BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
VAPOR RECOVERY RULES:	)	**R13-18**
AMENDMENTS TO 35 ILL. ADM.	)	**(Rulemaking - Air)**
CODE PARTS 201, 218, AND 219	)	

NOTICE OF FILING

TO: John Therriault, Assistant Clerk
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Ted Tiberi
ARID Technologies, Inc.
323 S. Hale Street
Wheaton, Illinois 60187

PLEASE TAKE NOTICE that I have today filed with the Office of the Pollution Control Board the PUBLIC COMMENTS OF THE ILLINOIS EPA, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
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DATED: October 11, 2013

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PUBLIC COMMENTS OF THE ILLINOIS EPA

NOW COMES the Illinois Environmental Protection Agency (Illinois EPA), by and through its attorney, and hereby submits its public comments as directed by the Hearing Officer Order entered on September 30, 2013, in the above-captioned rulemaking.

Procedural Background

On March 18, 2013, the Illinois EPA filed a regulatory proposal to amend the Board's vapor recovery rules, which included a Motion for Expedited Review, with the Illinois Pollution Control Board (Board). On April 4, 2013, the Board accepted the Illinois EPA's proposal for hearing, granted the Illinois EPA's Motion for Expedited Review, and adopted the proposed amendments for first notice. The proposed amendments were published in the Illinois Register on May 10, 2013 (37 Ill. Reg. 6028, 6054, and 6083).

The Board held hearings on May 8, 2013, and June 5, 2013. At the conclusion of the second hearing and by Order entered June 17, 2013, the Hearing Officer set a deadline of July 8, 2013, for filing public comments. On July 16, 2013, the Hearing Officer entered an Order re-opening the public comment period solely for the purpose of receiving public comment from the Illinois EPA in response to a public comment filed by the Illinois Petroleum Marketers Association and the Illinois Association of Convenience Stores (collectively, IPMA) on July 8, 2013. The Hearing Officer directed the Illinois EPA to file its public comment by July 31, 2013. The Illinois EPA timely filed its responsive public comment on July 31, 2013.

On September 9, 2013, ARID Technologies, Inc. (ARID) submitted a late public comment with attachments to the Board followed by an Addendum on September 10, 2013 (collectively, PC#4). In its public comment, ARID argued that the removal of Stage II vapor recovery systems will increase refueling emissions and that the U.S. Environmental Protection Agency's (USEPA) Motor Vehicle Emission Simulator (MOVES) modeling program is inappropriate for use in this matter. PC#4 at p. 2. On September 16, 2013, the Illinois EPA filed a Motion to Strike (Mot.) ARID's public comment based on ARID's failure to comply with the Board's filing and service rules, failure to comply with the public comment deadline established by the Hearing Officer, and presenting arguments and comments based on information not contained in the record, all of which risk meeting the January 1, 2014, proposed implementation date. Mot. at p. 2-4. On September 18, 2013, IPMA filed a response (IPMA Resp.) to ARID's public comment urging the Board to disregard it based on the emissions benefit of phasing-out Stage II and the costs to sources (mainly, several thousand retail gasoline dispensing operations) if the rulemaking is delayed. IPMA Resp. at p. 1. On September 20, 2013, ARID filed a response (ARID Resp.) to the Illinois EPA's Motion to Strike arguing again, among other things, that removal of Stage II with sole reliance on on-board refueling vapor recovery (ORVR) will result in an emissions increase. ARID Resp. at p. 2.

On September 23, 2013, ARID filed an additional late public comment with attachments (PC#5) essentially rehashing arguments made in its previous public comment (PC#4). PC#5 at p. 1. The Illinois EPA was never served with PC#5. On September 30, 2013, the Hearing Officer entered an Order (Ord.) allowing ARIDs public comments (PC#4 and PC#5), denying the Illinois EPA's Motion to Strike, and ordering the Illinois EPA to file a public comment responsive to ARID's public comments (PC#4 and PC#5) and the Board's questions relating to

the Stage I registration program by October 11, 2013. Ord. at p. 5-6. Also, the Hearing Officer Order allowed other participants to file responses to ARID's PC#4 and PC#5. Id. at p. 6.

Illinois EPA Response to ARID Technologies, Inc.'s Public Comments (PC#4 and PC#5)

I. Emissions Modeling

ARID's argument that emissions will increase if the Stage II program is removed is both misplaced and based on false assumptions. What ARID seeks to address are Stage I storage tank vent emissions. The Illinois EPA's proposal does not address Stage I storage tank vent emissions. The Illinois EPA is proposing to phase-out the Stage II vapor recovery program due to the incompatibility that exists between Stage II vacuum-assist pumps and ORVR-equipped vehicles and the resulting emissions disbenefit that will begin starting January 2014. ARID seems to propose the continuation of Stage II with ORVR and to require some sort of enhancement to the current system, implying at least that Illinois should require the addition of a vapor processor technology (possibly ARID's) in order to address Stage I storage tank vent emissions. However, these Stage I storage tank emissions are beyond the scope of this proceeding, and have been addressed by the Illinois EPA previously. While emissions from gasoline dispensing operations include spillage, refueling vapor emissions, and diurnal storage tank breathing losses, it is the position of both the Illinois EPA and USEPA that the existence of Stage II has no bearing on spillage or Stage I storage tank emissions. See Exhibit 1 at p. 27. In the Chicago area, storage tank emissions are addressed through the Stage I program (35 Ill. Adm. Code 218.583); and additionally, the requirement to install pressure/vacuum (p/v) relief valves (35 Il. Adm. Code 218.583(a)(3)). For this reason, ARID's argument is misplaced. Furthermore, enhancing or modifying the Stage II program is also beyond the scope of this proceeding as the Illinois EPA is proposing to phase-out the Stage II program, not maintain it.

ARID's primary argument is that removal of Stage II vapor recovery systems with sole reliance on ORVR will increase refueling emissions. PC#4 at p. 2, PC#5 at p. 1. This is simply not true and is based on false assumptions. As part of USEPA's ORVR widespread use rulemaking, USEPA studied whether removing Stage II vapor recovery systems would increase underground storage tank emissions relative to continuing Stage II with ORVR. According to USEPA, for non-Stage II gasoline dispensing operations, ORVR does not increase breathing losses relative to vehicles without ORVR. See Exhibit 2 at p. 10. For balance type Stage II systems, USEPA indicates that if the p/v relief valve is retained, these emissions will be similar for refueling of ORVR and non-ORVR vehicles after the balance system is removed. Id. For vacuum-assist Stage II systems, USEPA indicates breathing/emptying loss emissions will likely decrease with removal of these systems. Id. Further, USEPA indicates that retaining Stage II provides no additional breathing loss emission reductions and the incompatibility excess emissions factor arguably reduces overall efficiency. Id. at 10-11.

This is not the first time that ARID has made the argument that removal of Stage II vapor recovery systems with sole reliance on ORVR will increase refueling emissions. Recently, ARID made this argument during USEPA's ORVR widespread use/Stage II waiver rulemaking. See Exhibit 1 at p. 25-28. In response, USEPA indicated that not only was its methodology for calculating the widespread use date comprehensive and appropriate, but that ARID was targeting Stage I storage tank emissions, not refueling emissions, and that a discussion of the emissions impacts of Stage I storage tank emissions was beyond the scope of its ORVR widespread use/Stage II waiver rulemaking. Exhibit 1 at p. 27-28.

ARID provides various documents and spreadsheets in support of its assertion that emissions will increase with the removal of Stage II. See PC#4, PC#5. ARID's documents and

spreadsheets are based on emissions data from other states and assumptions not applicable in Illinois. ARID's methodology for calculating emissions impacts is unexplained and appears to provide no credit for emission reductions associated with the Stage I program, including the p/v relief valve requirement, or correcting the incompatibility issue through decommissioning Stage II equipment. Therefore, ARID's emissions calculations are based on false assumptions. Through its filings in this matter, the Illinois EPA has clearly demonstrated that phasing-out the Stage II program will remove the incompatibility issue and result in additional emission reduction benefits beginning in January 2014, and increasing in the future as the percentage of ORVR-equipped vehicles grows.

