174-30a. Stage I Vapor Recovery.

(a) Definitions. For the purposes of this section, the definitions provided in this subsection shall apply. Terms used in this section that are not defined in this subsection are as defined in section 22a-174-1 of the Regulations of Connecticut State Agencies.

- (1) “CARB” means the State of California Air Resources Board;
- (2) “CARB-approved” means a Stage I vapor recovery system or system component that is or has been tested and approved by CARB as an individual component or as part of an approved system or that is or has been tested and approved by another state using testing methods approved by CARB;
- (3) “Construct” means to install or replace all storage tanks with a capacity greater than 250 gallons, the product piping and the vent piping at a GDF during a single project;
- (4) “Delivery elbow” means a quick connect/disconnect type coupler that joins a hose from a delivery vehicle to a GDF’s storage tank riser pipe adaptor or coupler;
- (5) “Delivery vehicle” means a tank truck, tank-equipped trailer, railroad tank car, or other mobile source equipped with a storage tank used for the transportation of gasoline from a source of supply to any stationary storage tank;
- (6) “Gasoline” means any petroleum distillate or petroleum distillate and alcohol blend commercially known or sold as “gasoline” and commonly used as an internal combustion engine fuel;
- (7) “Gasoline dispensing facility” or “GDF” means any site where gasoline is transferred to motor vehicles from a stationary storage tank with a capacity of 250 gallons or more;
- (8) “Modified” means the addition, alteration, replacement or retrofit of a gasoline storage tank located at a GDF or any component fixed to such gasoline storage tank including, but not limited to, piping that contains gasoline or gasoline vapors and containments located over or on the gasoline storage tank;
- (9) “Stage I vapor recovery system” means a combination of pipes and hoses that create a closed system between the vapor spaces of an unloading delivery vehicle and a receiving

GDF storage tank such that vapors displaced from the GDF storage tank are transferred to the delivery vehicle tank;

- (10) “Throughput” means the number of gallons of gasoline delivered into motor vehicles at a GDF over a specified period of time;
- (11) “Two-point Stage I vapor recovery system” means a GDF storage tank possessing an entry port for a gasoline fill pipe and a separate exit port for a vapor-return connection; and
- (12) "Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.

(b) Applicability.

- (1) This section applies to the owner or operator of any GDF that has a monthly throughput of 10,000 gallons or more on or after July 1, 2015. If a GDF ever exceeds a monthly throughput of 10,000 gallons, the requirements of this section shall thereafter apply.
- (2) Monthly throughput shall be calculated by adding the volume of gasoline dispensed at the GDF during the current day with the volume of gasoline dispensed at the GDF during the previous 364 days, and dividing that sum by 12. For any GDF constructed after July 1, 2014, the initial calculation of monthly throughput shall be performed on or after 365 days after the date the GDF starts dispensing gasoline to motor vehicles.
- (3) For a GDF with multiple storage tanks, the requirements of this section apply only to a storage tank with a capacity of 250 gallons or greater.
- (4) The owner or operator of a GDF that does not meet the monthly throughput requirements of subdivision (1) of this subsection shall maintain a chronological register of daily throughput of gasoline to demonstrate that this section does not apply. Such records shall be maintained for five (5) years from the date of creation and be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner or the Administrator no later than three (3) business days after receiving such a request.

(c) Requirements.

- (1) No owner or operator of a GDF shall transfer or allow the transfer of gasoline between a delivery vehicle and a GDF stationary storage tank unless such stationary storage tank is equipped with a Stage I vapor recovery system that includes:
 - (A) A CARB-approved fill adapter; and
 - (B) A pressure/vacuum vent valve on each GDF storage tank vent pipe.
- (2) Any pressure/vacuum vent valve installed on and after July 1, 2015 shall be a CARB-approved pressure/vacuum vent valve.

- (3) The pressure specifications for any pressure/vacuum vent valve shall be as follows:
- (A) For any pressure/vacuum vent valve installed prior to July 1, 2015:
 - (i) A positive pressure setting of:
 - (I) 3.0 inches of water, plus or minus 0.5 inch, or
 - (II) 2.5 to 6.0 inches of water, and
 - (ii) A vacuum setting of 8.0 inches of water, plus or minus 2.0 inches; and
 - (B) For any pressure/vacuum vent valve installed on and after July 1, 2015:
 - (i) A positive pressure setting of 2.5 to 6.0 inches of water,
 - (ii) A negative pressure setting of 6.0 to 10.0 inches of water, and
 - (iii) The total leak rate of all pressure/vacuum vent valves at an affected facility, including connections, shall not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water.
- (4) Except as provided in subdivision (5) of this subsection, a GDF storage tank shall be equipped with a two-point Stage I vapor recovery system. The vapor exit port of the two-point Stage I vapor recovery system shall be designed and maintained to seal in a manner that will prevent the discharge of gasoline vapors to the atmosphere when the vapor return hose is disconnected.
- (5) An owner or operator of any GDF storage tank that does not have an available port to install a two-point Stage I vapor recovery system shall install a two-point Stage I vapor recovery system when the GDF storage tank is replaced or when the product in the tank is switched from any other fuel to gasoline.
- (6) In addition to the requirements of subdivisions (1) to (5), inclusive, of this subsection, an owner or operator of any GDF that has a monthly throughput of 100,000 gallons or more shall install, operate and maintain a Stage I vapor recovery system that meets the requirements of subparagraphs (A) to (F), inclusive, of this subdivision. If a GDF ever exceeds a monthly throughput of 100,000 gallons, the requirements of this subdivision shall thereafter apply.
- (A) All vapor line connections on the GDF storage tank shall be equipped with closures that seal upon disconnect;
 - (B) The Stage I vapor control system shall be designed such that the pressure in the delivery vehicle tank does not exceed 18 inches water pressure or 5.9 inches water vacuum during product transfer;

- (C) The vapor recovery and product adaptors and the method of connection with the delivery elbow shall be designed to prevent the over-tightening or loosening of fittings during normal delivery operations;
- (D) If a gauge well is separate from the fill tube, the gauge well shall be provided with a submerged drop tube that extends the same distance from the bottom of the storage tank as the fill pipe;
- (E) Liquid fill connections and vapor couplings shall be equipped with vapor-tight caps; and
- (F) The Stage I vapor recovery system shall be capable of meeting the static pressure performance requirement of the following equation when pressure decay testing is performed as required by subsection (d) of this section:

$$P_f = 2e^{-500.887/v}$$

Where:

P_f = Minimum allowable final pressure, inches of water

v = Total ullage affected by the test, gallons

e = Dimensionless constant equal to approximately 2.718.

(d) Testing.

- (1) The owner or operator of any GDF shall conduct each of the following tests at least once per calendar year:
 - (A) For every pressure/vacuum vent valve, a pressure/vacuum vent valve test as specified in subdivision (4) of this subsection;
 - (B) A pressure decay test as specified in subdivision (5) of this subsection; and
 - (C) A vapor-space tie-in test as specified in subdivision (7) of this subsection.
- (2) The owner or operator of any GDF constructed on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of initial operation.
- (3) The owner or operator of any GDF modified on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of completion of the modification.
- (4) Pressure/vacuum vent valve tests shall be conducted according to the current version of CARB TP-201.1E, *Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
- (5) Pressure decay tests shall be conducted according to the current version of CARB TP-201.3, *Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery*

Systems of Dispensing Facilities, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.

- (6) The owner or operator of any GDF subject to 40 CFR 63.11120 may use the test methods specified in 40 CFR 63.11120 in lieu of the method specified in subdivision (4) or subdivision (5) of this subsection.
- (7) Vapor-space tie-in tests shall be conducted according to the current version of CARB TP-201.3C, *Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)*, as may be revised from time to time, or another method test approved by the Commissioner and the Administrator.
- (8) The owner or operator of any GDF who has installed a pressure management or vapor control device on a storage tank with a capacity of 250 gallons or greater, other than a device that is required to be installed and tested by this section, shall test such device annually by a method approved by the commissioner. At least sixty (60) days prior to conducting an annual test, the owner or operator shall submit a test protocol for review and approval on a form provided by the commissioner.
- (9) Any owner or operator of any GDF shall:
 - (A) Notify the Department's Bureau of Air Management, Field Operations Section in writing of the time and location of a test required by this subsection at least seven (7) business days in advance; and
 - (B) Submit a copy of the test report on a form provided by the Department to the Department's Bureau of Air Management, Field Operations Section within ten (10) days after performing a test required by this subsection.
- (10) If an owner or operator of any GDF fails any test required by this subsection, the owner or operator shall take corrective actions and retest no later than sixty (60) days after failing the test.

(e) Record keeping.

- (1) Any owner or operator of a GDF shall maintain the following records:
 - (A) All licenses, as defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
 - (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
 - (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance or repair performed, identification of any part repaired or replaced on such Stage I vapor recovery system, the dates the maintenance or repair was performed, and a general description of the location of any part repaired or replaced;

- (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF;
 - (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator; and
 - (F) A chronological register of daily throughput.
- (2) In addition to the applicable records required by subdivision (1) of this subsection, any owner or operator of a GDF constructed after July 1, 2014 shall maintain records of the dates of the construction and the date gasoline was first dispensed to a motor vehicle.
 - (3) Records required by this subsection shall be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner or the Administrator no later than three (3) business days after receiving such a request.
 - (4) Records shall be maintained for five (5) years from the date of creation.
 - (5) An owner or operator shall display in a conspicuous location at the GDF the address at which the records required by subdivision (1) of this subsection are maintained.

Sec. 4. Section 22a-174-3a(a)(2) of the Regulations of Connecticut State Agencies is amended to read as follows:

- (2) Exemptions. Notwithstanding the provisions of subdivision (1) of this subsection, the owner or operator of a stationary source or modification may conduct activities listed in subdivision (2)(A), and may construct or operate the sources listed in subdivision (2)(B) and (2)(C) of this section, without a permit under this section:
 - (A) Any activity that:
 - (i) adds air pollution control equipment or implements process changes to control air pollution unless the addition or implementation results in an increase in actual emissions of any individual air pollutant of fifteen (15) tons or more per year, or ten (10) tons or more per year of a hazardous air pollutant subject to the provisions of subsection (m) of this section,
 - (ii) relocates a portable rock crusher which is subject to a permit or exemption letter issued by the commissioner pursuant to former section 22a-174-3 Regulations of Connecticut State Agencies, or which is registered under a general permit for such sources issued by the commissioner pursuant to section 22a-174(l) of the Connecticut General Statutes, provided the owner or operator is in compliance with any such permits and provides written notice to the commissioner prior to such relocation,
 - (iii) constitutes a conversion from fuel oil to natural gas, or in addition to fuel oil, provided such conversion does not increase actual emissions of any individual air

pollutant by fifteen (15) tons or more per year, unless such conversion results in reconstruction, or

- (iv) constitutes a conversion from residual fuel oil to distillate fuel oil, or in addition to residual fuel oil, provided such conversion does not increase actual emissions of any individual air pollutant by fifteen (15) tons or more per year, unless such conversion results in reconstruction;
- (B) Any stationary source that is:
- (i) registered under and is in compliance with any new source review general permit to construct and operate a new or existing stationary source issued pursuant to section 22a-174(l) of the Connecticut General Statutes,
 - (ii) a stripping facility used to remove VOC from contaminated groundwater or soil pursuant to an order issued by the commissioner, provided such facility has a control device with VOC removal efficiency of at least ninety-five percent (95%),
 - (iii) a portable engine or boiler temporarily replacing an existing engine or boiler, provided the replacement units have a combined emission rate equal to or less than the existing units and that the number of days total that any and all such portable engines or boilers may be used does not exceed ninety (90) days in any calendar year,
 - (iv) in compliance with section 22a-174-3b, section 22a-174-3c, section 22a-174-3d or section 22a-174-42 of the Regulations of Connecticut State Agencies, unless otherwise subject to this section pursuant to subdivision (7) of this subsection, or
 - (v) a “gasoline dispensing facility,” as defined in section [22a-174-30(a)(3)] 22a-174-30a(a)(7) of the Regulations of Connecticut State Agencies.
- (C) Any:
- (i) mobile source, or
 - (ii) non-road engine as defined in 40 CFR Part 89.

Sec. 5. Subsection (ee) of section 22a-174-20 of the Regulations of Connecticut State Agencies is amended to read as follows:

(ee) Reasonably Available Control Technology for large sources. The owner or operator of any premises with potential emissions of volatile organic compounds shall use Reasonably Available Control Technology in accordance with the provisions of section 22a-174-32 of the Regulations of Connecticut State Agencies on each source to limit the discharge of volatile organic compounds unless all the sources emitting volatile organic compounds at such premises are regulated by:

- (1) any one of the following subsections of section 22a-174-20 of the Regulations of Connecticut State Agencies: (a), (b), (l) through (y) or (ff) through (jj);
- (2) section [22a-174-30] 22a-174-30a of the Regulations of Connecticut State Agencies; or

- (3) an order to implement reasonably available control technology issued by the Commissioner pursuant to this subsection prior to November 15, 1992 and approved by the Administrator prior to May 31, 1995. An order or permit to limit potential emissions of volatile organic compounds to less than 100 tons per year for any twelve (12) consecutive months shall not be considered an order to implement Reasonably Available Control Technology.

Sec. 6. Section 22a-174-32(b)(3) of the Regulations of Connecticut State Agencies is amended to read as follows:

(3) When calculating potential emissions to determine the applicability of this section, the owner or operator of a premises shall include potential emissions of volatile organic compounds from all sources located at such premises excluding those sources which are:

- (A) subject to regulation under 40 CFR 61 and 63;
- (B) required to use Best Available Control Technology or Lowest Achievable Emission Rate for VOCs pursuant to a federally enforceable order or permit which contains specific VOC emission limitations;
- (C) subject to regulation under 40 CFR 264, Subparts AA or BB, or 40 CFR 265, Subparts AA or BB;
- (D) fuel burning equipment; or
- (E) subject to Reasonably Available Control Technology required pursuant to:
 - (i) any one of the following subsections of section 22a-174-20 of the Regulations of Connecticut State Agencies: (a), (b), (l) through (y), or (ff) through (jj),
 - (ii) section [22a-174-30] 22a-174-30a of the Regulations of Connecticut State Agencies, or
 - (iii) an order or permit requiring the implementation of Reasonably Available Control Technology issued by the commissioner prior to November 15, 1992 and approved by the Administrator prior to May 31, 1995.

Sec. 7. As of July 1, 2015, section 22a-174-30 of the Regulations of Connecticut State Agencies is repealed.

Statement of Purpose

The primary purpose of this proposal is to remove Stage II vapor recovery requirements from the Regulations of Connecticut State Agencies (RCSA) so the regulations reflect the state's vapor recovery program for gasoline dispensing facilities (GDFs) as set out in section 22a-174e of the Connecticut General Statutes (CGS). Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting the vapors to the storage tank at the GDF. Connecticut's Stage II vapor recovery program for GDFs was authorized by CGS section 22a-174e, as that section was in effect prior to June 18, 2013. In the 2013 legislative session, CGS section 22a-174e was revised by Public Act No. 13-120.¹ While former CGS section 22a-174e required installation of Stage II vapor recovery equipment at GDFs, Public Act No. 13-120 mandates the decommissioning of existing Stage II vapor recovery equipment and prohibits the installation of new Stage II vapor recovery equipment at GDFs. RCSA section 22a-174-30 was adopted under the authority of CGS section 22a-174e in 1992 and sets out the details of Connecticut's Stage II vapor recovery program. This proposal repeals RCSA section 22a-174-30 (section 7).