ARID also incorrectly argues that the use of the MOVES model is inappropriate for evaluating refueling emissions. PC#4 at p. 2. The MOVES model is directly applicable to this rulemaking and in evaluating refueling emissions. The MOVES model is USEPA's official motor vehicle emissions model for estimating emissions from all on-road mobile sources, including refueling emissions. See 75 Fed. Reg. 9411, 9412 (March 2, 2010). The MOVES model is appropriate as it allows for inputting state-specific data, including vehicle miles traveled, fuel parameters such as Reid vapor pressure, meteorological data, vehicle population, registration age distribution, Stage II efficiency, etc. USEPA believed that it was appropriate to use the MOVES model in determining the national ORVR widespread use date because it contained information relating to this subject matter and because it expected states to use the model in state implementation plan (SIP) demonstrations, including SIP revisions removing Stage II programs. 77 Fed. Reg. 28772, 28777 (May 16, 2012). USEPA indicated that it used the MOVES model to estimate ORVR vehicle fleet penetration, vehicle miles traveled by ORVR

vehicles, and gallons of gasoline dispensed to ORVR vehicles. 77 Fed. Reg. at 28777. Significantly, ARID's methodology is not approved by USEPA for SIP demonstration purposes.

In addition to ARID's primary arguments, it argues that Illinois EPA's modeling does not account for nonroad emissions. PC#4 at p. 1-2. The Illinois EPA did not include non-road refueling emissions because Stage II was required for the recovery of refueling emissions from motor vehicles (42 U.S.C. 182(b)(3)) and such non-road equipment is not typically refueled at gasoline dispensing operations covered by Stage II requirements. Furthermore, the percentage of gasoline used to refuel such off-road equipment is insignificant at gasoline dispensing operations, and emission losses correspondingly slight.

Additionally, ARID argues that removing the Stage II program will result in an increase in emissions as a result of non-ORVR equipped vehicles refueling at non-Stage II facilities. PC#4 at p. 2. As USEPA has stated, "[t]his is not to suggest that there would not be additional reductions available from non-ORVR vehicles at Stage II GDFs [gasoline dispensing facilities] after the crossover date if Stage II was retained or that there would not be uncontrolled emissions (non-ORVR vehicles at non-Stage II GDFs), but these would be relatively small and decreasing each year" as the percentage of ORVR-equipped vehicles grows. Exhibit 1 at p. 28. Furthermore, the Stage II program was required by the Section 182(b)(3) of the Clean Air Act Amendments of 1990 (CAA) (42 U.S.C. 182(b)(3)) in order to reduce ozone precursor emissions. Ozone is a pollutant that forms downwind of the source of its precursor emissions. In its filings in this matter, the Illinois EPA has demonstrated that the phase-out of the Stage II program will actually reduce ozone-forming emissions, by reducing and eliminating the incompatibility emissions, thereby improving overall regional ozone air quality.

II. Evaluation of the Stage II Program

As stated in the Illinois EPA's initial filing in this matter, as a result of USEPA's determination of the widespread use of ORVR throughout the national motor vehicle fleet and waiver of the CAA Section 182(b)(3) Stage II requirement, subject to USEPA review and approval, states now have the option of removing Stage II programs from their ozone SIPs. 77 Fed. Reg. at 28779. States with Stage II programs which are evaluating this option determine whether or not it is beneficial, in terms of their ozone air quality improvement goals and requirements, to maintain, modify, or remove their Stage II program from their SIP.

The Illinois EPA evaluated various options with respect to the Stage II program, held stakeholder outreach meetings, and determined that due to the demonstrated emissions "disbenefit" that would ensue from maintaining our Stage II program in its current form after Illinois' widespread use crossover date of January 2014, modifications to, or elimination of, the program would need to take place. Under the SIP system, USEPA provides states certain flexibility in determining which of a variety of federally-approved air quality improvement measures a state may choose to implement, allowing states to match these measures to state-specific air quality requirements and goals, as long as the measures chosen fit within federally-approved parameters. The Illinois EPA chose to phase-out the Stage II program as proposed in this rulemaking and as authorized by USEPA. As detailed in the Illinois EPA's initial filing in this matter and further supported during hearings, Illinois EPA determined that phasing-out the Stage II program was environmentally beneficial, technically feasible, and economically reasonable. It is unknown if ARID, or anyone else, may have a system that is capable of achieving greater emissions reductions that might arise at gasoline dispensing operations, whether or not they are equipped with Stage I, p/v relief valves, Stage II, or something else. That

question is entirely irrelevant to this rulemaking. From time to time, the Illinois EPA is offered advice from vendors, legislators, advocacy groups, and the general public as to specific requirements or measures that should be taken to improve the environment in general, and in this instance, air quality at gasoline dispensing operations. Within legislative and regulatory requirements, guidelines, and policies, the Illinois EPA has to choose the best course of action available. The Illinois EPA's proposal is limited to phasing-out the Stage II program, as authorized by USEPA, and as determined by the Illinois EPA to be the best course of action consistent with moving forward to meet our air quality goals.

Illinois EPA Response to Stage I Registration Questions

In his September 30, 2013, Order, the Hearing Officer directed the Illinois EPA to address the following:

> As IEPA maintains that current registration requirements (35 Ill. Adm. Code 218.583(e), 219.583(e)) should be repealed as redundant, please supply citations to other provisions (*e.g.*, Office of the State Fire Marshal regulations) already requiring that regulators be provided with the information called for by the registration requirements, including the information regarding pressure/vacuum (P/V) relief valves for tank vent pipes. *See* 60 Fed. Reg. 5318 (Jan. 27, 1995); 15% ROP Plan Control Measures for VOM Emissions – Part I: Pressure/Vacuum Relief Valves and 7.2 RVP (Amendments to 35 Ill. Adm. Code 201, 211, 218, 219), R94-12 (Sept. 15, 1994). For any information called for by the current registration requirements that is not otherwise required to be reported to regulators, IEPA is directed to explain why it is unnecessary for regulators to be notified of such information.

Ord. at p. 6. As stated by the Illinois EPA in its initial filing, it is proposing to repeal the Stage I registration requirements (35 Ill. Adm. Code 218.583(e) and 219.583(e)) due to overlapping federal gasoline dispensing National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 C.F.R. Part 63, subpart CCCCCC) notification requirements. The notification requirements for this NESHAP may be found at 40 C.F.R. § 63.11124. Information relating to

p/v relief valves is not required to be included in such notifications. The NESHAP requires notice of some, but not all, of the same information requested through the Stage I registrations (35 Ill. Adm. Code 218.583(e) and 219.583(e)). As discussed further below, the Illinois EPA determined that the only information necessary for administering and enforcing its Stage I program is the name and address of the owner/operator, which the NESHAP requires at 40 C.F.R. § 63.11124. Since the Illinois EPA administers and enforces this NESHAP, it receives this information. Also, the Illinois EPA has access to this information through the Office of the State Fire Marshal (OSFM) and the Illinois Department of Agriculture's (IDOA) tracking systems for gasoline dispensing operations (Stage I sources). OSFM regulates underground storage tanks and motor fuel dispensing facilities pursuant to the Gasoline Storage Act (430 ILCS 15) and implementing regulations (41 Ill. Adm. Code Parts 174-177). Under these authorities, OSFM receives and collects various permit applications and registrations/notifications (*e.g.* 430 ILCS 15/2-4; 41 Ill. Adm. Code 175.200, 175.300; 41 Ill. Adm. Code 176.400) identifying owner/operator names and addresses for these facilities and underground storage tanks. IDOA regulates gasoline dispensing operations through the Motor Fuel and Petroleum Standards Act (815 ILCS 370) and the Weights and Measures Act (225 ILCS 470). In order to accomplish the statutory purposes of these acts, IDOA collects gasoline dispensing operation owner/operator names and addresses, including other information, through motor fuel dispenser reporting forms.

With the evolution of existing regulatory programs and the advent of new, related regulatory programs, existing regulatory requirements often become outdated and unnecessary for program implementation. The Stage I registration program is no different. For example, Stage I control requirements did not originally include p/v relief valves. This requirement was

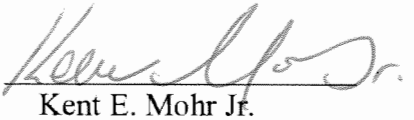
added on later - 1995. At the time it was added, because it was a new requirement, it was deemed important for registrations to include this information. The requirement for p/v relief valves is no longer new - it's almost 20 years old. With the advent of the gasoline dispensing NESHAP, which the Illinois EPA administers and enforces, and due to the Illinois EPA's recent streamlining initiatives *(e.g.* motor vehicle refinishing registration program repeal in R12-24), the duplicative nature of the Illinois EPA's Stage I registration program was evaluated. This evaluation revealed that the only information necessary for administration and enforcement of the Stage I program was the name and address of the owner/operator. Also, it was understood that having two separate, overlapping registration/notification regulatory requirements was burdensome and confusing for Stage I sources. Therefore, since the Illinois EPA already possesses and has access to the necessary information (the name and address of the owner/operator of the Stage I source) through the NESHAP notifications and OSFM and IDOA tracking systems, the Illinois EPA found it was prudent to propose that the Stage I registration program be repealed.