Stage I vapor recovery systems control vapors during the transfer of gasoline from a delivery vehicle to the storage tank at a GDF by diverting the displaced gasoline vapor from the GDF storage tank into the tanker compartment of the delivery vehicle unloading gasoline. Some elements of Connecticut's Stage I vapor recovery program are contained in RCSA section 22a-174-30 and others are in RCSA section 22a-174-20(b). Since the Stage I vapor recovery program must be retained as an ozone control program under the Clean Air Act, the proposal moves and consolidates those requirements to new RCSA section 22a-174-30a (sections 2 & 3). New RCSA section 22a-174-30a is drafted to be consistent with the federal requirements for controlling air emissions at GDFs (*see* 40 CFR 63 Subpart CCCCCC) and Public Act No. 13-120. The only requirement new to a GDF owner, which is not a requirement of 40 CFR 63 Subpart CCCCCC or Public Act No. 13-120, is the requirement to use a California Air Resource Board-approved pressure/vacuum vent valve upon valve replacement.

This proposal also revises RCSA sections 22a-174-3a(a)(2)(B)(v), 22a-174-20ee and 22a-174-32(b)(3)(E)(ii) to replace the references to RCSA section 22a-174-30, which is being repealed, with references to RCSA section 22a-174-30a (sections 4, 5 & 6).

Finally, the proposal revises RCSA section 22a-174-20(a)(7) to correct and clarify the requirements for the external surfaces of aboveground storage tanks containing volatile organic compounds (section 1).

¹ Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*.
<http://www.cga.ct.gov/2013/ACT/pa/pdf/2013PA-00120-R00HB-06534-PA.pdf>.



Notice of Intent to Amend, Adopt and Repeal Air Quality Regulations and to Revise the State Implementation Plan

The Commissioner of the Department of Energy and Environmental Protection (DEEP) hereby gives notice of a public hearing as part of a proceeding to amend, adopt and repeal certain regulations concerning control of air pollution during the transfer and dispensing of gasoline. Upon promulgation, the amended, adopted and repealed regulations will be submitted to the U.S. Environmental Protection Agency as a revision to the State Implementation Plan for air quality.

The proposal repeals RCSA section 22a-174-30 to remove Stage II¹ vapor recovery requirements from the Regulations of Connecticut State Agencies (RCSA) so that the regulatory requirements reflect the current status of the state's vapor recovery program as set out in statute.

Connecticut's Stage II vapor recovery program was authorized by section 22a-174e of the Connecticut General Statutes (CGS), as that section was in effect prior to June 18, 2013. In the 2013 legislative session, CGS section 22a-174e was revised by Public Act No. 13-120.² Public Act No. 13-120 mandates the decommissioning of existing Stage II vapor recovery equipment and prohibits the installation of new Stage II vapor recovery equipment at gasoline dispensing facilities (*i.e.*, gas stations).

The proposal consolidates Stage I³ vapor recovery requirements currently in RCSA sections 22a-174-20(b) and 22a-174-30 as new RCSA section 22a-174-30a. New RCSA section 22a-174-30a is drafted to be consistent with the federal requirements for controlling air emissions at gasoline dispensing facilities (40 CFR 63 Subpart CCCCC). The proposal does not add significant new requirements beyond the federal requirements and the requirements of Public Act No. 13-120.

All interested persons are invited to comment on the proposal. Comments should be submitted no later than 25 July 2014 to Robin D. Baena, DEEP, Bureau of Air Management, Engineering & Enforcement, 79 Elm Street, Hartford, Connecticut 06106-5127. Comments may be submitted by post, facsimile to (860) 424-4064 or by electronic mail to robin.baena@ct.gov.

In addition to accepting written comments, DEEP will also hold the public hearing described below. Any person giving oral comment at the hearing will be asked to submit a written copy of such comments.

¹ Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting them to the storage tank.

² Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*.
<http://www.cga.ct.gov/2013/ACT/pa/pdf/2013PA-00120-R00HB-06534-PA.pdf>.

³ Stage I vapor recovery systems divert the gasoline vapor displaced from a storage tank during refilling into the tanker compartment of the delivery vehicle.

PUBLIC HEARING
24 July 2014
10 AM
DEEP, 5th Floor, Holcombe Room
79 Elm Street, Hartford, CT

Copies of the proposal described above, the fiscal impact analysis, and a statement required by section 22a-6(h) of the Connecticut General Statutes (CGS) are available for public inspection during normal business hours from Robin Baena at the Bureau of Air Management, Engineering & Enforcement, 5th Floor, 79 Elm Street, Hartford, CT. The same documents are posted on DEEP's website at the following location:

http://www.ct.gov/dep/cwp/view.asp?a=2684&q=331220&depNav_GID=1619

For further information, contact Robin Baena of the Bureau of Air Management at (860) 424-4152 or by electronic mail to robin.baena@ct.gov.

DEEP is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint. Any person needing a hearing accommodation may call the State of Connecticut relay number - 711. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

The authority to adopt the proposal is granted by CGS sections 22a-6, 22a-174 and 22a-174e. This notice is required pursuant to CGS sections 22a-6 and 4-168 and 40 Code of Federal Regulations 51.102.

6/12/14
Date


Robert J. Klee
Commissioner

Attachment D

Public Hearing Attendees

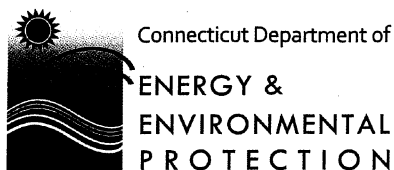
Public Attendees

None

Department of Energy & Environmental Protection Attendees

Robin Baena (Hearing Officer)
Merrily Gere

Attachment E



79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

HEARING CERTIFICATION

This certifies in accordance with the provisions of Title 40 Code of Federal Regulations Part 51.102 that the following actions were taken regarding the proposed amendment or adoption of various sections of the air quality regulations:

- 1) The public hearing was held on July 24, 2014 as announced in the notice of hearing (Attachment C);
- 2) In accordance with the notice, materials were available for review at the Department of Energy and Environmental Protection and posted on the Department's website;
- 3) Copies of the notice were mailed electronically to the directors of the air pollution control agencies in New York, New Jersey, Rhode Island and Massachusetts along with a copy to the Director of the Air Management Division of Region I of the U.S. Environmental Protection Agency; and
- 4) Public notice was published on the Connecticut Secretary of the State's website on June 20, 2014 and on the Department of Energy and Environmental Protection's website on June 12, 2014.

8/24/15
Date

Robin D. Baena
Robin D. Baena
Bureau of Air Management

HEARING REPORT

**Prepared Pursuant to Section 4-168(d) of the
Connecticut General Statutes and
Section 22a-3a-3(d)(5) of the Department of Energy and Environmental Protection
Rules of Practice**

**Regarding
Amendment of Air Quality Regulations Concerning
Control of Volatile Organic Compound Emissions during
the Transfer and Dispensing of Gasoline**

**Hearing Officer:
Robin D. Baena**

Date of Hearing: July 24, 2014

On June 12, 2014, the Commissioner of the Department of Energy and Environmental Protection (DEEP) published a notice of intent to amend section 22a-174-20 of the Regulations of Connecticut State Agencies (RCSA), adopt RCSA section 22a-174-30a, and repeal RCSA section 22a-174-30. Pursuant to such notice, a public hearing was held on July 24, 2014, with the public comment period closing on July 25, 2014.

I. Hearing Report Content

As required by section 4-168(d) of the Connecticut General Statutes (CGS), this report describes the proposal, identifies principal reasons in support of and in opposition to the proposal, and summarizes and responds to all comments on the proposal.

The proposal is included as Attachment 2 to this report. A final revised version of the proposal based on the recommendations in this report is included as Attachment 3. A statement in satisfaction of CGS section 22a-6(h) is included as Attachment 1.

II. Summary of Proposal

The commissioner is proposing to revise subsections (a) and (b) of RCSA section 22a-174-20, adopt RCSA section 22a-174-30a, and repeal RCSA section 22a-174-30. The proposal primarily updates existing requirements concerned with the control of volatile organic compound (VOC) emissions from gasoline dispensing facilities (GDFs) so that the regulations reflect the current status of the state's GDF vapor recovery program as set out in section 22a-174e of the Connecticut General Statutes (CGS), as revised by Public Act No. 13-120 in 2013. More specifically, DEEP is proposing to:

- Revise RCSA section 22a-174-20(a)(7) to correct and clarify the requirements for the external surfaces of VOC-containing aboveground storage tanks;

- Consolidate the Stage I¹ vapor recovery requirements contained in RCSA sections 22a-174-20(b) and 22a-174-30 into new proposed RCSA section 22a-174-30a;
- Incorporate existing federal requirements for controlling air emissions from gasoline delivery vehicles and GDFs (40 CFR 63 Subpart CCCCCC, Tables 1 and 2) into RCSA sections 22a-174-20(b) and 22a-174-30a, respectively;
- Require the use of a California Air Resource Board (CARB)-approved pressure vacuum (P/V) valve; and
- Remove the requirements for the installation and operation of Stage II² vapor recovery equipment at GDFs by repealing RCSA section 22a-174-30.

III. Opposition to the Proposal

One commenter (commenter #2) expressed opposition to the adoption of this proposal because he is a strong opponent of removing Stage II vapor recovery. The requirement to decommission Stage II vapor recovery equipment is, however, mandated by CGS section 22a-174e.

IV. Summary of Comments

Written comments were received from the following persons:

1. Anne Arnold, Manager
Air Quality Planning Unit
USEPA Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912
2. Ted Tiberi
ARID Technologies, Inc.
323 S. Hale Street
Wheaton, IL 60187
3. Michael J. Fox
Executive Director
GASDA, Inc.
29 Thornhill Road
Riverside, CT. 06878
4. Jennifer Celeste
Manager, Product and Regulatory Support
Sunoco Inc.
100 Green Street
Marcus Hook, PA 19061

1 Stage I vapor recovery systems divert the gasoline vapor displaced from a storage tank during refilling into the tanker compartment of the delivery vehicle.

2 Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting them to the storage tank.

All comments submitted are summarized below with DEEP's responses. Commenters are associated with the individual comments below by the number assigned above. When changes to the proposed text are indicated in response to comment, new text is in bold font and deleted text is in strikethrough font.

Comment 1: The National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Gasoline Dispensing Facilities, Part 63 Subpart CCCCC (GDF NESHAP) allows sources with a monthly throughput of 100,000 gallons or more to be deemed in compliance with vapor balance requirements if, prior to January 10, 2008, the source complies with an enforceable state rule that either requires an emissions reduction of at least 90% or requires management practices at least as stringent as those in Table 1 of the GDF NESHAP. EPA Region I found that GDFs subject to and in compliance with a RSCA section 22a-174-30 Stage II vapor recovery requirements and with a CARB certified Stage I vapor balance system prior to January 10, 2008, may comply with RSCA section 22a-174-30 and section 22a-174-20(b) as an alternative to complying with the GDF NESHAP Table I management practices, and with the periodic testing requirements in 40 CFR 1120(a). Therefore, GDF in compliance with these Connecticut requirements prior to January 10, 2008 have not been subject to the notification, testing and reporting requirements in the NESHAP. Because Connecticut is now proposing to remove Stage II requirements and the requirement for a CARB certified Stage I system, Connecticut may add the NESHAP Table I management practices to RSCA 22a-174-30a instead of an enforceable 90% emission reduction requirement in order for sources, prior to January 10, 2008, to follow Connecticut rules to meet NESHAP compliance. (1)

Response: DEEP is proposing to remove Stage II vapor recovery requirements from the RCSA through the repeal of section 22a-174-30 and to consolidate Stage I vapor recovery requirements, currently located in RCSA sections 22a-174-20(b) and 22a-174-30, into new RCSA section 22a-174-30a. DEEP did not propose to remove any Stage I requirements from its regulations. In addition, DEEP added the NESHAP Table 1 management practices into proposed RSCA 22a-174-30a. Therefore, sources that were subject to and in compliance with RCSA section 22a-174-30 prior to January 10, 2008 to meet NESHAP compliance by following the state rule will remain in compliance under the proposal. However, the requirement to equip GDF storage tanks with a Stage I vapor recovery system should be explicitly stated by revising proposed section 22a-174-30a(c)(1) as follows:

- (1) No owner or operator of a GDF shall transfer or allow the transfer of gasoline between a delivery vehicle and a GDF stationary storage tank unless such stationary storage tank is equipped with a **Stage I vapor recovery system that includes:**
 - (A) A CARB-approved fill adapter; and
 - (B) A pressure/vacuum vent valve on ~~the~~ **each** GDF storage tank vent ~~pipes~~ **pipe**.

(The revisions recommended in hearing officer comment 4 are included in the above text.)

Comment 2: For GDF with a monthly throughput of 100,000 gallons or more, the GDF NESHAP requires pressure/vacuum (P/V) vent valve specifications of a positive pressure setting of 2.5 to 6.0 inches of water, and a negative pressure setting of 6.0 to 10.0 inches of water, and a total leak rate not exceeding 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water. Connecticut's rule requires these settings for GDFs after July 1, 2015. In order for Connecticut's rule to include all of the Table 1 management practices,

RCSA 22a-174-30a(c)(6) must require these settings for P/V vent valves for all GDFs with a monthly throughput of 100,000 gallons or more. (1)

Response: As explained in the response to comment 1, DEEP is retaining all current Stage I vapor recovery requirements in the proposal and incorporating the NESHAP Table 1 management practices into proposed RCSA 22a-174-30a. The positive pressure setting specified in proposed RCSA section 22a-174-30a(c)(3)(A)(i)(I) is identical to the positive pressure settings set out in RCSA section 22a-174-30(c)(6)(A). DEEP's intent in including this pressure specification in the proposal is to allow for the continued use of P/V vent valves that were installed prior to the effective date of the proposal (July 1, 2015) that could not meet the more protective standard set out in Table 1 of the NESHAP at GDF that were not subject to the NESHAP Table 1 requirements. Once these valves require replacement, however, only CARB-approved valves meeting the positive pressure setting of 2.5 to 6.0 inches of water column specification can be installed. Therefore, the NESHAP Table 1 P/V vent valve pressure settings will be phased-in with valve replacement for all GDF subject to proposed section 22a-174-30a, not just those with a monthly throughput of 100,000 gallons or greater. The owner/operator of any GDF required to install P/V vent valves with a positive pressure setting of 2.5 to 6.0 inches of water column pursuant the NESHAP can comply with the proposal under section 22a-174-30a(c)(3)(A)(i)(II). DEEP should not make any changes to the proposal based on this comment.

Comment 3: RCSA section 22a-174-30a(d) requires an annual static pressure test according to the current CARB TP-201.3, as may be revised from time to time, and an annual PV vent valve test according to the current CARB TP-201.IE, as may be revised from time to time. The GDF NESHAP requires a static pressure test according to CARB TP-201.3, adopted April 12, 1996, and amended March 17, 1999; or according to Bay Area Air Quality Management District Source Test Procedure ST-30 Static Pressure Integrity Test - Underground Storage Tanks, adopted November 30, 1983, and amended December 21, 1994, and a PV vent valve test according to TP-201.IE, adopted October 8, 2003. A facility subject to the NESHAP vapor balance testing requirements (e.g., all new sources after January 10, 2008) using CARB TP-201.3 and CARB TP-201.IE for NESHAP compliance will be required to conduct the tests using the versions incorporated into the NESHAP unless a facility or the state requests and EPA approves a revised version of these tests as equivalent to the NESHAP. (1)

Response: CARB updates and revises its test procedures to correct and improve the test procedures. For example, CARB revised TP-201.3 in 2012 to correct a conversion factor used to calculate the minimum time required to pressurize the vapor space in the tank. The previous conversion factor overestimates the required pressurization time and results in a poor estimation of the amount of nitrogen needed to pressurize the tank. DEEP believes that use of the most accurate and up-to-date test procedures results in better vapor recovery system performance in the field by providing the most accurate measurement and verification of proper operation of installed vapor recovery systems. DEEP also recognizes that the owner/operator of a GDF subject to the NESHAP must comply with those requirements and the option to test according to 40 CFR 63.11120 for an owner/operator of a GDF subject to the NESHAP testing requirements should be added to RCSA section 22a-174-30a(d).

In addition, DEEP has recently become aware of several GDFs that have found it economically advantageous to install pressure management systems on their storage tanks to recover product. To avoid damaging the pressure management equipment when testing the storage tank, testers

have been isolating the device from the tank. To ensure integrity of the whole vapor recovery system, any device that penetrates the tank wall must also be tested. Additional pressure management and vapor recovery systems may be installed as the cost of gasoline rises and the advantage of installing these devices increases. But, since the type of systems that will be installed cannot be predicted, a proper test method cannot be specified for all possible systems at this time. Therefore, the proposal should be revised to require the GDF owner/operator to submit a test protocol for the DEEP to review and approve prior to testing such devices.

Finally, proposed section 22a-174-30a(d) requires an owner/operator who fails a test to take corrective actions and retest within in 60 days, but there is no requirement for the owner/operator to notify DEEP of the retest or submit the results of the retest. An owner/operator who is required to retest in accordance with proposed section 22a-174-30a(d) should be required to notify DEEP of the retest and submit the results of the retest. To reflect that intent, proposed section 22a-174-30a(d)(7)(A), which was renumbered as subparagraph (9)(A), should be revised to clarify that notification and results submittals are required for all testing required by subsection (d).

To allow an owner/operator the option to test according to 40 CFR 63.11120, require testing of any device that penetrates the tank wall, require notification and submittal of results for all required testing, and clarify language, RCSA section 22a-174-30a(d) should be revised as follows:

- (d) Testing.
 - (1) The owner or operator **of any GDF** shall conduct each of the following tests at least once per calendar year:
 - (A) For every pressure/vacuum vent valve, a pressure/vacuum vent valve test as specified in subdivision (4) of this subsection;
 - (B) A pressure decay test as specified in subdivision (5) of this subsection; and
 - (C) A vapor-space tie-in test as specified in subdivision ~~(6)~~ (7) of this subsection.
 - (2) ~~Any~~ **The owner or operator of any** GDF constructed on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of initial operation.
 - (3) ~~Any~~ **The owner or operator of any** GDF modified on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of completion of the modification.
 - (4) Pressure/vacuum vent valve tests shall be conducted according to the current version of CARB TP-201.1E, *Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
 - (5) Pressure decay tests shall be conducted according to the current version of CARB TP-201.3, *Determination of 2 Inch WC Static Pressure Performance of Vapor*

Recovery Systems of Dispensing Facilities, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.

- (6) **The owner or operator of any GDF subject to 40 CFR 63.11120 may use the test methods specified in 40 CFR 63.11120 in lieu of the method specified in subdivision (4) or subdivision (5) of this subsection.**
- (7) Vapor-space tie-in tests shall be conducted according to the current version of CARB TP-201.3C, *Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)*, as may be revised from time to time, or another method test approved by the Commissioner and the Administrator.
- (8) **The owner or operator of any GDF that has installed a pressure management or vapor control device on a storage tank with a capacity of 250 gallons or greater, other than a device that is required to be installed and tested by this section, shall test such device annually by a method approved by the commissioner. At least sixty (60) days prior to conducting an annual test, the owner or operator shall submit a test protocol for review and approval on a form provided by the commissioner.**
- ~~(7)~~(9) Any owner or operator shall:
 - (A) Notify the Department's Bureau of Air Management, Field Operations Section in writing of the time and location of a test required by ~~subdivision (4)~~ of this subsection at least seven (7) business days in advance; and
 - (B) Submit a copy of the test report on a form provided by the Department to the Department's Bureau of Air Management, Field Operations Section within ten (10) days after performing a test required by this subsection.
- ~~(8)~~(10) If an owner or operator fails any test required by this subsection, the owner or operator shall take corrective actions and retest no later than sixty (60) days after failing the test.

Comment 4: DEEP is proposing to amend its regulations to discontinue the requirements to install and operate Stage II vapor recovery controls, per Public Act No. 13-120's revision of Connecticut General Statutes (CGS) section 22a-174e, and to reorganize Stage I requirements. Connecticut's Stage I and Stage II programs have been approved into the Connecticut State Implementation Plan (SIP). Therefore, the revised rules should be submitted to EPA as a SIP revision.

In order for EPA to be able to approve this SIP revision, Connecticut must demonstrate that it meets the anti-backsliding requirements of Section 110(1) of the Clean Air Act (CAA). With respect to Stage II, EPA Region 1 is aware that CT DEEP has been working on a demonstration, for which a separate public notice is planned, to satisfy the necessary CAA requirements in accordance with EPA's "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures," issued on August 7, 2012. This demonstration should be submitted to EPA as a SIP revision to support the Stage II program phase-out. EPA recommends that the demonstration also explain how the new Stage I regulation meets Section 110(1) requirements. It appears that the proposed requirements are no less stringent

than the previously approved SIP requirements. CT DEEP should verify and document that fact. (1)

Response: DEEP will submit this amendment and CGS section 22a-174e as amended by Public Act No. 13-120 as a SIP revision after this amendment is adopted. As part of that submission, DEEP will demonstrate that the requirements of sections 110(l) and 184(b)(2) of the Clean Air Act (CAA) are met. DEEP should not make any changes to the proposal based on this comment.

Comment 5: DEEP is proposing revisions to certain subdivisions of sections 22a-174-20(a) and 22a-174-20(b). When DEEP submits its SIP revision, it would be helpful for EPA's processing of the SIP revision, if the submittal included the complete, as amended, 22a-174-20(a) and 22a-174-20(b) for incorporation by reference. (1)

Response: As requested, DEEP will include the complete amended subsections (a) and (b) of section 22a-174-20 in its SIP submittal to aid in EPA's processing of the SIP revision. DEEP should not make any changes to the proposal based on this comment.

Comment 6: For clarity, we recommend that proposed RCSA section 22a-174-30a(c)(3)(A)(i)(I) be revised, similar to Connecticut's existing Stage II rule, to read as follows:

"3 inches of water, plus or minus ~~1/2~~ one-half (0.5) inch, or ..."

Likewise, proposed subdivision 22a-174-30a(c)(3)(A)(ii) should be revised to read as follows:

"A vacuum setting of 8 inches of water, plus or minus two (2.0) inches, and ..." (1)

Response: RCSA section 22a-174-30a(c)(3)(A) should be revised for clarity by consistently using one decimal place for all pressure specifications as follows:

- (A) For any pressure/vacuum vent valve installed prior to July 1, 2015:
 - (i) A positive pressure setting of:
 - (I) \geq **3.0** inches of water, plus or minus ~~1/2~~ **0.5** inch, or
 - (II) 2.5 to 6.0 inches of water, and
 - (ii) A vacuum setting of \geq **8.0** inches of water, plus or minus \geq **2.0** inches; and
...

Comment 7: The recordkeeping requirements for maintaining records of the daily throughput of gasoline and of scheduled and unscheduled maintenance of the vapor balance system and other system components, found at RCSA section 22a-174-20(aa)(5), apply to any premise subject to the provisions of subdivisions 22a-174-20(b)(5) or (b)(6). The proposed amendments delete subdivision 22a-174-20(b)(6). As a result, facilities currently subject to subdivision 22a-174-20(b)(6) would no longer be subject to the recordkeeping requirements at 22a-174-20(aa)(5).

Proposed section 22a-174-30a(e)(1)(C) includes recordkeeping requirements for maintenance of the Stage I vapor recovery system; however, the throughput recordkeeping requirements are not currently included in proposed section 22a-174-30a(e). Maintaining records of throughput is important since the applicability of the rule's requirements is based on two throughput levels (*i.e.*, 10,000 and 100,000 gallons per 30-day rolling period). Thus, throughput recordkeeping requirements should be added to section 22a-174-30a(e). (1)

Response: DEEP agrees that daily gasoline throughput records required by RCSA section 22a-174-20(aa)(5) should be retained. A gasoline throughput recordkeeping requirement should be added to the proposal by adding subparagraph (F) to section 22a-174-30a(e)(1) as follows:

(e) Record keeping.

(1) Any owner or operator of a GDF shall maintain the following records:

- (A) All licenses, as that term is defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
- (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
- (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance ~~problem or~~ **repair performed**, identification of any part ~~or parts~~ repaired or replaced on such Stage I vapor recovery system, ~~the date such part or parts were repaired or replaced~~ **dates the maintenance or repair was performed**, and a general description of the location of ~~the part or parts in the system~~ **of any part repaired or replaced**;
- (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF; ~~and~~
- (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator; ~~and~~
- (F) **A chronological register of daily throughput of gasoline.**

(The revisions recommended in hearing officer comment 7 are included in the above text.)

In addition, GDFs with a throughput of less than 10,000 gallons per month must keep records to demonstrate that they are not subject to the rule. Such recordkeeping requirements should be added to the proposal by appending subdivision (4) to subsection (b) of RCSA section 22a-174-30a. Subdivision (4) should read as follows:

- (4) **The owner or operator of a GDF that does not meet the monthly throughput requirements of subdivision (1) of this subsection shall maintain a chronological register of daily throughput of gasoline to demonstrate that this section does not apply. Such records shall be maintained for five (5) years from the date of creation and be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.**

Section 22a-174-20(aa)(5) should be revised as part of a future proposal to remove the reference to section 22a-174-20(b)(6). For reference, RCSA section 22a-174-20(aa)(5) reads as follows:

- (5) The owner or “operator” of any premise subject to the provisions of subdivisions 22a-174-20(b)(5) or (b)(6) shall maintain the following records for the premise:
 - (A) daily throughput of gasoline; and
 - (B) records of both scheduled and unscheduled maintenance of the “vapor balance system” and other system components.

Comment 8: Connecticut is proposing to repeal RCSA section 22a-174-30 "Dispensing of Gasoline/Stage I and Stage II Vapor Recovery" and adopt a new RCSA section 22a-174-30a "Stage I Vapor Recovery." There are, however, some Stage II vapor recovery provisions that should continue into the future. Specifically, Connecticut DEEP should ensure that its SIP submittal includes enforceable requirements that specify the decommissioning procedures to be used, the date by which decommissioning must take place, and the operation and maintenance requirements for Stage II vapor recovery systems that must continue until decommissioning takes place. (1)

Response: DEEP will continue to enforce RCSA section 22a-174-30 at any GDF with Stage II vapor recovery equipment installed until the section is repealed on July 1, 2015. This date coincides with the date that CGS section 22a-174e requires that all Stage II vapor recovery equipment be decommissioned. CGS section 22a-174e specifies that decommissioning be performed in accordance with Section 14 of the 2009 "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Refueling Sites" of the Petroleum Equipment Institute. DEEP will include CGS section 22a-174e in its SIP submittal. DEEP should not make any changes to the proposal based on this comment.

Comment 9: EPA encourages DEEP to include California Air Resources (CARB) enhanced Stage I vapor recovery requirements in Connecticut’s Stage I vapor recovery regulation. Rhode Island has adopted and Massachusetts has proposed to adopt these requirements. Enhancing Connecticut’s Stage I requirements would provide additional reductions to help address continuing ozone nonattainment issues in Connecticut. (1)

Response: The purpose of this proposal is to update the regulations to be consistent with section 22a-174e of the Connecticut General Statutes, not to propose Stage I upgrades. DEEP will evaluate the feasibility and benefit of adopting CARB enhanced Stage I vapor recovery requirements based on the experience in other states. DEEP should not make any changes to the proposal based on this comment.

Comment 10: ARID has been a strong opponent of removing Stage II vapor recovery. Removal of Stage II vapor recovery will result in excess emissions and increased health risks. Recently, the Waterford Professional Firefighters Association warned the refueling public of safety hazards associated with refueling non-ORVR vehicles at non-Stage II GDF.³ Careless refueling can lead

3 Cura, Jamie. “Waterford Firefighters Warn of Vapors in Air when Pumping Gas.” *Waterford Patch*. July 10, 2014. (<http://waterford.patch.com/groups/police-and-fire/p/waterford-firefighters-warn-of-vapors-in-air-when-pumping-gas>)

to flash fires at the nozzle/automobile interface. This risk, though always present, would be much less with the use of Stage II vapor recovery.

Video shot with an infrared camera of a non-ORVR vehicle being refueled at a non-Stage II station (commenter submitted file by email) shows vapors escaping. The video and a study conducted by the Finnish Institute of Occupational Health comparing hydrocarbon concentrations in proximity to the motorist at GDF's with and without Stage II vapor recovery systems in place⁴ show that the safety and health risks are increased while refueling non-ORVR vehicles in the absence of Stage II vapor recovery. The increased risk could increase the liability and insurance premiums of GDF owners/operators. (2)

Comment 11: The Waterford Professional Firefighters Association's fire-safety recommendations are common sense recommendations. The emissions visible in the infrared video during the refueling event and the Finnish Institute of Occupational Health study referred to in Comment 8 are for vehicles without ORVR refueling at stations without Stage II and show why federal law required Stage II vapor recovery. The Clean Air Act also recognized the incompatibility between Stage II systems and ORVR and, therefore, allowed for the removal of Stage II systems when enough vehicles were ORVR equipped. The majority of vehicles currently on the road have ORVR installed to reduce refueling emissions. The decommissioning of Stage II equipment will not increase the risk of flash fires at the nozzle/automobile interface, and there is no expectation that insurance premiums will increase for GDF owners/operators after decommissioning. (3)

Comment 12: The Finnish Institute of Occupational Health study cited in Comment 8 is 14 years old and does not discuss the emissions impact of cars with ORVR. The article is outdated and does not address the current vehicle fleet. The reason behind removing Stage II vapor recovery systems is the incompatibility between ORVR and Stage II vapor recovery. Since the majority of the vehicles in the United States have ORVR, Stage II vapor recovery at service stations is actually causing more air pollution. Sunoco has no issues with the proposed regulations. (4)

Response to comments 10, 11 and 12: Section 22a-174e of the Connecticut General Statutes as revised by [Public Act No. 13-120](#) mandates the decommissioning of existing Stage II vapor recovery equipment and prohibits the installation of new Stage II vapor recovery equipment. Although the proposal removes Stage II vapor recovery requirements from the Regulations of Connecticut State Agencies by repealing section 22a-174-30, adoption of the proposal will not change the status of Connecticut's Stage II vapor recovery program. All Stage II equipment must be decommissioned by July 1, 2015. DEEP should not make any changes to the proposal based on these comments.