It is important to note that the Illinois EPA is not proposing to amend the Stage I control requirements in this rulemaking. The Stage I control requirements, including the requirement for p/v relief valves and related testing and recordkeeping requirements, remain unchanged in the rules. Furthermore, with the owner/operator name and address information, the Illinois EPA may measure compliance with the Stage I rule and the NESHAP as it deems necessary. Also, it is important to note that there is no federal requirement for a Stage I registration program. This is left to the discretion of the states.

WHEREFORE, the Illinois EPA respectfully submits these comments and requests the Board to proceed expeditiously to second notice.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: 

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DATED: October 11, 2013

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THIS FILING IS SUBMITTED ON RECYCLED PAPER

May 8, 2012

OAR-2010-1076

Determination of Widespread Use of Onboard Refueling Vapor Recovery (ORVR) and Waiver of Stage II Vapor Recovery Requirements

Summary of Public Comments and Responses

U. S. Environmental Protection Agency
OAQPS/Air Quality Policy Division
State and Local Programs Group (C539-03)
Research Triangle Park, North Carolina 27711

May 8, 2012

Disclaimer

This report has been reviewed by the Air Quality Policy Division of the Office of Air Quality Planning and Standards, and EPA, and approved for publication. Mention of trade names or commercial products is not intended to constitute endorsement or recommendation for use.

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Introduction

The Environmental Protection Agency (EPA) proposed criteria for determining widespread use of onboard refueling vapor recovery (ORVR) for control of gasoline emissions during refueling of vehicles at gasoline dispensing facilities (GDFs). This action proposed to establish June 30, 2013, as the date by which the Administrator determined that ORVR for capturing refueling emissions when vehicles are refueled with gasoline is in widespread use. The action also proposed that certain federal statutory requirements for Stage II gasoline vapor recovery at GDFs would be waived as of that date.

During the public comment period for the proposed rule, EPA received comments from 27 entities including: twelve industry representatives; ten states; five air quality management agencies; and, one citizen group. Included in Table 1 below is the list of commenters and the associated Docket ID number for their comments.

Table 1. List of Commenters on Proposed Rule: Criteria for Determining Widespread Use of Onboard Refueling Vapor Recovery and Waiver of Stage II Requirements

Docket ID	Commenter Name
2010-1076-0032	David H. Fialkov, Counsel, Steptoe & Johnson, LLP. Representing multi-signatory parties involved in nearly all retail fuel outlets in the United States.
2010-1076-0034	Phillip E. Russo, CAE, Executive Director, National Association of Fleet Administrators
2010-1076-0035	James N. Goldstene, Executive Officer, California Air Resources Board.
2010-1076-0036	Erin Faessler, Project Development Manager, Vapor Systems Technologies, Inc.
2010-1076-0037	Arthur N. Marin, Executive Director, Northeast States for Coordinated Air Use Management
2010-1076-0038	Kurt J. Weist, Senior Attorney, Citizens for Pennsylvania's Future
2010-1076-0039	William L. Driscoll, Executive Director, Ozone Transport Commission
2010-1076-0040	J. Jared Snyder, Assistant Commissioner, Office of Air Resources, Climate Change & Energy, New York State Department of Environmental Conservation
2010-1076-0041	Edward S. Kubinsky, Jr., Special Projects Manager, Crompco, LLC
2010-1076-0042	Laurel L. Kroack, Chief, Bureau of Air, Illinois Environmental Protection Agency

Table 1. List of Commenters on Proposed Rule: Criteria for Determining Widespread Use of Onboard Refueling Vapor Recovery and Waiver of Stage II Requirements

Docket ID	Commenter Name
2010-1076-0043	Kyra L. Moore, Director, Missouri Department of Natural Resources
2010-1076-0044	Joe Kubsh, Executive Director, Manufacturers of Emission Controls Association
2010-1076-0045	Myra C. Reece, Chief, Bureau of Air Quality, South Carolina Department of Health and Environmental Control
2010-1076-0046	David H. Fialkov, Counsel, Steptoe & Johnson, LLP. Representing multi-signatory parties involved in nearly all retail fuel outlets in the United States.
2010-1076-0047	California Environmental Protection Agency, California Air Resources Board, Vapor Recovery Test Procedures: (TP-201.1E) "Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves" and (TP-201.3) "Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities"
2010-1076-0048	James A. Capp, Chief, Air Protection Branch, Georgia Environmental Protection Division
2010-1076-0049	John Eichberger, Vice President, Government Relations, National Association of Convenience Stores
2010-1076-0050	Mark S. Morgan, Regulatory Counsel, Petroleum Marketers Association of America
2010-1076-0051	R. Timothy Columbus, General Counsel, Society of Independent Gasoline Marketers of America
2010-1076-0052	Robert L. Greco, API Group Director, Downstream & Industry Operations, American Petroleum Institute
2010-1076-0053	Barry R. Wallerstein, D. Env., Executive Director, South Coast Air Quality Management District.
2010-1076-0054	Kevin Tokunaga, Program Manager, Glenn County Air Pollution Control District
2010-1076-0055	Nancy L. Seidman (Massachusetts), Co-Chair and Barry R, Wallerstein (Los Angeles, CA), Co-Chair, Mobile Sources and Fuels Committee, National Association of Clean Air Agencies
2010-1076-0056	DUPLICATED RECORD OF 2010-1076-0042: Laurel L. Kroack,, Chief, Bureau of Air, Illinois Environmental Protection Agency
2010-1076-0057	Jason S. Hicks, CAFM, Transportation and Facilities Department Manager
2010-1076-0058	Sheila C. Holman, Director, Division of Air Quality, North Carolina Department of Environment and Natural Resources

Table 1. List of Commenters on Proposed Rule: Criteria for Determining Widespread Use of Onboard Refueling Vapor Recovery and Waiver of Stage II Requirements

Docket ID	Commenter Name
2010-1076-0059	Ted Tiberi, President & Founder, ARID Technologies, Inc.
2010-1076-0060	Eddy Tabet, PE, President and CEO, Technology Engineering and Construction, Inc.
2010-1076-0061	David Garland, No-Go Nozzle (Comment submitted after close of comment period)

I. Background

This rule will allow Serious and above ozone nonattainment areas that are now required under the federal Clean Air Act (CAA) to have Stage II gasoline vapor recovery equipment on GDFs to remove the requirement after the waiver date. States will have to submit a SIP revision to EPA removing the Stage II requirements and get it approved by EPA in order to take this action. In some cases, states in the Ozone Transport Region (OTR) may have to adopt measures that obtain emissions reductions comparable to those achieved by Stage II to make up for any emissions increases which might arise from removing Stage II incremental to ORVR control. This rule allows states to retain their Stage II requirements if they wish.

EPA regards Stage II vapor recovery system decommissioning to involve equipment replacement and elimination of activities and actions associated with operating Stage II vapor recovery systems. We have estimated the costs to facilities decommissioning Stage II vapor recovery systems to indicate a long term substantial annual savings of over $91 million, nationwide.

Based on our evaluation of the available data and appropriate criteria for determining under CAA section 202(a)(6) that widespread use of ORVR has occurred, EPA proposed a determination of ORVR widespread use and a general waiver of the CAA section 182(b)(3) Stage II requirement effective nationwide, June 30, 2013. Based on further EPA analysis and comments on the proposed rule, ORVR will be deemed in widespread use and the CAA section 182(b)(3) requirement will be waived upon the effective date of the final rule. This would apply to any area that currently requires a Stage II program under CAA section 182(b)(3). Subsequent to the effective waiver date of the CAA section 182(b)(3) Stage II requirement, areas currently implementing SIP-approved Stage II programs, as a result of obligations under the 1-hour or 1997 8-hour ozone NAAQS, would be required to continue implementing these programs until EPA approval of a SIP revision that removes the requirement from the state's ozone implementation plan. Additionally, any nonattainment area classified Serious or above for the first time after approximately December 31, 2009, would not be required to adopt and implement a new Stage II program under CAA section 182(b)(3). This is because such areas, under the

terms of CAA section 182(b)(3), would not be required to implement Stage II programs until 2 and a half years after such classification.

During the public comment period, EPA received comments from 27 entities. In this document, we summarize all of those comments and provide our responses. All comments, information and data submitted by commenters and discussed in this document are available in the Air Docket, Widespread Use of ORVR and Stage II Waiver, Docket ID No. EPA-HQ-OAR-2010-1076.