V. Comments of Hearing Officer

The hearing officer suggests the following additional revisions to the proposal.

The following suggested revisions will make for a clearer final proposal and will improve the enforceability of the final regulation.

(1) CARB currently approves GDF vapor recovery equipment as part of enhanced vapor recovery (EVR) systems and not as individual components. The components of these approved

⁴ Hakkola, Matti A. and Lauri H. Saarinen. "Customer Exposure to Gasoline Vapors During Refueling at Service Stations." *Applied Occupational and Environmental Hygiene*. 15(9). 677-680. 2000.

systems are of better quality than some components on the market. DEEP is not requiring the installation of EVR systems at this time. However, to clarify that a component of an approved system can be used individually and not only as part of an approved system, the definition of “CARB-approved” in section 22a-174-30a(a)(2) should be revised as follows:

- (2) “CARB-approved” means a Stage I vapor recovery system or system component that is or has been tested and approved by CARB **as an individual component or as part of an approved system** or that is or has been tested and approved by another state using testing methods approved by CARB;

(2) Proposed section 22a-174-30a(a)(7) should be revised for clarity as follows:

- ~~(7)~~(8) “Modified” means **the addition, alteration, replacement or retrofit of** a gasoline storage tank ~~with a capacity of 250 gallons or more~~ located at a GDF or any component fixed to such gasoline storage tank ~~that has been added, altered, replaced or retrofitted~~. Components of a gasoline storage tank include, but are not limited to, piping that contains gasoline or gasoline vapors and containments located over or on the gasoline storage tank;

(Subdivision (7) is renumbered as subdivision (8) due to the addition of a definition for “construction” as described in hearing officer comment 3)

(3) The DEEP believes that requiring a GDF that has exceeded the applicability threshold of subdivisions (7) or (8) of section 22a-174-20(b) in the distant past, but is no longer dispensing gasoline at that rate, to maintain and annually test a Stage I vapor recovery system is unnecessarily burdensome. The gasoline dispensing market has changed significantly since the promulgation of Connecticut’s Stage I vapor recovery requirements. Today, large super-stations dominate the market and small independently owned stations sell only a minor fraction of the gasoline dispensed in the state. These small businesses operate on a narrow profit margin. Requiring the owner of a small GDF to comply with proposed section 22a-174-30a could make the operation unprofitable.

Requiring the small GDFs to maintain and test their Stage I vapor recovery system produces little, if any, environmental benefit. Based on AP-42 emission factors (chapter 5.2), emissions from an uncontrolled station with a monthly throughput of 10,000 gallons of gasoline are calculated to be 70 pounds per month greater than they would be at a station with Stage I controls. Controlling emissions of less than 70 pounds per month at GDFs with current monthly throughputs of less than 10,000 gallons by requiring station owners to maintain and test Stage I equipment is not economically reasonable and provides an unfair advantage to large stations as the control costs are a much lower percentage of total sales for large stations.

By requiring Stage I controls on all GDFs with monthly throughputs of 10,000 gallons or greater, Connecticut’s regulations are much more stringent than the federal rules. 40 CFR 63 subpart CCCCCC requires Stage I controls to be installed only on GDFs with a monthly throughput of 100,000 gallons or greater. Further exceeding the federal requirements by requiring Stage I controls at GDFs that do not and have not in the recent past operated with a monthly throughput of 10,000 gallons or greater is not justified economically or based on environmental benefits.

Some GDFs with Stage II vapor controls installed dispensed 10,000 gallons or more only during a few months decades ago under unusual circumstances, for example, when a nearby station was closed, and have not dispensed at that rate since. Others have never exceeded the 10,000 gallon

applicability threshold, but had installed and operated Stage I and Stage II vapor recovery equipment. Therefore, determining applicability to proposed section 22a-174-30a through past compliance with section 22a-174-30 is not reasonable. However for the proposed regulation to be reasonably enforceable, applicability cannot be transient and, going forward from promulgation of the proposal, an owner/operator of a GDF should be subject to the requirements of the regulation once the applicability threshold has been triggered. In addition, to be consistent with 40 CFR 63 subpart CCCCC, applicability should be based on a monthly throughput as defined in 40 CFR 63.11132, rather than basing applicability on a 30-day rolling aggregate. Since monthly throughput is based on a 12-month average, one year of data is required for the calculation.

Applicability should be determined based on monthly throughput calculated beginning on July 1, 2015 by revising proposed section 22a-174-30a(b) as follows:

(b) Applicability.

- ~~(1) On and after July 1, 2015, the provisions of this section apply to:~~
- ~~(A) The owner or operator of any GDF that has a throughput of 10,000 gallons or more, based on a 30-day aggregate; and~~
 - ~~(B) The owner or operator of any GDF that was subject to the requirements of former section 22a-174-30 of the Regulations of Connecticut State Agencies.~~
- ~~(2) If a GDF exceeds a throughput of 10,000 gallons during any 30-day rolling period, the requirements of this section shall always apply.~~
- (1) This section applies to the owner or operator of any GDF that has a monthly throughput of 10,000 gallons or more on or after July 1, 2015. If a monthly throughput of 10,000 gallons is exceeded, the requirements of this section shall thereafter apply.**
- (2) Monthly throughput shall be calculated by adding the volume of gasoline dispensed at the GDF during the current day with the volume of gasoline dispensed at the GDF during the previous 364 days, and dividing that sum by 12. For any GDF constructed after July 1, 2014, the initial calculation of monthly throughput shall be performed on or after 365 days after the date the GDF starts dispensing gasoline to motor vehicles.**
- (3) For a GDF with multiple storage tanks, the requirements of this section apply only to a storage tank with a capacity of 250 gallons or greater.**
- (4) The owner or operator of a GDF that does not meet the monthly throughput requirements of subdivision (1) of this subsection shall maintain a chronological register of daily throughput of gasoline to demonstrate that this section does not apply. Such records shall be maintained for five (5) years from the date of creation and be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.**

(The revisions recommended in the response to comment 7 are included in the above text.)

In addition, a definition for construction should be added to section 22a-174-30a(a) as follows and subsection (a) should be renumbered accordingly:

“Construct” means to install or replace all storage tanks with a capacity greater than 250 gallons, the product piping and the vent piping at a GDF during a single project;

Construction dates and the date gasoline was first dispensed are needed to determine applicability for a new or rebuilt GDF; therefore, section 22a-174-30a(e) should be revised to require such records as follows:

(e) Record keeping.

(1) Any owner or operator of a GDF shall maintain the following records:

- (A) All licenses, as that term is defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
- (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
- (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance ~~problem or~~ **repair performed**, identification of any part ~~or parts~~ repaired or replaced on such Stage I vapor recovery system, ~~the date such part or parts were repaired or replaced~~ **dates the maintenance or repair was performed**, and a general description of the location of ~~the part or parts in the system~~ **of any part repaired or replaced**;
- (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF; ~~and~~
- (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator; ~~and~~
- (F) **A chronological register of daily throughput of gasoline.**

(2) **In addition to the applicable records required by subdivision (1) of this subsection, any owner or operator of a GDF constructed after July 1, 2014 shall maintain records of the dates of the construction and the date gasoline was first dispensed to a motor vehicle.**

~~(2)~~(3) Records required by this subsection shall be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.

- (3)(4) Records shall be maintained for five (5) years from the date of creation.
- (4)(5) An owner or operator shall display in a conspicuous location at the GDF the address at which the records required by subdivision (1) of this subsection are maintained.

(The revisions recommended in comment 7 and hearing officer comment 7 are included in the above text.)

Finally, to be consistent with the federal requirements and proposed section 22a-174-30a(b), proposed section 22a-174-30a(c)(6) should be revised as follows:

- (6) In addition to the requirements of subdivisions (1) through (5) of this subsection, an owner or operator of any GDF that has a **monthly** throughput of 100,000 gallons or more, ~~based on a 30-day aggregate~~, shall install, operate and maintain a Stage I vapor recovery system that meets the requirements of subparagraphs (A) through (F) of this subdivision. If a GDF exceeds a **monthly** throughput of 100,000 gallons ~~during any 30-day rolling period~~, the requirements of this subdivision shall always apply. ...
- (4) Proposed section 22a-174-30a(c)(1)(B) should be revised as follows for clarity:
- (B) A pressure/vacuum vent valve on ~~the~~ **each** GDF storage tank vent ~~pipes~~ **pipe**.
- (5) Section 22a-174-20(b)(13) requires an owner/operator to repair and retest a delivery vehicle that fails the tests required by subdivision (12) within 15 days of a failed test. The owner/operator may, however, prefer to permanently or temporarily remove the vehicle from service. Text should be added to subdivision (13) to allow the owner/operator to take the vehicle out of service and require retesting prior to returning the vehicle to service.
- (13) The owner or operator of any delivery vehicle [which] that fails to meet the requirements of [subdivisions] subdivision (12) [or (14)] of this subsection shall repair and retest such vehicle within fifteen (15) days **or take such vehicle out of service. Prior to returning such vehicle to service, the owner or operator shall repair and retest the vehicle.**
- (6) Proposed section 22a-174-20(b)(14) requires an owner/operator to notify the department prior to conducting annual testing of a delivery vehicle required by subdivision (12), but does not require notification if retesting is required according to subdivision (13). An owner/operator should be required to notify the department prior to any required testing. Therefore, section 22a-174-20(b)(14) should be revised to require such notification as follows:
- (14) Any person who performs a test required by subdivision (12) **or (13)** of this subsection shall[: (A)] notify the Department's [Air Compliance Unit] Bureau of Air Management, Field Operations Section of the time and location of the test at least forty-eight (48) hours in advance
- (7) Proposed section 22a-174-30a(e)(1)(C) should be revised as follows for clarity:
- (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance ~~problem~~ **or**

repair performed, identification of any part ~~or parts~~ repaired or replaced on such Stage I vapor recovery system, the date ~~such part or parts were repaired or replaced~~ **the maintenance or repair was performed**, and a general description of the location of ~~the part or parts in the system~~ **of any part repaired or replaced**;

VI. Conclusion

Based upon the comments addressed in this Hearing Report, I recommend the proposal be revised as recommended herein and that the recommended final proposal, included as Attachment 3 to this report, be submitted by the Commissioner for approval by the Attorney General and the Legislative Regulations Review Committee and upon adoption, be submitted to the EPA as a SIP revision.

/s/Robin D. Baena
Robin D. Baena, Hearing Officer

3/19/2015
Date

ATTACHMENT 1
STATEMENT PURSUANT TO SECTION 22a-6(h) OF THE GENERAL STATUTES:
FEDERAL STANDARDS ANALYSIS

Pursuant to section 22a-6(h) of the Connecticut General Statutes (CGS), the Commissioner of the Department of Energy and Environmental Protection (the Department) is authorized to adopt regulations pertaining to activities for which the federal government has adopted standards or procedures. At the time of public notice, the Commissioner must distinguish clearly all provisions of a regulatory proposal that differ from federal standards or procedures either within the regulatory language or through supplemental documentation accompanying the proposal. In addition, the Commissioner must provide an explanation for all such provisions in the regulation-making record required under CGS Title 4, Chapter 54 and make such explanation publicly available at the time of the publication of the notice of intent required under CGS section 4-168.

In accordance with the requirements of CGS section 22a-6(h), the following statement is entered into the administrative record in the matter of the proposed revisions to section 22a-174-20 of the Regulations of Connecticut State Agencies (RCSA), repeal of RCSA section 22a-174-30 and adoption of RCSA section 22a-174-30a.

The proposal primarily updates existing requirements concerned with the control of volatile organic compound (VOC) emissions from gasoline dispensing facilities (GDFs) so that the regulations conform to section 22a-174e of the Connecticut General Statutes (CGS), as revised by Public Act No. 13-120 in 2013. The Department is proposing to:

- Consolidate the Stage I¹ vapor recovery requirements contained in RCSA sections 22a-174-20(b) and 22a-174-30 into new proposed RCSA section 22a-174-30a;
- Incorporate existing federal requirements for controlling air emissions from gasoline delivery vehicles and GDFs (40 CFR 63 Subpart CCCCC) into RCSA sections 22a-174-20(b) and 22a-174-30a, respectively;
- Require the use of a California Air Resource Board (CARB)-approved pressure vacuum (P/V) valve upon valve replacement; and
- Remove the requirements for the installation and operation of Stage II² vapor recovery equipment at GDFs by repealing RCSA section 22a-174-30.

The Department performed a comparison of the proposal to analogous federal regulations. Stage I vapor recovery and gasoline delivery vehicle emissions control requirements are set out in 40 Code of Federal Regulations (CFR) 63 Subpart CCCCC, *National Emissions Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities* and 40 CFR 63 Subpart BBBBBB, *National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities*. The proposal incorporates requirements contained in 40 CFR 63 Subpart CCCCC and is consistent

1 Stage I vapor recovery systems divert the gasoline vapor displaced from a storage tank during refilling into the tanker compartment of the delivery vehicle.

2 Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting them to the storage tank.

with both of these subparts in all aspects except the pressure/vacuum vent valve requirements. The requirement for a CARB-approved pressure/vacuum vent valve is more stringent than the federal pressure/vacuum vent valve requirements.

No federal regulations address Stage II vapor recovery at GDFs. Connecticut was required to implement its Stage II vapor recovery program under Clean Air Act (CAA) sections 182(b)(3) and 184(b)(2). CAA Section 202(a)(6) provides EPA with authority to waive the Stage II requirements when on-board refueling vapor recovery (ORVR) systems are determined to be in widespread use throughout the motor vehicle fleet. EPA made that determination, effective May 16, 2012, and waived the requirement that states implement Stage II vapor control programs (77 FR 28772). Under CAA section 110(l), removal of Stage II requirements must not interfere with attainment and reasonable further progress of the ozone national ambient air quality standards. Using the methods provided in EPA's guidance on removing Stage II gasoline vapor control programs from State Implementation Plans ([EPA-457/B-12-001](#)), DEEP concluded that termination of the state's Stage II vapor recovery program satisfies CAA requirements.

June 3, 2014
Date

/s/Robin D. Baena
Bureau of Air Management

Attachment 2

Proposal

Section 1. Subdivision (7) of subsection (a) of section 22a-174-20 of the Regulations of Connecticut State Agencies is amended to read as follows:

(7) The external surfaces of any storage tank containing VOCs with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions that has a maximum capacity of 2,000 gallons (7,570 liters) or greater and is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white upon the next painting of the tank[,] or [upon being returned to service after being out of service for the first time after the effective date of this subsection] by March 7, 2024, whichever is sooner, [and no less than 10 years after the effective date of this subsection, except the] or upon being returned to service after being out of service. The requirement to use mill-finished aluminum or white paint shall not apply to words and logograms applied to the external surface of the storage tank for purposes of identification provided such symbols do not cover more than 20 percent of the external surface area of the tank's sides and top or more than 200 square feet (18.6 square meters), whichever is less.