II. Comments Regarding EPA's Proposed Criteria for Determining ORVR Widespread Use

Comment: Commenters (EPA-HQ-OAR-2010-1076-0034, 0037, 0039, 0044, 0045, 0048, 0049, 0051, 0052, 0054, 0055, 0057, 0058) supported the criteria EPA used in the proposed rule to determine ORVR widespread use on June 13, 2013 for purposes of controlling motor vehicle refueling emissions throughout the motor vehicle fleet in any area that currently requires a Stage II vapor recovery program under CAA section 182(b)(3).

Response: EPA considered two criteria in establishing the widespread use date. These included the date when 75 percent of gasoline would be dispensed to ORVR-equipped vehicles and the date when ORVR and Stage II would get equivalent control of refueling emissions based on analysis using parameters discussed in the NPRM. After considering the public comments received, EPA is determining that ORVR will be in widespread use on the effective date of the final rule.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0037) supported EPA's approach of creating one national date for determining when ORVR widespread use has occurred while providing flexibility for a state to conduct a state-specific analysis to support an alternative date.

Response: EPA's final rule establishes a single national date for determining widespread use of ORVR. Because EPA's final rule provides ORVR to be in widespread use at the time of publication of the notice in the Federal Register, it is no longer necessary for States to conduct separate analysis to establish an earlier date.

Comment: The commenter expressed concerns regarding the 98 percent ORVR overall efficiency used in EPA's analysis for the proposed rule. The commenter was concerned that the EPA's study lacks analysis of critical data elements. The commenter listed specific issues not included in analysis of the ORVR efficiency rating as: (1) a lack of data on high mileage vehicles (>100,000 miles); (2) determining which of the many capture ratings to use with various alternative fuels; (3) determining failures that would not be identified by on-board diagnostic (OBD) systems; and (4) faster implementation of recalls when problems are found. The commenter urged EPA to investigate these issues and develop a more robust monitoring system to gauge ORVR effectiveness, including strategies to address failures of the ORVR system not detected by on board diagnostics (OBD) systems. The commenter was concerned that EPA had overstated the benefits of ORVR without sufficient data to support the continued effectiveness of

ORVR over time. Moreover, the commenter wanted assurances that SIPs and Rate of Progress (ROP) plans use realistic numbers when assessing impacts of the ORVR program.

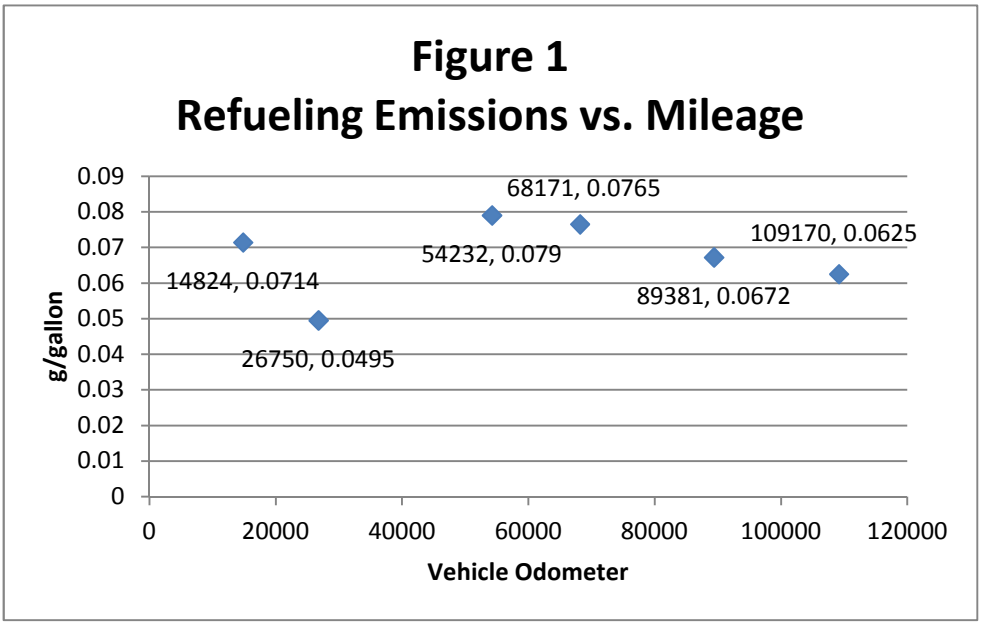
Response: Concerning the 98 percent ORVR efficiency used in EPA's analysis, in the NPRM EPA referenced results of the manufacturer in-use verification program where there were over 1,160 laboratory tests of in-use ORVR-equipped vehicles tested in an as-received condition which led to an in-use efficiency of about 98 percent. The study used vehicles with over 67,000 miles odometer readings.

The data used in the NPRM covered data available through November 2009. Since that analysis was completed an additional 478 data points have become available mostly for model years 2006-2010. As presented below, several conclusions can be drawn from the fuller data set. First, the overall efficiency for the full set of 1,638 test points is still 98 percent, as shown in Table 1. For the 1,638 test vehicles, the weighted average emission rate was 0.068 g/gal which yields an efficiency of 98 percent when compared to the uncontrolled emission rate of 3.32 g/gal expected under these test conditions. The data set used by EPA to draw its conclusions about the effectiveness of ORVR is comprised of 1,638 individual tests covering vehicles from eleven model years. Over 95 percent of these vehicles passed the standards and the average vehicle had an emission level of only about one-third of the level of the emission standard. Contrary to the concerns of the commenter, EPA believes this is a robust data set and that it well supports our conclusions about ORVR efficiency in-use.

Table 2: Measured Refueling Emission Rate by Model Year

Model Year	Average Measured Emission Rate	Number of Test Vehicles
2000	.07	20
2001	.07	75
2002	.08	77
2003	.07	100
2004	.10	283
2005	.07	282
2006	.06	263
2007	.07	171
2008	.05	139
2009	.04	121
2010	.04	107

Second, EPA examined the data to look for trends in changes in capture efficiency as the vehicles accrue mileage. To conduct this analysis EPA calculated average mileage and emission rates in six separate mileage increments. This included 20,000 miles increments between zero and 100,000 miles and all data above 100,000 miles. As can be seen in Figure 1 there does not seem to be a loss in efficiency even for vehicles over 100,000 miles. Based on this type of information EPA recently set the assigned deterioration factor for ORVR to 0.0 g/gal for small volume manufacturers and small volume test groups.[1]



Note: The points above are the average mileage in the range and the average g/gal value

The commenter did not explain their point regarding which capture rating to use with various alternative fuels. There are no refueling emission standards for dedicated CNG and LPG vehicles as they have sealed fuel delivery systems. There are refueling emission standards for dedicated methanol and dual fuel LPG, and CNG vehicles. These standards are basically of the same identical or equivalent stringency to that required for gasoline-powered vehicles. The population of these vehicles is quite small and EPA has no in-use emission rate data for these groups. It should be noted that they are not covered by Stage II vapor recovery requirements, since they do not refuel at gasoline dispensing facilities.

The commenter also addressed the capability of vehicle onboard diagnostic (OBD) systems to identify performance problems in ORVR systems. Most ORVR systems have five

[1] US EPA Dear Manufacturer letter, Assigned Deterioration Factors, CD-12-07 (Revised) (LDV/LDT/MDPV/HDV/ICI/LD-AFC), March 30, 2012 .

basic sub-systems. These include the fill pipe seal, the tank valve, the vapor line, the activated carbon canister with solenoid, and the purge valve and lines. The fill pipe seal is not covered by OBD. All current vehicle models employ a liquid seal to block vapor escaping from the fill pipe opening instead of a mechanical seal. A liquid seal is created by the flowing gasoline, so it is new for each refueling event and not subject to failure. Most vehicles employ some form of a tank valve which acts as liquid/vapor separator and aids in the closing of the opening from the tank to the vapor line once the refueling event is complete. The performance of this valve is not covered by OBD, but if it fails in the closed position refueling will not be possible. There is a vapor line from the fuel tank to the activated carbon canister. A failure in the connection of this vapor line at either the tank or canister end or a leak in the line itself will be detected by the OBD evaporative system leak monitoring requirement as would any other leak in the line or the fuel/vapor control system. Since essentially all current vehicles employ integrated evaporative/refueling control systems they use the same activated carbon canister and purge hardware. The OBD system is required to be able to detect the absence of purge air flow which could indicate purge valve failure, a blockage in the line from the purge valve to the canister, and to some degree a reduction in air flow through the canister as a result of plugged filters or a breakdown in the carbon bed. The degree of failure would not necessarily be known. OBD would detect the complete absence of a canister since it would register as a gross leak in the system or render the OBD evaporative emission system leak check hardware inoperative, but it would not detect a canister which has lost efficiency. The commenter raised concern that there might be aspects of the OBD system requirements that do not monitor the performance of ORVR systems. As mentioned above, the only area of concern here would be a loss of canister efficiency. However, the results of both the ORVR and evaporative system IUVP programs do not indicate this is a problem as pass rates in both programs exceed 95 percent.[2]

As part of other ongoing work EPA has examined OBD data taken from five state I/M programs. The data covered model years 1996-2010; the calendar years varied by state with the earliest being 2002 and the latest 2006. For all evaporative system related OBD codes (P0400-P0455 and P0465-P0469) DTC frequency values ranged between 0.0 and 3.8 percent with the vast majority of values between 0.0 and 2.0 percent.[3] This does not necessarily address the magnitude of the emission impacts of vehicles with OBD evaporative system codes as the data was not disaggregated by code. However, it shows that the frequency of all problems is small. Furthermore, it is worth noting that there were several cases of vehicles with evaporative system OBD codes in the IUVP data discussed above and their test results are reflected in the overall emission averages.

Finally, it is worth noting that the in-use ORVR efficiency in the current version of the MOVES model is based on 98 percent efficiency. However, it also includes some projections for losses in ORVR efficiency based on data from older evaporative emission control systems. It

[2] See the progress reports at http://www.epa.gov/otaq/oms-def.htm

[3] See EPA Memorandum, Review of Frequency of Evaporative System Related OBD Codes for Five State I/M Programs. A copy of this memorandum is located in the docket for this action EPA-HQ-OAR-2010-1076.

does not include consideration of the ORVR design features and OBD information presented above or much of the in-use performance data derived from the IUVP program.

Finally, as was discussed in the NPRM and supporting documentation it should be noted that neither ORVR nor Stage II applies directly to the largest of the heavy-duty gasoline vehicles or to motorcycles. The ORVR requirement does not apply to these two classes of highway motor vehicles and neither of these classes is included in the groups tested during Stage II system certifications. On a nationwide basis these vehicles use less than one percent of all highway gasoline.[4]

Comment: Commenter (EPA-HQ-OAR-2010-1076-0038) stated that EPA's selection of June 30, 2013 as the widespread use date or ORVR is arbitrary and unreasonable. The commenter recommended that EPA should determine that ORVR will be in widespread use no earlier that November 30, 2013. The commenter indicated that EPA's methodology in determining widespread use, presented ORVR use percentages of 74.1 percent for 2012 and 77.7 percent for 2013. The commenter believed the proposed rule correctly presented the target control efficiency of 77.4 percent, expected to be achieved between the end of calendar year 2012 and the end of 2013 that is at some point during the calendar year 2013 and therefore proposes the midpoint of the calendar year, June 30, 2013. However, the commenter argued that a percentage that is increasing over time will reach a specified level at some point during a given year obviously does not imply that it will do so by the midpoint of that year. The commenter suggested an alternative to using the midpoint would be to perform a simple, straight-line interpolation between the two end-of-year percentages for 2012 and 2013. Such an interpolation reveals that the target of 77.4 percent would not be achieved until 334.58 days into 2013, or November 30, 2013. The commenter asserted that EPA should select November 30 or December 31, 2013 as the date on which widespread use of ORVR will occur.

Response: The CAA provides discretionary authority to the EPA Administrator to, by rule, revise or waive the section 182(b)(3) Stage II requirement after the Administrator determines that ORVR is in widespread use throughout the motor vehicle fleet. See CAA section 202(a)(6). As discussed in the NPRM, it is EPA's view that we have broad discretion in how to define ORVR widespread use and the manner in which any final determination is implemented. As can be seen in Table 1 in the NPRM, EPA considered many different criteria for determining widespread use of ORVR including ORVR vehicle VMT, ORVR vehicle fleet penetration, percentage of gasoline dispensed to ORVR vehicles, fraction of refueling emissions controlled by ORVR vehicles, and, as discussed in the text, equivalent control of refueling emissions between ORVR and Stage II vapor recovery. EPA ultimately based the NPRM on the volume of gasoline dispensed to ORVR-equipped vehicles and for comparison the cross-over date where reductions achieved by ORVR alone would equal reductions achieved by Stage II systems alone. For the fraction of gasoline dispensed to ORVR-equipped vehicles, EPA selected a value of 75

[4] Derived from Tables in Chapter 4 of the National Transportatios Statistics for 2011; this can be found at http://www.bts.gov/publications/national_transportation_statistics/

percent as a very reasonable indicator that ORVR was in widespread use. For the equivalent control approach EPA presented an analysis which indicated that an ORVR value of 77.4 percent would provide equivalent control as Stage II based on the Stage II in-use efficiency values and exemption rates used. The 75 percent approach indicated a date near the end of 2012 (November) while the ORVR/Stage II equivalent approach indicated a date about a year later. As discussed in the NPRM based on this information, EPA concluded that the midpoint of 2013 was a reasonable date for widespread use. Arguably, given EPA's discretion, a date any time after 75 percent was achieved might also have been appropriate. Thus, EPA does not agree with the general assertions of the commenter that our approach is arbitrary and unreasonable, and while we understand the commenter's reasoning we do not find the comment compelling. As mentioned above, the CAA gives EPA broad discretion on how to determine widespread use and we believe the methodology and dates presented in the NPRM were appropriate based on the data, our analysis, and the statute. The widespread use date in the final rule is earlier than proposed, but EPA used the same fundamental data sources and approach as discussed in the NPRM. These were widely supported by the commenters. We believe the methodology and date presented in the FRM are appropriate and consistent with the methodology used in the NPRM and the statute.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0044) explained that ORVR systems, comprised of a carbon canister, prevent the escape of fuel vapors through the fuel filler pipe and prevent liquid gasoline from exiting the fuel tank when tipped beyond horizontal. The displaced vapor is directed into the carbon canister and trapped. The commenter added that during engine operation, fresh air is purged through the canister to regenerate the carbon so that it is ready for subsequent fueling or diurnal events. The commenter stated that purged vapors are consumed in the combustion process. The commenter made clear that today, all new passenger vehicles manufactured in North America are equipped with ORVR systems. The commenter contended that ORVR systems have been shown to be highly effective at reducing refueling hydrocarbon emissions (approximately 98 percent refueling hydrocarbon emissions reduction using ORVR compared to approximately 60 percent refueling emissions reduction associated with Stage II vapor recovery technologies). The high overall emissions reduction efficiency of ORVR systems is achieved with only a small incremental cost of $10 to $15 compared to vehicle enhanced evaporative emission technologies that do not include ORVR capabilities. The commenter indicated economic savings are accumulated by the vehicle owner by stating that each year an average vehicle owner will recover about 17 liters of fuel from refueling and diurnal events, if their vehicle has an ORVR canister. The commenter explained that this represents an energy savings of 0.7 percent. The commenter further indicated that five liters per year of this fuel is recovered during refueling events alone and results in a payback time of only two years in decreased fuel purchases for the ORVR system. The commenter added that carbon canisters have been shown to last the lifetime of the vehicle, with no normal maintenance or replacement and with little or no deterioration in performance.

Response: EPA thanks the commenter for presenting supportive input on how ORVR technology captures refueling vapors and helps protect human health and the environment while saving costs and fuel in the process.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0055) acknowledged that EPA developed a methodology that compared the efficiency of Stage II recovery systems and the number of ORVR equipped vehicles in the fleet. The commenter also acknowledged that EPA indicated if a state or locality finds that removing Stage II requirements would reduce the overall level of reductions for which it previously obtained credit the state or locality, pursuant to the CAA, would need to make a demonstration that removing Stage II would not interfere with attaining or maintaining the ozone NAAQS. The commenter suggested that EPA develop implementation guidance that EPA would release in conjunction with the final rule, and that EPA should provide an example methodology that accounts for all of the emissions reduction benefits of Stage II recovery systems including the number of non-ORVR equipped vehicles that would no longer be refueling at Stage II dispensing facilities. The commenter stated that the methodology should account for any dis-benefits such as excess emissions that occur when ORVR-equipped vehicles refuel at incompatible Stage II installations.

The commenter concurred with EPA's initiative to determine widespread use of ORVR. The commenter concluded that EPA's widespread use determination will provide an opportunity for individual states or localities to fully demonstrate compliance with applicable CAA requirements to remove Stage II recovery systems if they choose. The commenter added that EPA's determination of widespread use will allow future ozone nonattainment areas to forego installation of Stage II systems. The commenter further concluded that in numerous areas, continued deployment of Stage II recovery systems will provide additional environmental benefits. However, the commenter added that while they concur that EPA has the authority to determine when ORVR is in widespread use, they added that the agency must clearly state in the final rule that its determination of widespread use does not automatically allow for discontinued use of Stage II recovery systems. The commenter suggested that EPA should provide greater detail on the environmental impacts of removing or continuing to operate Stage II recovery systems so that individual regions can make informed decisions on whether or not to decommission these systems. Lastly, the commenter suggested that state and local air agencies must be provided with clear guidance on a streamlined SIP revision process if they desire to decommission Stage II systems.