Sec 2. Subdivisions (6) through (16) of subsection (b) of section 22a-174-20 of the Regulations of Connecticut State Agencies are amended to read as follows:

(6) [By December 31, 1982, any person who owns or operates any dispensing facility with a stationary storage tank for gasoline having a capacity of more than two thousand (2,000) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period shall install at each stationary storage tank an approved control system. The applicability of this subdivision shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(7) [After December 31, 1982, no person shall install any stationary storage tank for gasoline with a capacity of more than two hundred fifty (250) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period unless the tank has an approved control system. The throughput of a loading facility shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(8) [Effective May 31, 1983, no person shall transfer or allow the transfer of gasoline from a delivery vehicle to a stationary storage tank subject to the provisions of subdivisions (6) or (7) of this subsection unless:

- (A) the transfer is made through a properly maintained and operated approved control system which is in good working order, connected and operating; and
- (B) there are no leaks in pressure/vacuum relief valves and hatch covers of the delivery vehicle, nor in the truck tanks, storage tank or associated vapor and liquid lines during loading or unloading.] Reserved.

(9) [No person shall dispense gasoline to a stationary storage tank having an approved control system in such a manner as to impair the collection efficiency of the control system.] Reserved.

(10) The owner or operator of a delivery vehicle shall [ensure that]:

- (A) Design, operate and maintain the delivery vehicle [is designed and maintained] to be vapor-tight at all times;
- (B) Keep [the] all hatches [are] on the delivery vehicle closed and securely fastened at all times during loading and unloading operations;
- (C) Set the pressure relief valves [are set] to release at no less than 0.7 pounds per square inch; [and]
- (D) Refill the vapor laden delivery vehicle [is refilled] only at facilities which meet the requirements of subdivisions (2) or (5) of this subsection[.];
- (E) Properly connect all hoses in the vapor balance system prior to loading and unloading;
- (F) Maintain all vapor return hoses, couplers and adapters used in gasoline delivery to be vapor-tight;
- (G) Ensure all delivery vehicle vapor return equipment is compatible in size and forms a vapor-tight connection with the vapor balance equipment on the dispensing facility storage tank;
- (H) Dispense gasoline to a stationary storage tank having an approved control system in a manner that does not interfere with the collection efficiency of the control system;
- (I) Load and unload in a manner that does not cause the delivery vehicle tank to be subject to a pressure in excess of 18 inches of water or a vacuum in excess of 6 inches of water; and
- (J) Not transfer or allow the transfer of gasoline from a delivery vehicle to a dispensing facility stationary storage tank if there are leaks in pressure/vacuum relief valves or hatch covers of the delivery vehicle, in the truck tanks or in associated vapor and liquid lines.

(11) [The Commissioner may provide an exemption to the provisions of subdivisions (5) or (6) of this subsection for economic or technological impracticability. Any exemption granted under this subdivision shall require the approval of the Administrator.] Reserved.

(12) Any owner or operator of a delivery vehicle that receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies [or any loading facility subject to subdivision (5) of this subsection] shall not cause or permit [a] such delivery vehicle to load or unload gasoline unless:

- (A) [such] The owner or operator tests the tank on such delivery vehicle once every twelve (12) months in accordance with Method 27 as set forth in Appendix A of Title 40 [Code of Federal Regulations Part] CFR 60 or another manner accepted by the Administrator and approved by the Commissioner in accordance with section 22a-174-5 of the Regulations of Connecticut State Agencies;
- (B) [Repealed;

- (C) during] During the test specified in subparagraph (A) of this subdivision, the tank sustains a pressure change of no more than three (3) inches of water in five (5) minutes when pressurized to a gauge pressure of eighteen (18) inches of water or when evacuated to a gauge pressure of six (6) inches of water; [and]
- [(D)](C) [the] The delivery vehicle displays a marking near the U.S. Department of Transportation markings required by Title 49 [of the Code of Federal Regulations Section] CFR 177.824 which shows the initials “DEEP” or “DEP” and the date of the last test or comparable markings as required by either the Connecticut Department of Transportation or the Connecticut Department of Motor Vehicles[.]; and
- (D) Records of all tests performed under this subdivision shall be maintained for a minimum of five (5) years and made available to the Commissioner within three (3) business days after the Commissioner requests such records.
- (13) The owner or operator of any delivery vehicle [which] that fails to meet the requirements of [subdivisions] subdivision (12) [or (14)] of this subsection shall repair and retest such vehicle within fifteen (15) days.
- (14) Any person who performs a test required by subdivision (12) of this subsection shall[:
- (A)] notify the Department's [Air Compliance Unit] Bureau of Air Management, Field Operations Section of the time and location of the test at least forty-eight (48) hours in advance[; and
- (B) submit a copy of the test report to the Commissioner within ten (10) days after performing a test].
- (15) [The owner or operator of any delivery vehicle subject to the provisions of subdivision (12) of this subsection shall ensure that:
- (A) during loading and unloading operations the tank is not subject to a pressure in excess of eighteen (18) inches of water, nor a vacuum in excess of six (6) inches of water;
- (B) during loading and unloading operations there are no visible liquid leaks and there is never a reading equal to or greater than the Lower Explosive Limit (LEL, measured as propane) at one (1) inch from any source of potential leaks as detected by a combustible gas detector using the test procedure described in Appendix B to “Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems” (EPA-450/2-78-051); and
- (C) records of all tests performed under subdivision (12) of this subsection are maintained for a minimum of five (5) years.] The Commissioner may test a delivery vehicle during loading and unloading operations to evaluate its vapor-tightness by measuring the vapor concentration at a distance of one inch from the source with a combustible gas detector, calibrated with propane using the test procedure described in CARB TP-204.3, *Determination of Leaks*. Equipment is vapor-tight when a measured vapor concentration is less than 14,000 parts per million.

(16) The owner or operator of any loading facility[, dispensing facility] or delivery vehicle subject to the provisions of this subsection shall:

- (A) [within six (6) months of the effective date of this subdivision, develop] Develop a written operation and maintenance (O&M) plan for any equipment used to load or unload gasoline;
- (B) [within twelve (12) months of the effective date of this subdivision, develop] Develop a formal training program implementing the O&M plan for any person who receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies or any loading facility subject to subdivision (5) of this subsection;
- (C) Maintain a copy of the O&M plan and training program materials at the subject facility; and
- [(C)] (D) [make and keep] Maintain monthly records demonstrating implementation of the O&M plan, including records of persons completing the training program required by subparagraph (B) of the subdivision, at the subject facility[; and]. All such records shall be:
 - (i) Made available to the Commissioner to inspect and copy upon request, and
 - (ii) Maintained for five (5) years from the date such record is created.
- [(D)] maintain such records at the subject facility for a period of five [(5)] years, and provide such records to the commissioner upon request.]

Sec. 3. The Regulations of Connecticut State Agencies are amended by adding section 22a-174-30a as follows:

(NEW)

Section 22a-174-30a. Stage I Vapor Recovery.

(a) **Definitions.** For the purposes of this section, the definitions provided in this subsection shall apply. Terms used in this section that are not defined in this subsection are as defined in section 22a-174-1 of the Regulations of Connecticut State Agencies.

- (1) “CARB” means the State of California Air Resources Board;
- (2) “CARB-approved” means a Stage I vapor recovery system or system component that is or has been tested and approved by CARB or that is or has been tested and approved by another state using testing methods approved by CARB;
- (3) “Delivery elbow” means a quick connect/disconnect type coupler that joins a hose from a delivery vehicle to a GDF’s storage tank riser pipe adaptor or coupler;

- (4) “Delivery vehicle” means a tank truck, tank-equipped trailer, railroad tank car, or other mobile source equipped with a storage tank used for the transportation of gasoline from a source of supply to any stationary storage tank;
- (5) “Gasoline” means any petroleum distillate or petroleum distillate and alcohol blend commercially known or sold as “gasoline” and commonly used as an internal combustion engine fuel;
- (6) “Gasoline dispensing facility” or “GDF” means any site where gasoline is transferred to motor vehicles from a stationary storage tank with a capacity of 250 gallons or more;
- (7) “Modified” means a gasoline storage tank with a capacity of 250 gallons or more located at a GDF or any component fixed to such gasoline storage tank that has been added, altered, replaced or retrofitted. Components of a gasoline storage tank include, but are not limited to, piping that contains gasoline or gasoline vapors and containments located over or on the gasoline storage tank;
- (8) “Stage I vapor recovery system” means a combination of pipes and hoses that create a closed system between the vapor spaces of an unloading delivery vehicle and a receiving GDF storage tank such that vapors displaced from the GDF storage tank are transferred to the delivery vehicle tank;
- (9) “Throughput” means the number of gallons of gasoline delivered into motor vehicles at a GDF over a specified period of time;
- (10) “Two-point Stage I vapor recovery system” means a GDF storage tank possessing an entry port for a gasoline fill pipe and a separate exit port for a vapor-return connection; and
- (11) "Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.

(b) Applicability.

- (1) On and after July 1, 2015, the provisions of this section apply to:
 - (A) The owner or operator of any GDF that has a throughput of 10,000 gallons or more, based on a 30-day aggregate; and
 - (B) The owner or operator of any GDF that was subject to the requirements of former section 22a-174-30 of the Regulations of Connecticut State Agencies.
- (2) If a GDF exceeds a throughput of 10,000 gallons during any 30-day rolling period, the requirements of this section shall always apply.
- (3) For a GDF with multiple storage tanks, the requirements of this section apply only to a storage tank with a capacity of 250 gallons or greater.

(c) **Requirements.**

- (1) No owner or operator of a GDF shall transfer or allow the transfer of gasoline between a delivery vehicle and a GDF stationary storage tank unless such stationary storage tank is equipped with:
 - (A) A CARB-approved fill adapter; and
 - (B) A pressure/vacuum vent valve on the GDF storage tank vent pipes.
- (2) Any pressure/vacuum vent valve installed on and after July 1, 2015 shall be a CARB-approved pressure/vacuum vent valve.
- (3) The pressure specifications for any pressure/vacuum vent valve shall be as follows:
 - (A) For any pressure/vacuum vent valve installed prior to July 1, 2015:
 - (i) A positive pressure setting of:
 - (III) 3 inches of water, plus or minus 1/2 inch, or
 - (IV) 2.5 to 6.0 inches of water, and
 - (ii) A vacuum setting of 8 inches of water, plus or minus 2 inches; and
 - (B) For any pressure/vacuum vent valve installed on and after July 1, 2015:
 - (i) A positive pressure setting of 2.5 to 6.0 inches of water,
 - (ii) A negative pressure setting of 6.0 to 10.0 inches of water, and
 - (iii) The total leak rate of all pressure/vacuum vent valves at an affected facility, including connections, shall not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water.
- (4) Except as provided in subdivision (5) of this subsection, a GDF storage tank shall be equipped with a two-point Stage I vapor recovery system. The vapor exit port of the two-point Stage I vapor recovery system shall be designed and maintained to seal in a manner that will prevent the discharge of gasoline vapors to the atmosphere when the vapor return hose is disconnected.
- (5) An owner or operator of any GDF storage tank that does not have an available port to install a two-point Stage I vapor recovery system shall install a two-point Stage I vapor recovery system when the GDF storage tank is replaced or when the product in the tank is switched from any other fuel to gasoline.
- (6) In addition to the requirements of subdivisions (1) through (5) of this subsection, an owner or operator of any GDF that has a throughput of 100,000 gallons or more, based on a 30-day aggregate, shall install, operate and maintain a Stage I vapor recovery system

that meets the requirements of subparagraphs (A) through (F) of this subdivision. If a GDF exceeds a throughput of 100,000 gallons during any 30-day rolling period, the requirements of this subdivision shall always apply.

- (A) All vapor line connections on the GDF storage tank shall be equipped with closures that seal upon disconnect;
- (B) The Stage I vapor control system shall be designed such that the pressure in the delivery vehicle tank does not exceed 18 inches water pressure or 5.9 inches water vacuum during product transfer;
- (C) The vapor recovery and product adaptors and the method of connection with the delivery elbow shall be designed to prevent the over-tightening or loosening of fittings during normal delivery operations;
- (D) If a gauge well is separate from the fill tube, the gauge well shall be provided with a submerged drop tube that extends the same distance from the bottom of the storage tank as the fill pipe;
- (E) Liquid fill connections and vapor couplings shall be equipped with vapor-tight caps; and
- (F) The Stage I vapor recovery system shall be capable of meeting the static pressure performance requirement of the following equation when pressure decay testing is performed as required by subsection (d) of this section:

$$Pf = 2e^{-500.887/v}$$

Where:

Pf = Minimum allowable final pressure, inches of water

v = Total ullage affected by the test, gallons

e = Dimensionless constant equal to approximately 2.718.

(d) Testing

- (1) The owner or operator shall conduct each of the following tests at least once per calendar year:
 - (A) For every pressure/vacuum vent valve, a pressure/vacuum vent valve test as specified in subdivision (4) of this subsection;
 - (B) A pressure decay test as specified in subdivision (5) of this subsection; and
 - (C) A vapor-space tie-in test as specified in subdivision (6) of this subsection.
- (2) Any GDF constructed on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of initial operation.
- (3) Any GDF modified on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of completion of the modification.

- (4) Pressure/vacuum vent valve tests shall be conducted according to the current version of CARB TP-201.1E, *Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
 - (5) Pressure decay tests shall be conducted according to the current version of CARB TP-201.3, *Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
 - (6) Vapor-space tie-in tests shall be conducted according to the current version of CARB TP-201.3C, *Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)*, as may be revised from time to time, or another method test approved by the Commissioner and the Administrator.
 - (7) Any owner or operator shall:
 - (A) Notify the Department's Bureau of Air Management, Field Operations Section in writing of the time and location of a test required by subdivision (1) of this subsection at least seven (7) business days in advance; and
 - (B) Submit a copy of the test report on a form provided by the Department to the Department's Bureau of Air Management, Field Operations Section within ten (10) days after performing a test required by this subsection.
 - (8) If an owner or operator fails any test required by this subsection, the owner or operator shall take corrective actions and retest no later than sixty (60) days after failing the test.
- (e) **Record keeping.**
- (1) Any owner or operator of a GDF shall maintain the following records:
 - (A) All licenses, as that term is defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
 - (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
 - (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance problem, identification of any part or parts repaired or replaced on such Stage I vapor recovery system, the date such part or parts were repaired or replaced, and a general description of the location of the part or parts in the system;
 - (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF; and

- (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator.
- (2) Records required by this subsection shall be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.
- (3) Records shall be maintained for five (5) years from the date of creation.
- (4) An owner or operator shall display in a conspicuous location at the GDF the address at which the records required by subdivision (1) of this subsection are maintained.

Sec. 4. As of July 1, 2015, section 22a-174-30 of the Regulations of Connecticut State Agencies is repealed.

Statement of purpose: The primary purpose of this proposal is to remove Stage II vapor recovery requirements from the Regulations of Connecticut State Agencies (RCSA) so the regulations reflect the state's vapor recovery program for gasoline dispensing facilities (GDFs) as set out in section 22a-174e of the Connecticut General Statutes (CGS). Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting the vapors to the storage tank at the GDF. Connecticut's Stage II vapor recovery program for GDFs was authorized by CGS section 22a-174e, as that section was in effect prior to June 18, 2013. In the 2013 legislative session, CGS section 22a-174e was revised by Public Act No. 13-120.¹ While former CGS section 22a-174e required installation of Stage II vapor recovery equipment at GDFs, Public Act No. 13-120 mandates the decommissioning of existing Stage II vapor recovery equipment and prohibits the installation of new Stage II vapor recovery equipment at GDFs. RCSA section 22a-174-30 was adopted under the authority of CGS section 22a-174e in 1992 and sets out the details of Connecticut's Stage II vapor recovery program. This proposal repeals RCSA section 22a-174-30 (section 4).