Response: EPA appreciates the commenter's concurrence that EPA has the necessary authority to waive Stage II requirements when it is determined that ORVR is in widespread use. EPA agrees with the importance of maintaining the overall level of reductions for which the SIP credit was previously obtained until EPA approves a SIP submission removing Stage II. To discontinue its Stage II program under section 182(b)(3), a State should submit a SIP revision. EPA will act on the SIP revision through notice and comment rulemaking. The revision would also be subject to the CAA section 110(l) requirement that the SIP revision not interfere with any

applicable requirement concerning attainment and reasonable further progress, or any other requirement of the CAA.

EPA fully understands that the commenter requests a methodology to account for all emission impacts of retaining or removing Stage II including benefits and dis-benefits of non-ORVR equipped vehicles that would no longer be refueling at Stage II dispensing facilities and the excess emission that may occur when ORVR equipped vehicles refuel at vacuum assist type Stage II facilities. EPA intends to provide guidance documents addressing removal of Stage II programs to be issued subsequent to the publishing of the final rule. This will include guidance addressing how to assess the provisions of CAA section 110(l) (potential emission control losses from removing Stage II should not interfere with any applicable requirement concerning attainment and reasonable further progress, or any other requirement of the CAA) as well as how to factor in the effects of ORVR/vacuum assist Stage II system incompatibility in the overall reductions from Stage II systems in this assessment.

As suggested by the commenter, EPA points out in the final rule that States may choose to continue or enhance Stage II controls in a particular area if they continue to achieve air quality benefits.

In response to the commenter's request to provide detail on environmental impacts of either removing or continuing operation of Stage II systems, EPA notes that this is an area-specific issue. The analysis supporting EPA's ORVR widespread use determination used what we believe to be reasonable and typical national values. In assessing the potential environmental impact in their state/area, states can use EPA's basic methodology but use state/area specific input parameters instead of the national values. For example, EPA used 86 percent efficiency and 10 percent exemption rate for Stage II. Lower or different values may be justified. Also, a state may in fact experience a faster ORVR vehicle penetration than the national average or a larger or smaller incompatibility effect. A change in these parameter values may be justified on a case-by-case basis and this could help to inform the actions of any state/area in retaining or removing Stage II.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0035) wrote that the state (California) has been a leader in the area of gasoline vapor recovery with the most comprehensive program in the nation. The commenter stated that this program has been a part of the State's air quality strategy for over 35 years and credited this program has yielded cost-effective emission reductions in the most ozone impacted areas. The commenter further states that Stage II vapor recovery requirements were extended into ozone attainment areas to reduce the public's exposure to benzene. The commenter maintained that the Stage II program as implemented in over 10,000 gasoline service stations in the state surpassed the federal Stage II requirements. The commenter presented standards that exceed federal requirements as follows: 1) ORVR compatibility and pressure management to control emission lost from the underground storage tank through vent lines, vapor processor exhaust, and fugitive leak sources; 2) In-station diagnostics requirements that help maintain in-use effectiveness; 3) Stringent standards for specially designed nozzles that reduce emissions from liquid retention, drips, and spills; and 4)

Further emission reductions are anticipated from a newly proposed low permeation fuel hose standard that the State will consider in 2011. The commenter concluded that these program elements provide emission reductions that exceed those of Stage II alone and that these reductions are unaffected by increasing ORVR penetration. The commenter construed that their area has a critical need for reducing smog-forming emissions and will continue to use Stage II vapor recovery until such time in the future a re-examination of ORVR and Stage II programs can be undertaken.

Commenter (EPA-HQ-OAR-2010-1076-0053) pointed out that their air management district has been implementing enhanced State II vapor recovery systems for several years and has lead to about 95 percent vapor capture efficiency, which the commenter exemplified is much higher than the national average of 86 percent. The commenter stated that in their area, a significantly larger number of older non-ORVR equipment vehicles continue to operate. The commenter concluded that combined with the estimated 95 percent efficiency of Stage II systems in the area, the commenter claimed substantial emission reductions are garnished with Stage II systems. As such, the commenter stated that ORVR equipped vehicle population must be closer to 95 percent before their area would decommission Stage II systems. The commenter further stated that to do otherwise would not be feasible given that the area could not find additional emission reduction measures to supplant any shortfalls associated with the Stage II systems. The commenter stated that the methodology developed by EPA to determine the date of widespread ORVR use does not fully account for the emission reduction benefits when non-ORVR equipped vehicles refuel at Stage II vapor recovered equipped facilities. This commenter believed that continued deployment of Stage II systems in their region would continue to generate environmental benefits. The commenter closed by stating that they concur with the ORVR determination of widespread use, but EPA must clearly state that this date does not automatically allow for discontinued use of Stage II systems and to discuss in detail the environmental impacts of removing Stage II recovery systems so that individual regions can make informed decisions on the need for Stage II systems.

Response: These comments both came from entities located within the state of California. California is a national leader in Stage II vapor recovery. No other state has programs as aggressive in their scope or implementation or as wide sweeping in dealing with the GDF emissions as a system as does California and the various AQMDs. EPA's proposed rule does not require states to waive their Stage II vapor recovery programs and EPA clearly reiterates this in the final rule, as suggested by the commenters. States have the option of maintaining their requirements and setting ORVR penetration levels of the vehicle fleet for their state before they would remove Stage II. EPA defers to the commenter's in establishing what they believe is an appropriate ORVR penetration level before their area would decommission Stage II systems. The comprehensive control strategy for GDFs in California provides more overall reductions at GDFs than dispenser-based Stage II controls used in other regions but offered no data to support their claim of 95 percent efficiency. The commenters did not challenge the ORVR efficiency put forth by EPA. The environmental benefits of Stage II vapor

recovery systems and ORVR have been well documented and information is readily available from various sources for future work.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0059), a manufacturer of gasoline vapor processor equipment which enhances vapor control at GDFs, stated that many questions and conflicts remain on the ORVR system operating parameters for both new systems as well as for systems used over an extended period of time. The commenter presented data from the California Air Resources Board (CARB) to show that the ORVR systems are not able to meet the CAA section 202(a)(6) requirement of 0.2 grams of hydrocarbon emission per gallon of fuel dispensed. The commenter included a series of reports and previous correspondence to EPA in the ORVR/Stage II arena.

Response: In a March 24, 2010 comment letter to EPA, the commenter makes assertions about the in-use efficiency of ORVR. The commenter states that California ARB emission test data generated as part of the certification process for Stage II vacuum assist systems demonstrates that ORVR controls emit at 2.4 to 5.0 times the 0.20 g/gal emission standard. This is data derived from field testing of ORVR vehicles with a Stage II vacuum assist nozzle as part of certification testing for the Stage II systems. This is well established standard practice by ARB, and the requirements and test procedures are well prescribed in their regulations. In the ARB Stage II certification procedure and reports, vapor concentration measurements in the sleeve and vapor return line from the Stage II nozzle to the dispenser are taken as % C_3H_8 (propane). These concentrations are converted to gasoline vapor mass and divided by dispensed gasoline volume to get a gram /gallon HC emission rate.

We have reviewed the commenter's analysis and the three referenced ARB source test reports (ST-06-15, ST-06-10, and ST-04-01) and offer the following points in response. For the reasons set forth below, we believe the issue identified by the commenter is an artifact of the test procedure, test equipment, and the experimental set-up and are not useful in an ORVR efficiency assessment.

First, in 40 CFR 86, ORVR vehicles are certified using conventional nozzles, not Stage II balance or vacuum assist nozzles. With a liquid seal fill neck approach, which is the approach universally used by the manufacturers (as opposed to a mechanical seal approach), the vacuum assist nozzle spout sits in the fill pipe in the region between the fuel nozzle restrictor plate and the top of the liquid surface which creates the seal. During a dispensing event this is an area where turbulent mixing occurs as the dispensed fuel hits the fuel in the vehicle's fill pipe. This fuel in the pipe makes up the flowing liquid seal. (Much like a sink trap, this liquid in the fill pipe blocks vapors from leaving the fuel tank through the fill pipe opening.) The dispensing rate is up to 10 gal/min; this means that the velocity of the fuel leaving the nozzle spout is on the order of 600 ft/min. The collision of this stream of fuel and the fuel in the fill pipe is a prime condition for the creation of vapor and gasoline droplets in the fill pipe. Also, most vehicles have external vent lines on the fill pipe which improve fill quality and crash safety and route vapor from the tank to near the top of the fill pipe. This vapor is then drawn back into the fuel tank

during the refueling event in lieu of fresh air. If fresh air were drawn in, it would lead to a greater vapor load to be captured on the activated carbon canister.

We believe that in the ARB tests the vacuum assist nozzle draws vapor and droplets from this area of the fill pipe during the refueling event. These would otherwise stay in fill pipe and enter the tank as part of the air stream which accompanies the incoming fuel. Another researcher has developed data which supports this conclusion.[5]

Second, this conclusion is reinforced by work published by ARB in 1998[6]. This research shows that the vapor return line concentration varies with system V/L ratio, dispensing rate, and even the time point in the overall dispensing event. These are dispensing event and refueling nozzle related parameters, not vehicle related. However, the report does show some Stage II vapor return line concentration differences between recirculation fill pipe configurations (which bring vapor back up nearer to the top of the fill pipe) and those without such recirculation. This is a clear link to the nozzle spout fill pipe interface.

Third, in reviewing the ARB source test reports cited by the commenter, it does not appear that ORVR and non-ORVR vehicles were segregated in the testing sequence. Thus, it is likely that there was vapor hang over in the Stage II vapor return hose from the non-ORVR tests to the ORVR tests in at least some situations. This would artificially increase the ORVR result. This effect is also seen in the detailed test results in the tables in the March 1998 ARB report referenced above.

Fourth, we would offer that the commenter's assertions do not appear to be consistent with engineering principles. It is not reasonable on its face to conclude that refueling vapor of the reported magnitude gets from the tank headspace through the liquid seal and into the fill pipe region above the seal. Also, given the dispensing rate, little if any vapor or droplets would be expected to get past the stream of air which follows the incoming fuel flow in an ORVR refueling event with a conventional nozzle. No supporting data for balance type Stage II systems was provided. We believe this would have shown little or no effect since there would be no vacuum available to draw off vapor from the fill pipe.

Finally, the commenter expresses a concern that removing Stage II vapor recovery systems could cause a potential safety hazard for motorists by creating the possibility for an explosive air/gasoline vapor mixture near the individual conducting the refueling event. EPA studied this issue in 1988 and concluded that both ORVR and Stage II controls would reduce what is already a very low incident rate of service station refueling fires related to atomized

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[5] ORVR Compatibility Study for the Gilbarco Vaporvac VRS, American Petroleum Institute by Tech Environmental, Inc., p.3, February 5, 2004.

[6] California Air Resources Board, Monitoring and Laboratory Division, Vapor Return Path Hydrocarbon Concentrations in Vacuum Assist Vapor Recovery Systems Dispensing Gasoline to Onboard Refueling Vapor Recovery (ORVR) Equipped Vehicles, Project No. C-97-024, March 30, 1998.

vapors/liquids (an incidence rate of about 25/yr out of over 12 billion refueling events per year ~1% of all service station fires).[7]

Our assessment of the ARB test data leads us to conclude that in this testing the vacuum assist Stage II nozzles captured vapor and probably liquid droplets from the fill pipe. The ARB test procedure is not designed to address the issue being raised by the commenter. In our view, it is incorrect to conclude that this information indicates poor in-use performance by ORVR systems. The degree to which this occurs is attributable to the use of a vacuum assist nozzle in this testing, the test procedure used, and the other requirements of the test.[8]

Comment: Commenter (EPA-HQ-OAR-2010-1076-0061), a manufacturer of gasoline dispensing equipment known as the "No-Go Nozzle." The comments submitted were provided to EPA after the deadline for submitting public comments. The commenter described their nozzle as being originally designed to solve the problem of drive-off gasoline theft at the pump by locking the nozzle into the fill pipe of the vehicle and until the transaction is paid for. The commenter further stated that the nozzle has environmental and safety benefits. The commenter contends that since the nozzle locks to the fill pipe, that the nozzle improves vapor recovery on non-ORVR cars by 17 to 20 percent. The commenter also stated that the nozzle could generate a small, but measurable improvement on ORVR car vapor recovery, improve EVR vacuum assist efficacy to nearly 100 percent, function as a dripless nozzle and provide and provide all these benefits with minimal additional cost to GDFs.

Response: We do not disagree with the commenter that potentially more could be done to enhance Stage II vapor recovery with the use of certain nozzles beyond applicable industry standards, the requirements in 40 CFR part 63 subpart CCCCCC and related state provisions, but an assessment of these issues is beyond the scope and purpose of this action.

III. Comments Regarding EPA's Proposed Waiver of Stage II Vapor Recovery Required Under CAA Section 182(b)(3)

Comment: Commenters (EPA-HQ-OAR-2010-1076-0034, 0037, 0044, 0048, 0049, 0050, 0052, 0057, 0058), supported EPA's proposed general waiver the Stage II requirements to any areas subject to CAA section 182(b)(3). Another commenter (EPA-HQ-OAR-2010-1076-0034, 0040) commended EPA for proposing to eliminate Stage II Vapor Recovery requirements in those areas where ORVR is in widespread use. They further stated that air quality will improve while reducing regulatory burdens.

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[7] Summary and Analysis of Comments Regarding the Potential Safety Implications of Onboard Vapor Recovery Systems, Chapter 4, US EPA, Office of Mobile Sources, August 1988. Available in public docket A-87-11.

[8] These conclusions in no way are intended to reflect negatively on the ARB Stage II certification results or test procedures or the value of any other elements of ARB's Stage II EVR program.

Response: EPA thanks the commenters for providing support for the waiver of CAA section 182(b)(3) Stage II vapor recovery requirements. After considering the public comments received, and conducting further analysis EPA is making the effective date of the waiver of Stage II vapor recovery requirements the effective date on the final rule. EPA also recognizes a cost savings in the decommissioning of Stage II vapor recovery systems and has updated the analysis.

Comment: Commenters (EPA-HQ-OAR-2010-1076-0046, 0049, 0051 and 0052) stated that in the interim period between the date that the rule is finalized and the proposed June 30, 2013 widespread use of ORVR date, new fuel outlets in non-attainment areas should not be required to include Stage II systems. The commenters maintained that the cost of installing new Stage II systems is approximately $50,000. The commenters added that it is unreasonable to require new gas stations to incorporate an expensive technology into their equipment when the technology will be decommissioned in less than two years. The commenters stated that EPA should account for this fact and permit new stations in non-attainment areas to refrain from incorporating Stage II controls.

Commenter (EPA-HQ-OAR-2010-1076-0037) has requested guidance from EPA on how to make practical planning decisions for new or significantly modified gasoline dispensing facilities constructed within one to two years of a state's Stage II phase-out date. The commenter indicated that installing a new Stage II system is costly and may not result in significant emission reductions in the short window of time between installation and phase-out. State program needs will vary, and therefore the commenter recommended that EPA work closely with states to develop practical strategies that address new and modified facilities within the context of each states' Stage II program.

Response: EPA is aware that new construction undertaken prior to the waiver date may incur capital costs for installing Stage II that may only be required for a short time. It is evident from the public comments and other materials that states and members of the regulated industry are seeking an EPA decision on a widespread use date which a state could use as at least a partial basis for a decision on whether to curtail Stage II installations at newly constructed GDFs, and if desired, lead to an orderly phase-out of Stage II controls at existing GDFs. According to our updated analysis and as explained in the final rule, we have already met ORVR widespread use under one of the two proposed analytical approaches and in most cases the second will have passed before a state completes its SIP revision and legislates any needed revised regulations. As discussed in the preamble to the rule, EPA has decided to make the determination that ORVR widespread use will occur upon the effective date of the final rule. EPA shares the commenters' concerns about an inefficient use of resources to meet a regulatory requirement which may have a short period of applicability and will work with the states to find a way forward on this matter. However, this is ultimately an issue for each state and the commenters must rely on the states to change their requirements. EPA cannot unilaterally change existing state SIPs or state regulations addressing Stage II requirements. As long as states keep the Stage II requirement in their state statutes or regulations, and as long as they choose to retain those in their SIPs, EPA does not have the authority to allow GDFs to not comply with those SIPs.