Stage I vapor recovery systems control vapors during the transfer of gasoline from a delivery vehicle to the storage tank at a GDF by diverting the displaced gasoline vapor from the GDF storage tank into the tanker compartment of the delivery vehicle unloading gasoline. Some elements of Connecticut's Stage I vapor recovery program are contained in RCSA section 22a-174-30 and others are in RCSA section 22a-174-20(b). Since the Stage I vapor recovery program must be retained as an ozone control program under the Clean Air Act, the proposal moves and consolidates those requirements to new RCSA section 22a-174-30a (sections 2 & 3). New RCSA section 22a-174-30a is drafted to be consistent with the federal requirements for controlling air emissions at GDFs (*see* 40 CFR 63 Subpart CCCCC) and Public Act No. 13-120. The only requirement new to a GDF owner, which is not a requirement of 40 CFR 63 Subpart CCCCC or Public Act No. 13-120, is the requirement to use a California Air Resource Board-approved pressure/vacuum vent valve upon valve replacement.

¹ Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*.
<http://www.cga.ct.gov/2013/ACT/pa/pdf/2013PA-00120-R00HB-06534-PA.pdf>.

The proposal also revises RCSA section 22a-174-20(a)(7) to correct and clarify the requirements for the external surfaces of aboveground storage tanks containing volatile organic compounds (section 1).

Attachment 3

Final Text of the Proposal, Based on Recommendations in the Hearing Officer's Report

Section 1. Subdivision (7) of subsection (a) of section 22a-174-20 of the Regulations of Connecticut State Agencies is amended to read as follows:

(7) The external surfaces of any storage tank containing VOCs with a vapor pressure of 0.75 pounds per square inch or greater under standard conditions that has a maximum capacity of 2,000 gallons (7,570 liters) or greater and is exposed to the rays of the sun shall be either mill-finished aluminum or painted and maintained white upon the next painting of the tank[,] or [upon being returned to service after being out of service for the first time after the effective date of this subsection] by March 7, 2024, whichever is sooner, [and no less than 10 years after the effective date of this subsection, except the] or upon being returned to service after being out of service. The requirement to use mill-finished aluminum or white paint shall not apply to words and logograms applied to the external surface of the storage tank for purposes of identification provided such symbols do not cover more than 20 percent of the external surface area of the tank's sides and top or more than 200 square feet (18.6 square meters), whichever is less.

Sec 2. Subdivisions (6) through (16) of subsection (b) of section 22a-174-20 of the Regulations of Connecticut State Agencies are amended to read as follows:

(6) [By December 31, 1982, any person who owns or operates any dispensing facility with a stationary storage tank for gasoline having a capacity of more than two thousand (2,000) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period shall install at each stationary storage tank an approved control system. The applicability of this subdivision shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(7) [After December 31, 1982, no person shall install any stationary storage tank for gasoline with a capacity of more than two hundred fifty (250) gallons and a throughput of ten thousand (10,000) gallons or more per thirty (30) day period unless the tank has an approved control system. The throughput of a loading facility shall be based upon a thirty day rolling average and once a loading facility exceeds this limit, the requirements of this subdivision shall always apply.] Reserved.

(8) [Effective May 31, 1983, no person shall transfer or allow the transfer of gasoline from a delivery vehicle to a stationary storage tank subject to the provisions of subdivisions (6) or (7) of this subsection unless:

- (A) the transfer is made through a properly maintained and operated approved control system which is in good working order, connected and operating; and
- (B) there are no leaks in pressure/vacuum relief valves and hatch covers of the delivery vehicle, nor in the truck tanks, storage tank or associated vapor and liquid lines during loading or unloading.] Reserved.

(9) [No person shall dispense gasoline to a stationary storage tank having an approved control system in such a manner as to impair the collection efficiency of the control system.] Reserved.

- (10) The owner or operator of a delivery vehicle shall [ensure that]:
- (A) Design, operate and maintain the delivery vehicle [is designed and maintained] to be vapor-tight at all times;
 - (B) Keep [the] all hatches [are] on the delivery vehicle closed and securely fastened at all times during loading and unloading operations;
 - (C) Set the pressure relief valves [are set] to release at no less than 0.7 pounds per square inch; [and]
 - (D) Refill the vapor laden delivery vehicle [is refilled] only at facilities which meet the requirements of subdivisions (2) or (5) of this subsection[.];
 - (E) Properly connect all hoses in the vapor balance system prior to loading and unloading;
 - (F) Maintain all vapor return hoses, couplers and adapters used in gasoline delivery to be vapor-tight;
 - (G) Ensure all delivery vehicle vapor return equipment is compatible in size and forms a vapor-tight connection with the vapor balance equipment on the dispensing facility storage tank;
 - (H) Dispense gasoline to a stationary storage tank having an approved control system in a manner that does not interfere with the collection efficiency of the control system;
 - (I) Load and unload in a manner that does not cause the delivery vehicle tank to be subject to a pressure in excess of 18 inches of water or a vacuum in excess of 6 inches of water; and
 - (J) Not transfer or allow the transfer of gasoline from a delivery vehicle to a dispensing facility stationary storage tank if there are leaks in pressure/vacuum relief valves or hatch covers of the delivery vehicle, in the truck tanks or in associated vapor and liquid lines.

(11) [The Commissioner may provide an exemption to the provisions of subdivisions (5) or (6) of this subsection for economic or technological impracticability. Any exemption granted under this subdivision shall require the approval of the Administrator.] Reserved.

(12) Any owner or operator of a delivery vehicle that receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies [or any loading facility subject to subdivision (5) of this subsection] shall not cause or permit [a] such delivery vehicle to load or unload gasoline unless:

- (A) [such] The owner or operator tests the tank on such delivery vehicle once every twelve (12) months in accordance with Method 27 as set forth in Appendix A of Title 40 [Code of Federal Regulations Part] CFR 60 or another manner accepted by the Administrator and approved by the Commissioner in accordance with section 22a-174-5 of the Regulations of Connecticut State Agencies;
- (B) [Repealed;

- (C) during] During the test specified in subparagraph (A) of this subdivision, the tank sustains a pressure change of no more than three (3) inches of water in five (5) minutes when pressurized to a gauge pressure of eighteen (18) inches of water or when evacuated to a gauge pressure of six (6) inches of water; [and]
- [(D)](C) [the] The delivery vehicle displays a marking near the U.S. Department of Transportation markings required by Title 49 [of the Code of Federal Regulations Section] CFR 177.824 which shows the initials “DEEP” or “DEP” and the date of the last test or comparable markings as required by either the Connecticut Department of Transportation or the Connecticut Department of Motor Vehicles[.]; and
- (D) Records of all tests performed under this subdivision shall be maintained for a minimum of five (5) years and made available to the Commissioner within three (3) business days after the Commissioner requests such records.
- (13) The owner or operator of any delivery vehicle [which] that fails to meet the requirements of [subdivisions] subdivision (12) [or (14)] of this subsection shall repair and retest such vehicle within fifteen (15) days or take such vehicle out of service. Prior to returning such vehicle to service, the owner or operator shall repair and retest the vehicle.
- (14) Any person who performs a test required by subdivision (12) or (13) of this subsection shall:
- (A) notify the Department's [Air Compliance Unit] Bureau of Air Management, Field Operations Section of the time and location of the test at least forty-eight (48) hours in advance[; and
- (B) submit a copy of the test report to the Commissioner within ten (10) days after performing a test].
- (15) [The owner or operator of any delivery vehicle subject to the provisions of subdivision (12) of this subsection shall ensure that:
- (A) during loading and unloading operations the tank is not subject to a pressure in excess of eighteen (18) inches of water, nor a vacuum in excess of six (6) inches of water;
- (B) during loading and unloading operations there are no visible liquid leaks and there is never a reading equal to or greater than the Lower Explosive Limit (LEL, measured as propane) at one (1) inch from any source of potential leaks as detected by a combustible gas detector using the test procedure described in Appendix B to “Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems” (EPA-450/2-78-051); and
- (C) records of all tests performed under subdivision (12) of this subsection are maintained for a minimum of five (5) years.] The Commissioner may test a delivery vehicle during loading and unloading operations to evaluate its vapor-tightness by measuring the vapor concentration at a distance of one inch from the source with a combustible gas detector, calibrated with propane using the test procedure described in CARB TP-204.3, *Determination of Leaks*. Equipment is

vapor-tight when a measured vapor concentration is less than 14,000 parts per million.

(16) The owner or operator of any loading facility[, dispensing facility] or delivery vehicle subject to the provisions of this subsection shall:

(A) [within six (6) months of the effective date of this subdivision, develop] Develop a written operation and maintenance (O&M) plan for any equipment used to load or unload gasoline;

(B) [within twelve (12) months of the effective date of this subdivision, develop] Develop a formal training program implementing the O&M plan for any person who receives gasoline from a loading facility described in subdivisions (2) or (5) of this subsection or delivers gasoline to a dispensing facility subject to the provisions of [subdivisions (6) or (7) of this subsection] section 22a-174-30a of the Regulations of Connecticut State Agencies or any loading facility subject to subdivision (5) of this subsection;

(C) Maintain a copy of the O&M plan and training program materials at the subject facility; and

[(C)] (D) [make and keep] Maintain monthly records demonstrating implementation of the O&M plan, including records of persons completing the training program required by subparagraph (B) of the subdivision, at the subject facility[; and]. All such records shall be:

(i) Made available to the Commissioner to inspect and copy upon request, and

(ii) Maintained for five (5) years from the date such record is created.

[(D)] maintain such records at the subject facility for a period of five [(5)] years, and provide such records to the commissioner upon request.]

Sec. 3. The Regulations of Connecticut State Agencies are amended by adding section 22a-174-30a as follows:

(NEW)

Section 22a-174-30a. Stage I Vapor Recovery.

(a) **Definitions.** For the purposes of this section, the definitions provided in this subsection shall apply. Terms used in this section that are not defined in this subsection are as defined in section 22a-174-1 of the Regulations of Connecticut State Agencies.

(1) “CARB” means the State of California Air Resources Board;

(2) “CARB-approved” means a Stage I vapor recovery system or system component that is or has been tested and approved by CARB as an individual component or as part of an approved system or that is or has been tested and approved by another state using testing methods approved by CARB;

- (3) “Construct” means to install or replace all storage tanks with a capacity greater than 250 gallons, the product piping and the vent piping at a GDF during a single project;
- (4) “Delivery elbow” means a quick connect/disconnect type coupler that joins a hose from a delivery vehicle to a GDF’s storage tank riser pipe adaptor or coupler;
- (5) “Delivery vehicle” means a tank truck, tank-equipped trailer, railroad tank car, or other mobile source equipped with a storage tank used for the transportation of gasoline from a source of supply to any stationary storage tank;
- (6) “Gasoline” means any petroleum distillate or petroleum distillate and alcohol blend commercially known or sold as “gasoline” and commonly used as an internal combustion engine fuel;
- (7) “Gasoline dispensing facility” or “GDF” means any site where gasoline is transferred to motor vehicles from a stationary storage tank with a capacity of 250 gallons or more;
- (8) “Modified” means the addition, alteration, replacement or retrofit of a gasoline storage tank located at a GDF or any component fixed to such gasoline storage tank. Components of a gasoline storage tank include, but are not limited to, piping that contains gasoline or gasoline vapors and containments located over or on the gasoline storage tank;
- (9) “Stage I vapor recovery system” means a combination of pipes and hoses that create a closed system between the vapor spaces of an unloading delivery vehicle and a receiving GDF storage tank such that vapors displaced from the GDF storage tank are transferred to the delivery vehicle tank;
- (10) “Throughput” means the number of gallons of gasoline delivered into motor vehicles at a GDF over a specified period of time;
- (11) “Two-point Stage I vapor recovery system” means a GDF storage tank possessing an entry port for a gasoline fill pipe and a separate exit port for a vapor-return connection; and
- (12) "Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.

(b) Applicability.

- (1) This section applies to the owner or operator of any GDF that has a monthly throughput of 10,000 gallons or more on or after July 1, 2015. If a monthly throughput of 10,000 gallons is exceeded, the requirements of this section shall thereafter apply.
- (2) Monthly throughput shall be calculated by adding the volume of gasoline dispensed at the GDF during the current day with the volume of gasoline dispensed at the GDF during the previous 364 days, and dividing that sum by 12. For any GDF constructed after July 1, 2014, the initial calculation of monthly throughput shall be performed on or after 365 days after the date the GDF starts dispensing gasoline to motor vehicles.

- (3) For a GDF with multiple storage tanks, the requirements of this section apply only to a storage tank with a capacity of 250 gallons or greater.
 - (4) The owner or operator of a GDF that does not meet the monthly throughput requirements of subdivision (1) of this subsection shall maintain a chronological register of daily throughput of gasoline to demonstrate that this section does not apply. Such records shall be maintained for five (5) years from the date of creation and be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.
- (c) Requirements.**
- (1) No owner or operator of a GDF shall transfer or allow the transfer of gasoline between a delivery vehicle and a GDF stationary storage tank unless such stationary storage tank is equipped with a Stage I vapor recovery system that includes:
 - (A) A CARB-approved fill adapter; and
 - (B) A pressure/vacuum vent valve on each GDF storage tank vent pipe.
 - (2) Any pressure/vacuum vent valve installed on and after July 1, 2015 shall be a CARB-approved pressure/vacuum vent valve.
 - (3) The pressure specifications for any pressure/vacuum vent valve shall be as follows:
 - (A) For any pressure/vacuum vent valve installed prior to July 1, 2015:
 - (i) A positive pressure setting of:
 - (I) 3.0 inches of water, plus or minus 0.5 inch, or
 - (II) 2.5 to 6.0 inches of water, and
 - (ii) A vacuum setting of 8.0 inches of water, plus or minus 2.0 inches; and
 - (B) For any pressure/vacuum vent valve installed on and after July 1, 2015:
 - (i) A positive pressure setting of 2.5 to 6.0 inches of water,
 - (ii) A negative pressure setting of 6.0 to 10.0 inches of water, and
 - (iii) The total leak rate of all pressure/vacuum vent valves at an affected facility, including connections, shall not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water.
 - (4) Except as provided in subdivision (5) of this subsection, a GDF storage tank shall be equipped with a two-point Stage I vapor recovery system. The vapor exit port of the two-point Stage I vapor recovery system shall be designed and maintained to seal in a manner

that will prevent the discharge of gasoline vapors to the atmosphere when the vapor return hose is disconnected.

- (5) An owner or operator of any GDF storage tank that does not have an available port to install a two-point Stage I vapor recovery system shall install a two-point Stage I vapor recovery system when the GDF storage tank is replaced or when the product in the tank is switched from any other fuel to gasoline.
- (6) In addition to the requirements of subdivisions (1) through (5) of this subsection, an owner or operator of any GDF that has a monthly throughput of 100,000 gallons or more shall install, operate and maintain a Stage I vapor recovery system that meets the requirements of subparagraphs (A) through (F) of this subdivision. If a GDF exceeds a monthly throughput of 100,000 gallons, the requirements of this subdivision shall always apply.
- (A) All vapor line connections on the GDF storage tank shall be equipped with closures that seal upon disconnect;
- (B) The Stage I vapor control system shall be designed such that the pressure in the delivery vehicle tank does not exceed 18 inches water pressure or 5.9 inches water vacuum during product transfer;
- (C) The vapor recovery and product adaptors and the method of connection with the delivery elbow shall be designed to prevent the over-tightening or loosening of fittings during normal delivery operations;
- (D) If a gauge well is separate from the fill tube, the gauge well shall be provided with a submerged drop tube that extends the same distance from the bottom of the storage tank as the fill pipe;
- (E) Liquid fill connections and vapor couplings shall be equipped with vapor-tight caps; and
- (F) The Stage I vapor recovery system shall be capable of meeting the static pressure performance requirement of the following equation when pressure decay testing is performed as required by subsection (d) of this section:

$$P_f = 2e^{-500.887/v}$$

Where:

P_f = Minimum allowable final pressure, inches of water

v = Total ullage affected by the test, gallons

e = Dimensionless constant equal to approximately 2.718.

(d) Testing.

- (1) The owner or operator of any GDF shall conduct each of the following tests at least once per calendar year:

- (A) For every pressure/vacuum vent valve, a pressure/vacuum vent valve test as specified in subdivision (4) of this subsection;
 - (B) A pressure decay test as specified in subdivision (5) of this subsection; and
 - (C) A vapor-space tie-in test as specified in subdivision (7) of this subsection.
- (2) The owner or operator of any GDF constructed on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of initial operation.
- (3) The owner or operator of any GDF modified on and after July 1, 2015 shall conduct the tests identified in subdivision (1) of this subsection within sixty (60) days of completion of the modification.
- (4) Pressure/vacuum vent valve tests shall be conducted according to the current version of CARB TP-201.1E, *Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
- (5) Pressure decay tests shall be conducted according to the current version of CARB TP-201.3, *Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities*, as may be revised from time to time, or another test method approved by the Commissioner and the Administrator.
- (6) The owner or operator of any GDF subject to 40 CFR 63.11120 may use the test methods specified in 40 CFR 63.11120 in lieu of the method specified in subdivision (4) or subdivision (5) of this subsection.
- (7) Vapor-space tie-in tests shall be conducted according to the current version of CARB TP-201.3C, *Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)*, as may be revised from time to time, or another method test approved by the Commissioner and the Administrator.
- (8) The owner or operator of any GDF who has installed a pressure management or vapor control device on a storage tank with a capacity of 250 gallons or greater, other than a device that is required to be installed and tested by this section, shall test such device annually by a method approved by the commissioner. At least sixty (60) days prior to conducting an annual test, the owner or operator shall submit a test protocol for review and approval on a form provided by the commissioner.
- (9) Any owner or operator shall:
- (A) Notify the Department's Bureau of Air Management, Field Operations Section in writing of the time and location of a test required by this subsection at least seven (7) business days in advance; and
 - (B) Submit a copy of the test report on a form provided by the Department to the Department's Bureau of Air Management, Field Operations Section within ten (10) days after performing a test required by this subsection.

(10) If an owner or operator fails any test required by this subsection, the owner or operator shall take corrective actions and retest no later than sixty (60) days after failing the test.

(e) Record keeping.

(1) Any owner or operator of a GDF shall maintain the following records:

- (A) All licenses, as that term is defined in section 4-166 of the Connecticut General Statutes, to construct or operate the GDF or to construct or operate a specific system at the GDF;
- (B) All records and results of tests performed pursuant to subsection (d) of this section, including the date of the testing and the names, addresses, and phone numbers of the persons who performed the tests;
- (C) A record of any maintenance or repair conducted on any part of the Stage I vapor recovery system, including a description of the maintenance or repair performed, identification of any part repaired or replaced on such Stage I vapor recovery system, the dates the maintenance or repair was performed, and a general description of the location of any part repaired or replaced;
- (D) A chronological file of all inspection reports issued by a representative of the Commissioner or the Administrator for inspections performed at the GDF;
- (E) A chronological file of all compliance records, including orders, warnings and notices of violations, issued by a representative of the Commissioner or the Administrator; and
- (F) A chronological register of daily throughput of gasoline.

(2) In addition to the applicable records required by subdivision (1) of this subsection, any owner or operator of a GDF constructed after July 1, 2014 shall maintain records of the dates of the construction and the date gasoline was first dispensed to a motor vehicle.

(3) Records required by this subsection shall be made available to the Commissioner or the Administrator upon request. An owner or operator shall make records available to the Commissioner no later than three (3) business days after receiving such a request.

(4) Records shall be maintained for five (5) years from the date of creation.

(5) An owner or operator shall display in a conspicuous location at the GDF the address at which the records required by subdivision (1) of this subsection are maintained.

Sec. 4. As of July 1, 2015, section 22a-174-30 of the Regulations of Connecticut State Agencies is repealed.

Statement of purpose: The primary purpose of this proposal is to remove Stage II vapor recovery requirements from the Regulations of Connecticut State Agencies (RCSA) so the regulations reflect the state's vapor recovery program for gasoline dispensing facilities (GDFs)

as set out in section 22a-174e of the Connecticut General Statutes (CGS). Stage II vapor recovery systems control vapors during the refueling of vehicles by capturing the gasoline vapors displaced from the vehicles' gas tank and diverting the vapors to the storage tank at the GDF. Connecticut's Stage II vapor recovery program for GDFs was authorized by CGS section 22a-174e, as that section was in effect prior to June 18, 2013. In the 2013 legislative session, CGS section 22a-174e was revised by Public Act No. 13-120.¹ While former CGS section 22a-174e required installation of Stage II vapor recovery equipment at GDFs, Public Act No. 13-120 mandates the decommissioning of existing Stage II vapor recovery equipment and prohibits the installation of new Stage II vapor recovery equipment at GDFs. RCSA section 22a-174-30 was adopted under the authority of CGS section 22a-174e in 1992 and sets out the details of Connecticut's Stage II vapor recovery program. This proposal repeals RCSA section 22a-174-30 (section 4).

Stage I vapor recovery systems control vapors during the transfer of gasoline from a delivery vehicle to the storage tank at a GDF by diverting the displaced gasoline vapor from the GDF storage tank into the tanker compartment of the delivery vehicle unloading gasoline. Some elements of Connecticut's Stage I vapor recovery program are contained in RCSA section 22a-174-30 and others are in RCSA section 22a-174-20(b). Since the Stage I vapor recovery program must be retained as an ozone control program under the Clean Air Act, the proposal moves and consolidates those requirements to new RCSA section 22a-174-30a (sections 2 & 3). New RCSA section 22a-174-30a is drafted to be consistent with the federal requirements for controlling air emissions at GDFs (*see* 40 CFR 63 Subpart CCCCCC) and Public Act No. 13-120. The only requirement new to a GDF owner, which is not a requirement of 40 CFR 63 Subpart CCCCCC or Public Act No. 13-120, is the requirement to use a California Air Resource Board-approved pressure/vacuum vent valve upon valve replacement.

The proposal also revises RCSA section 22a-174-20(a)(7) to correct and clarify the requirements for the external surfaces of aboveground storage tanks containing volatile organic compounds (section 1).

1 Public Act No. 13-120, *An Act Concerning Gasoline Vapor Recovery Systems*.
<http://www.cga.ct.gov/2013/ACT/pa/pdf/2013PA-00120-R00HB-06534-PA.pdf>.

Attachment G

The Connecticut General Assembly

Legislative Commissioners' Office

Edwin J. Maley, Jr.
Commissioner
William A. Hamzy
Commissioner

Larry G. J. Shapiro
Director



Legislative Office Building
Suite 5500
Hartford, Connecticut
06106-1591
(860) 240-8410
fax (860) 240-8414
e-mail: lco@cga.ct.gov

Memorandum

To: Legislative Regulation Review Committee
From: Legislative Commissioners' Office
Committee Meeting Date: June 23, 2015

Regulation No:	2015-15
Agency:	Department of Energy and Environmental Protection
Subject Matter:	Control of Volatile Organic Compound Emissions During the Transfer and Dispensing of Gasoline
Statutory Authority: (copy attached)	22a-174, 22a-174e

	Yes or No
Mandatory	Y
Federal Requirement	Y
Permissive	N

For the Committee's Information:

Substantive Concerns:

1. On page 1, in section 22a-174-20(a)(7), the amended language makes it unclear whether the requirement that the external surface be either mill-finished aluminum or painted and maintained white is to be complied with upon the earlier of three events: (1) Upon the next painting of the tank, (2) March 7, 2024, or (3) upon being returned to service after being out of service, or whether such requirement applies upon the earlier of two events: (1) Upon the next painting of the tank, or (2) March 7, 2024 and always after being returned to

service after being out of service. This provision should be rewritten to make the timing for this requirement clear.

2. On page 2, in section 22a-174-20(b)(10)(A), the revised language implies that the owner or operator of a delivery vehicle is also responsible for the design of such vehicle by requiring such owner or operator to "*design*...the delivery vehicle to be vapor-tight at all times". Previously, this section required such owner or operator to *ensure* that such vehicle is "*designed to*...be vapor-tight at all times". If the owner or operator did not actually design such vehicle, it is unclear how such person could comply with this new requirement. Conversely, an owner or operator could *ensure* that such vehicle is *designed to* be vapor-tight at all times by conducting a review of the specifications for such vehicle.

Technical Corrections:

1. On page 3, in section 22a-174-20(b)(12)(D), "from the date of such tests" should be inserted after "years" and "shall be" should be "are", for clarity.

2. On page 3, throughout section 22a-174-20(b)(14), "or retest" should be inserted after "test", for accuracy.

3. On page 5, in section 22a-174-30a(a)(8), ". Components of a gasoline storage tank include, but are not limited to," should be ", including, but not limited to," for proper form.

4. On page 6, in section 22a-174-30a(b)(1), "monthly throughput of 10,000 gallons is exceeded," should be "GDF ever exceeds a monthly throughput of 10,000 gallons," for clarity and consistency.

5. On page 6, in the sixth line of section 22a-174-30(b)(4), "Commissioner" should be "Commissioner or the Administrator", for consistency.

6. On page 7, in the first line of section 22a-174-30a(c)(6), "(1) through (5)" should be "(1) to (5), inclusive," for proper form, in the fourth line of said section, "exceeds" should be "ever exceeds" for clarity and consistency, and in the sixth line of said section, "shall always" should be "shall thereafter", for clarity and consistency.

7. On page 9, in section 22a-174-30a(d)(9) and (10), "of any GDF" should be inserted after "owner or operator", for consistency.

8. On page 9, in section 22a-174-30a(e)(1)(A), "that term is" should be deleted as it unnecessary.

9. On page 10, in section 22a-174-30a(e)(1)(F), "of gasoline" should be deleted as it is unnecessary.

10. On page 10, in the third line of section 22a-174-30(e)(3), "Commissioner" should be "Commissioner or the Administrator", for consistency.

11. On page 10, in section 4, the text of said section should not be in bold type, for proper form and conforming changes to the Regulations of Connecticut State Agencies need to be made in the following sections in order to eliminate the reference to section 22a-174-30 which is being repealed: 22a-174-3a(a)(2)(B)(v), 22a-174-20ee and 22a-174-32(b)(3)(E)(ii).

Recommendation:

<p>Approval in whole with technical corrections with deletions with substitute pages Disapproval in whole or in part X Rejection without prejudice</p>

Reviewed by: Bradford M. Towson / William F. O'Shea

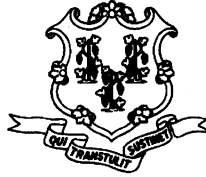
Date: June 11, 2015

The Connecticut General Assembly

Legislative Commissioners' Office

Edwin J. Maley, Jr.
Commissioner
William A. Hamzy
Commissioner

Larry G. J. Shapiro
Director



Legislative Office Building
Suite 5500
Hartford, Connecticut
06106-1591
(860) 240-8410
fax (860) 240-8414
e-mail: lco@cga.ct.gov

Memorandum

To: Legislative Regulation Review Committee
From: Legislative Commissioners' Office
Committee Meeting Date: June 23, 2015

Regulation No:	2015-15
Agency:	Department of Energy and Environmental Protection
Subject Matter:	Control of Volatile Organic Compound Emissions During the Transfer and Dispensing of Gasoline
Statutory Authority: (copy attached)	22a-174, 22a-174e

	Yes or No
Mandatory	Y
Federal Requirement	Y
Permissive	N

For the Committee's Information:

On June 16, 2015, the department submitted the following substitute pages: 1 to 7, inclusive, and 9 and 10. This report is based, in part, on those substitute pages.

Substantive Concerns:

Technical Corrections:

1. On page 7, in the fifth line of section 22a-174-30a(c)(6), "(A) through (F)" should be "(A) to (F), inclusive," for proper form.

2. On page 10, in section 4, conforming changes to the Regulations of Connecticut State Agencies need to be made in the following sections in order to eliminate the reference to section 22a-174-30 which is being repealed: 22a-174-3a(a)(2)(B)(v), 22a-174-20ee and 22a-174-32(b)(3)(E)(ii).

Recommendation:

<input checked="" type="checkbox"/>	Approval in whole
<input checked="" type="checkbox"/>	with technical corrections with deletions
<input checked="" type="checkbox"/>	with substitute pages
	Disapproval in whole or in part
	Rejection without prejudice

Reviewed by: Bradford M. Towson / William F. O'Shea

Date: June 17, 2015

Sec. 22a-174. (Formerly Sec. 19-508). Powers of the commissioner. Regulations. Fees. Exemptions. General permits. Appeal of commissioner's action re permit applications. (a) The commissioner, in the manner provided in subdivision (1) of section 22a-6, shall have the power to formulate, adopt, amend and repeal regulations to control and prohibit air pollution throughout the state or in such areas of the state as are affected thereby, which regulations shall be consistent with the federal Air Pollution Control Act and which qualify the state and its municipalities for available federal grants. Any person heard at the public hearing on any such regulation shall be given written notice of the determination of the commissioner.

(b) The commissioner shall have the power to (1) enter into contracts with technical consultants, including, but not limited to, nonprofit corporations created for the purpose of facilitating the state's implementation of multistate air pollution control programs, for special studies, advice and assistance; to consult with and advise and exchange information with other departments or agencies of the state; and (2) serve on the board of directors of a nonprofit corporation, including, but not limited to, a nonprofit corporation created for the purpose of facilitating the state's implementation of multistate air pollution control programs.

(c) The commissioner shall have the power, in accordance with regulations adopted by him, (1) to require that a person, before undertaking the construction, installation, enlargement or establishment of a new air contaminant source specified in the regulations adopted under subsection (a) of this section, submit to him plans, specifications and such information as he deems reasonably necessary relating to the construction, installation, enlargement, or establishment of such new air contaminant source; (2) to issue a permit approving such plans and specifications and permitting the construction, installation, enlargement or establishment of the new air contaminant source in accordance with such plans, or to issue an order requiring that such plans and specifications be modified as a condition to his approving them and issuing a permit allowing such construction, installation, enlargement or establishment in accordance therewith, or to issue an order rejecting such plans and specifications and prohibiting construction, installation, enlargement or establishment of a new air contaminant source in accordance with the plans and specifications submitted; (3) to require periodic inspection and maintenance of combustion equipment and other sources of air pollution; (4) to require any person to maintain such records relating to air pollution or to the operation of facilities designed to abate air pollution as he deems necessary to carry out the provisions of this chapter and section 14-164c; (5) to require that a person in control of an air contaminant source specified in the regulations adopted under subsection (a), obtain a permit to operate such source if the source (A) is subject to any regulations adopted by the commissioner concerning high risk hazardous air pollutants, (B) burns waste oil, (C) is allowed by the

commissioner, pursuant to regulations adopted under subsection (a), to exceed emission limits for sulfur compounds, (D) is issued an order pursuant to section 22a-178, or (E) violates any provision of this chapter, or any regulation, order or permit adopted or issued thereunder; (6) to require that a person in control of an air contaminant source who is not required to obtain a permit pursuant to this subsection register with him and provide such information as he deems necessary to maintain his inventory of air pollution sources and the commissioner may require renewal of such registration at intervals he deems necessary to maintain such inventory; (7) to require a permit for any source regulated under the federal Clean Air Act Amendments of 1990, P.L. 101-549; (8) to refuse to issue a permit if the Environmental Protection Agency objects to its issuance in a timely manner under Title V of the federal Clean Air Act Amendments of 1990; and (9) notwithstanding any regulation adopted under this chapter, to require that any source permitted under Title V of the federal Clean Air Act Amendments of 1990 shall comply with all applicable standards set forth in the Code of Federal Regulations, Title 40, Parts 51, 52, 59, 60, 61, 63, 68, 70, 72 to 78, inclusive, and 82, as amended from time to time.

(d) The commissioner shall have all incidental powers necessary to carry out the purposes of this chapter and section 14-164c.

(e) As used in this subsection, "contiguous" means abutting or adjoining without consideration of the actual or projected existence of roadways, walkways, plazas, parks or other minor intervening features; "indirect source" means any building, structure, facility, installation or combination thereof, that has or leads to associated activity as a result of which any air pollutant is or may be emitted. The commissioner shall not require the submission of plans and specifications under indirect source regulations adopted pursuant to subdivisions (1) and (2) of subsection (c) of this section for proposed construction to be undertaken within a redevelopment area or urban renewal project, as defined in chapter 130, provided (1) the proposed construction is pursuant to a plan for such redevelopment area or urban renewal project adopted pursuant to section 8-127 prior to October 1, 1974, or to a modification of such plan, (2) the proposed construction is part of a contiguous, single purpose or multipurpose development or developments and (3) site clearance or construction had commenced on a portion of the site of such development or developments prior to October 1, 1974, nor shall the commissioner issue any order pursuant to subdivision (1) of subsection (c) of this section pertaining to the enforcement of indirect source regulations with respect to such proposed construction within such redevelopment areas and urban renewal projects. In the event that the modification of any such plan after October 1, 1974, would result in the proposed construction generating substantially more motor vehicle traffic than would have been generated prior to such modification, the submission of plans and specifications shall be required for such proposed modification. The commissioner shall not require the renewal of an indirect source operating permit

issued in accordance with subsection (c) of this section unless such indirect source no longer conforms with plans, specifications or other information submitted to said commissioner in accordance with said subsection (c).

(f) The commissioner shall allow the open burning of brush on residential property, provided the burning is conducted by the resident of the property or the agent of the resident and a permit for such burning is obtained from the local open burning official of the municipality in which the property is located, and the open burning of brush in municipal landfills, transfer stations and municipal recycling centers, provided a permit for such burning is obtained from the fire marshal of the municipality where the facility is located, except that no open burning of brush shall occur (1) when national or state ambient air quality standards may be exceeded; (2) where a hazardous health condition might be created; (3) when the forest fire danger in the area is identified by the commissioner as extreme and where woodland or grass land is within one hundred feet of the proposed burn; (4) where there is an advisory from the commissioner of any air pollution episode; (5) where prohibited by an ordinance of the municipality; and (6) in the case of a municipal landfill, when such landfill is within an area designated as a hot spot on the open burning map prepared by the commissioner. A permit for the burning of brush at any municipal landfill, municipal transfer station or municipal recycling center shall be issued no more than six times in any calendar year. The proposed permit to burn brush at any municipal landfill, municipal transfer station or municipal recycling center shall be submitted to the commissioner by the fire marshal, with the approval of the chief elected official of the municipality in which the municipal landfill, municipal transfer station or municipal recycling center is located. The commissioner shall approve or disapprove the fire marshal's proposed permitting of burning of brush at a municipal landfill, municipal transfer station or municipal recycling center within a reasonable time of the filing of such application. The burning of leaves, demolition waste or other solid waste deposited in such landfill shall be prohibited. The burning of nonprocessed wood for campfires and bonfires is not prohibited if the burning is conducted so as not to create a nuisance and in accordance with any restrictions imposed on such burning. Nothing in this subsection or in any regulation adopted pursuant to this subsection shall affect the power of any municipality to regulate or ban the open burning of brush within its boundaries for any purpose. Notwithstanding any other provision of this section, fire breaks for the purpose of controlling forest fires and controlled fires in saltwater marshes to forestall uncontrolled fires are not prohibited. Open burning may be engaged in for any of the following purposes if the open burning official with jurisdiction over the area where the burning will occur issues an open burning permit: Fire-training exercises; eradication or control of insect infestations or disease; agricultural purposes; clearing vegetative debris following a natural disaster; and vegetative management or enhancement of wildlife habitat or ecological sustainability on municipal property or on any privately owned property permanently

dedicated as open space. Open burning for such purposes on state property may be engaged in with the written approval of the commissioner. Local burning officials nominated for the purposes of this subsection shall be nominated only by the chief executive officer of the municipality in which the official will serve and shall be certified by the commissioner. The chief executive officer may revoke the nomination. The commissioner may adopt regulations, in accordance with the provisions of chapter 54, governing open burning and may authorize or prohibit open burning consistent with this section. The regulations may require the payment of an application fee and inspection fee and may establish a certification procedure for local burning officials.

(g) The commissioner shall require, by regulations adopted in accordance with the provisions of chapter 54, the payment of a permit application fee sufficient to cover the reasonable costs of reviewing and acting upon an application for, and monitoring compliance with the terms and conditions of, any state or federal permit, license, order, certificate or approval required pursuant to this section. Any person obtaining a permit, pursuant to said regulations, for the construction or operation of a source of air pollution or for modification to an existing source of air pollution shall submit a permit fee of twice the amount of the fee established by regulations in effect on July 1, 1990. The commissioner shall require the payment of a permit application fee of two hundred dollars.

(h) The commissioner may require, by regulations adopted in accordance with the provisions of chapter 54, payment of a fee by the owner or operator of a source of air pollution, sufficient to cover the reasonable cost of a visual test of an air pollution control device through the use of a dust compound in the detection of leaks in such device, or the monitoring of such test, provided such fee may not exceed the average cost to the department for the conduct or monitoring of such tests plus ten per cent of such average cost. Except as specified in section 22a-27u, all payments received by the commissioner pursuant to this subsection shall be deposited in the General Fund and credited to the appropriations of the Department of Energy and Environmental Protection in accordance with the provisions of section 4-86.

(i) Notwithstanding the provisions of subsections (g) and (h) of this section, no municipality shall be required to pay more than fifty per cent of any fee established by the commissioner pursuant to said subsections.

(j) Fees or increased fees prescribed by this section shall not be applicable to residential property.

(k) (1) The commissioner may issue a general permit with respect to a category of new or existing stationary air pollution sources, except with respect to a source which is already covered by an individual permit, provided the general permit is not inconsistent with the

federal Clean Air Act, as amended in 1990, 42 USC, Sections 7401 et seq., and as it may be further amended from time to time. Any person conducting an activity for which a general permit has been issued shall not be required to obtain an individual permit under this section, except as provided in subdivision (5) of this subsection. The general permit may regulate a category of sources which, whether or not requiring a permit under the federal Clean Air Act, (A) involve the same or substantially similar types of operations or substances, (B) require the same types of pollution control equipment or other operating conditions, standards or limitations, and (C) require the same or similar monitoring, and which, in the opinion of the commissioner, are more appropriately controlled under a general permit than under an individual permit. The general permit may require that any person proposing to conduct any activity under the general permit register such activity, including obtaining approval from the commissioner, before the general permit becomes effective as to such activity, and may include such other conditions as the commissioner deems appropriate, including, but not limited to, management practices and verification and reporting requirements. Any such reports shall be made available to the public by the commissioner. The commissioner shall grant an application for approval under a general permit without repeating the notice and comment procedures provided under subdivision (2) of this subsection, and such a grant shall not be subject to judicial review under subdivision (4) of this subsection. Registrations and applications for approval under the general permit shall be submitted on forms prescribed by the commissioner; application forms concerning activities regulated under the federal Clean Air Act shall require that the applicant provide such information as may be required by that act. The commissioner shall prepare, and annually amend, a list of holders of general permits under this section, which list shall be made available to the public.

(2) Notwithstanding any other procedures in this chapter, any regulations adopted thereunder, and chapter 54, the commissioner may issue a general permit in accordance with the following procedures: (A) The commissioner shall publish in a newspaper, having a substantial circulation in the affected area or areas, notice of (i) intent to issue a general permit, (ii) the right to inspect the proposed general permit, (iii) the opportunity to submit written comments thereon, and (iv) the right to a public hearing if, within the comment period, the commissioner receives a petition signed by at least twenty-five persons provided the notice shall state that the right to a public hearing may be exercised upon request of any person if the permit regulates an activity which is subject to provisions of the federal Clean Air Act; (B) the administrator of the United States Environmental Protection Agency and any states affected by the general permit shall be given notice as may be required by the federal Clean Air Act; (C) the commissioner shall allow a comment period of thirty days following publication of notice under subparagraph (A) of this subdivision during which interested persons may submit written comments concerning the permit to the commissioner; (D) the commissioner shall not issue the general permit until

after the comment period and the public hearing, if one is held; (E) the commissioner shall publish notice of any general permit issued in a newspaper having a substantial circulation in the affected area or areas; and (F) summary suspension may be ordered in accordance with subsection (c) of section 4-182. Any person may request that the commissioner issue, modify, revoke or suspend a general permit in accordance with this subsection.

(3) Any general permit under this subsection shall be issued for a fixed term. A general permit covering an activity regulated under the federal Clean Air Act shall be issued for a term of no more than five years. A general permit covering an activity regulated under the federal Clean Air Act shall contain such additional conditions as may be required by that act.

(4) Notwithstanding any other provision of this chapter and chapter 54, with respect to a general permit concerning activities regulated under the federal Clean Air Act, any person who submitted timely comments thereon may appeal the issuance of such permit to the superior court in accordance with the provisions of section 4-183. Such appeal shall have precedence in the order of trial as provided in section 52-192.

(5) Subsequent to the issuance of a general permit, the commissioner may require a person whose activity is or may be covered by the general permit to apply for and obtain an individual permit pursuant to this chapter if he determines that an individual permit would better protect the land, air and waters of the state from pollution. The commissioner may require an individual permit under this subdivision in cases including, but not limited to, the following: (A) The permittee is not in compliance with the conditions of the general permit; (B) a change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollution applicable to the permitted activity; (C) circumstances have changed since the time the general permit was issued so that the permitted activity is no longer appropriately controlled under the general permit, or a temporary or permanent reduction or elimination of the permitted activity is necessary; or (D) a relevant change has occurred in the applicability of the federal Clean Air Act. In making the determination to require an individual permit, the commissioner may consider the location, character and size of the source and any other relevant factors. The commissioner may require an individual permit under this subdivision only if the person whose activity is covered by the general permit has been notified in writing that an individual permit is required. The notice shall include a brief statement of the reasons for requiring an individual permit, an application form, a statement setting a time for the person to file the application and a statement that the general permit as it applies to such person shall automatically terminate on the effective date of the individual permit. Such person shall forthwith apply for, and use best efforts to obtain, the individual permit. Any person may petition the commissioner to take action under this subdivision.

(6) The commissioner may adopt regulations, in accordance with the provisions of chapter 54, to carry out the purposes of this subsection.

(l) In any proceeding on an application for a permit which is required under 42 USC 7661a, the applicant, and any other person entitled under said section to obtain judicial review of the commissioner's final action on such application may appeal such action in accordance with the provisions of section 4-183.

(m) The commissioner shall not issue a permit for an asphalt batch plant or continuous mix facility under the provisions of this section until July 1, 2004, unless the commissioner determines that the issuance of the permit will result in an improvement of environmental performance of an existing asphalt batch plant or continuous mix plant. The provisions of this section shall apply to any application pending on May 5, 1998. Nothing in this section shall apply to applications for upgrading, replacing, consolidating or otherwise altering the physical plant of an existing facility provided such upgrade, replacement, consolidation or alteration results in an improvement of environmental performance or in reduced total emissions of air pollutants.

Sec. 22a-174e. Decommissioning of stage II vapor recovery systems. Pressure decay test of stage I vapor recovery systems. (a) As used in this section:

(1) "Decommission" means to render inoperable an operational stage II vapor recovery system by (A) permanently disconnecting all above-ground stage II vapor recovery equipment, and (B) sealing all above-ground and below-ground vapor or liquid paths that may release to the ambient air. Decommission does not require removal of below-ground stage II vapor recovery equipment;

(2) "Gasoline dispensing facility" means any site where gasoline is transferred to a motor vehicle from any stationary storage tank with a capacity of two hundred fifty gallons or more;

(3) "Pressure decay test" means an integrity test of the ullage portion of a gasoline storage system, during which such storage system is pressurized, pressure changes are monitored for a specified period of time and the final pressure is compared to an allowable value;

(4) "Stage I vapor recovery system" means a vapor recovery system that prevents the discharge to the ambient air of gasoline vapors while gasoline is transferred between a delivery vehicle and a gasoline dispensing facility; and

(5) "Stage II vapor recovery system" or "stage II vapor recovery equipment" means a vapor recovery system that prevents the discharge to the ambient air of gasoline vapors

displaced during the dispensing of gasoline into a motor vehicle fuel tank.

(b) On or before July 1, 2015, the owner of any gasoline dispensing facility shall decommission any installed stage II vapor recovery equipment in accordance with subsection (c) of this section, notwithstanding any requirements in the regulations of Connecticut state agencies adopted by the Department of Energy and Environmental Protection pertaining to stage II vapor recovery systems. On or after June 18, 2013, no owner of any gasoline dispensing facility shall install a stage II vapor recovery system.

(c) Decommissioning of a stage II vapor recovery system shall: (1) Begin after such owner has notified the commissioner of the intent to decommission; (2) be performed in accordance with Section 14 of the 2009 "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Refueling Sites" of the Petroleum Equipment Institute; and (3) be completed within one hundred days from initiation, unless the Commissioner of Energy and Environmental Protection grants an extension of time for good cause after a request for such extension by the owner of a gasoline dispensing facility. Such notification shall be made at least thirty days prior to decommissioning on a form prescribed by the commissioner.

(d) The owner of any gasoline dispensing facility with a stage I vapor recovery system annually shall perform a pressure decay test of such system. Such owner shall notify the Commissioner of Energy and Environmental Protection at least seven business days prior to a scheduled test on a form prescribed by the commissioner.