Comment: Commenters (EPA-HQ-OAR-2010-1076-0048 and 0058) pointed to the following statement by EPA, which states, "Nonetheless, for over 15 years this technology [Stage II] has provided substantial VOC emission reductions in ozone nonattainment areas, which needed those reductions to attain the ozone NAAQS as well as reductions in air toxic emissions such as benzene". The commenters declared that this statement is inaccurate and urged EPA to correct the statement in the final rule. The commenters stated that they agree that Stage II technology provided VOC emissions reductions as well as reductions in air toxic emissions such as benzene, however the commenters did not believe all areas needed those reductions to attain the ozone NAAQS. The commenter stated that throughout their area, biogenic VOC emissions dominate the VOC source category and as a result, local reductions in man-made VOC emissions are not generally effective in reducing ozone. The commenters stated that reductions in nitrogen oxides (NO_x) emissions are much more effective in reducing ozone concentrations in their area. Therefore, the commenters recommended that EPA acknowledge this fact for this rulemaking and recommended a correction to the overly broad statement that VOC emission reductions are needed to reduce ozone levels.

Response: EPA recognizes that natural source emissions can make a significant contribution to total volatile organic compound (VOC) and oxides of nitrogen (NOx) emissions. Estimating emissions of VOC and NOx from natural sources is an essential part of preparing an inventory of ozone precursors. In the past, the impacts of biogenic VOC were not considered when ozone control strategies to limit emissions of either NOx or VOC were developed. However, the importance of biogenic VOC emissions in an ozone inventory became apparent in some regions when the biogenic VOC emission estimates were compared to the anthropogenic VOC emission estimates.[9] Biogenic VOC are emitted in large quantities from vegetation and may dominate over those from anthropogenic sources. Generally, biogenic emissions do not cause ozone problems; they are part of the natural background. It is only after anthropogenic emissions are added to the natural background that harmful levels of ozone result. However, biogenic emissions must be considered when examining anthropogenic emission control strategies. Furthermore, EPA acknowledges that there are a few NOx limited regions where VOC reductions are not as helpful in reducing ozone (without NOx reductions) as in others which are VOC limited. The views of the commenters, while perhaps true in some areas in some time frames, does not diminish the basic perspective in the NPRM that Stage II vapor recovery has reduced VOC emissions that contribute to the formation of ozone and contribute to air toxics risk in the vast majority of situations. There is a long record of analyses and documents created and reviewed in two public processes supporting this view (see public dockets A-84-07 and A-87-11) and it is further supported by the fact that Stage II controls were only required in the Serious, Severe, and Extreme ozone nonattainment areas (mostly metropolitan/urban areas) by the 1990 Clean Air Act Amendments, not in rural areas. These urban/metropolitan areas are generally VOC limited. More importantly, however, this rule gives states/areas the way forward

[9] Chameides, W., R. Lindsay, J. Richardson, and C. Kiang. 1988. *The Role of Biogenic Hydrocarbons in Urban Photochemical Smog: Atlanta as a Case Study*. Science, vol. 241, pp. 1473-1475.

to remove Stage II that was previously required by the CAA. If a state/area believes they are NOx limited that may well provide greater incentive to remove Stage II as soon as possible and make an approval of a SIP revision more straightforward.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0058) urged EPA to finalize the rule quickly and provide states with the ability to waive the Stage II requirements and thus free up resources that can be better expended on control measures that are more effective at reducing levels of ozone.

Response: EPA has determined that ORVR is in widespread use upon the effective date of the final rule. Accordingly, to remove stage II requirements for their SIPs, states must submit SIP revisions and meet the requirements of section 110(l) that potential emission control losses from removing Stage II should not interfere with any applicable requirement concerning attainment and reasonable further progress, or any other requirement of the CAA.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0035) concluded that the proposed federal action to waive Stage II vapor recovery requirements is an option that the commenter did not believe is viable for their areas. The commenter believed that there may be opportunities for improvement of the Stage II vapor recovery hardware and possible reductions in operation and maintenance costs of the Stage II program to allow it to remain a cost-effective element of the commenter's air pollution reduction program in their specific area. The commenter affirmed that despite great progress in achieving cleaner air, the area still needs additional reduction of air pollution and removal of Stage II controls would result in a significant increase in emissions of ozone precursors at a time when the area is searching for new control measures to reduce emissions. The commenter declared that the area cannot identify how to account for the lost emission reductions that would result from removal of their Stage II vapor recovery program. The commenter also emphasized that in spite of the growing share of ORVR-equipped vehicle refueling events, the commenter estimated that even in 2014, 17 percent of gasoline will be dispensed to non-ORVR vehicles.

Response: EPA's final rule with the ORVR widespread use determination and section 182(b)(3) waiver determination does not obligate states to remove any existing Stage II vapor recovery requirements. States may choose to continue to require or enhance Stage II controls in a particular area if they continue to achieve air quality benefits.

Comment: Commenter (EPA-HQ-OAR-2010-1076- 0037) stated that when correctly installed, operated, and maintained, Stage II systems effectively control VOC emissions associated with dispensing gasoline to motor vehicles. In the future, as Stage II systems are removed, there is concern that emissions from gasoline storage tanks may increase as a result of unsaturated air being drawn into the storage tanks. The commenter indicated concern that EPA may not have fully evaluated the potential for such additional fugitive emissions. The commenter urged EPA to undertake such an analysis and report its findings to the states so that they may assess future policy steps.

The commenter added EPA should continue to allow states to maintain Stage II and be clear on what is required to maintain the program. While states have this option, the commenter

believed that EPA should also address issues related to quantifying excess emissions that may occur when refueling ORVR-equipped vehicles at gasoline stations using vacuum-assist Stage II technology.

Response: As a part of the analysis supporting the NPRM, EPA assessed fugitive emissions related to refueling motor vehicles at GDFs. The conclusion of that analysis was that fugitive emissions (e.g., breathing and emptying losses) were about the same for the ORVR only or ORVR + Stage II scenario because of the requirements of 40 CFR part 63 subpart CCCCCC – the gasoline dispensing facility NESHAP. However, in the analysis EPA noted that the incompatibility effect observed when refueling an ORVR car with a Stage II vacuum assist system could increase these emissions and suggested that this might be a reason for removing Stage II.[10] EPA's final rule with the ORVR widespread use determination and section 182(b)(3) waiver determination would not obligate states to remove any existing Stage II vapor recovery requirements. States that choose to remove the program will need to ensure that removal of the program does not interfere with attainment and maintenance of the NAAQS per CAA section 110(1). States may choose to continue to require or enhance Stage II controls in a particular area if they continue to achieve air quality benefits.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0041) stated that in order to ensure that gasoline underground storage tank systems continue to be maintained in a vapor-tight condition and prevent backsliding by allowing these underground storage tank systems to no longer be monitored when no more periodic Stage II testing is required, EPA must consider the following to ensure these systems remain vapor-tight as designed: Immediately upon decommissioning a stage II system and annually thereafter, EPA should incorporate the requirement to test gasoline underground storage tank stage I vapor recovery systems ability to contain the vapors by mandating the following test methods: 1) California Air Resources Board (CARB) TP 201.3 (Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities; Amended March 17, 1999); and, 2) CARB TP 201.1E (Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves; October 8, 2003)

Response: EPA appreciates the commenter's suggestion. In the ORVR Widespread Use proposal, EPA did not propose to rescind any existing state or federal requirement for underground storage tank (UST) integrity testing such as those contained in 40 CFR part 63 subpart CCCCCC. EPA encourages owners and operators of UST to follow federal, state and local requirements for their systems and to follow currently recognized industry codes and standards when dismantling Stage II vapor recovery systems. If the state chooses to waive the Stage II requirements and seeks to revise its SIP, the state may extend such requirements to lower throughput GDFs or the increase the frequency of the testing in their amended SIP to ensure that underground storage tanks continue to be maintained in a vapor tight condition.

[10] See EPA Memorandum "Onboard Refueling Vapor Recovery Widespread Use Assessment", June 2011. A copy of this memorandum is located in the docket for this action EPA-HQ-OAR-2010-1076.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0045) stated that since EPA has identified the proposed rule as an example of examining rules to make sure they are still achieving the environmental benefits that were originally intended, the EPA should review other programs. The commenter suggested a review of vehicle "Inspection and Maintenance" programs. The commenter alleged that the effectiveness of the program has diminished greatly as an emission control technology. The commenter also asserted that imposing requirements for VOC reductions in NO_x limited areas that have overwhelming biogenic VOC sources is a poor utilization of resources. The commenter concludes by maintaining that Early Action Compact programs should be an option for areas that are under consideration for nonattainment designations.

Response: EPA thanks the commenter for the suggestions, although the topic is outside the scope of this rulemaking. Consequently, the following response is for discussion purposes only, and does not constitute final action of any kind on EPA's regarding the request made by the commenter. The 1990 Amendments to the Clean Air Act made inspection/maintenance (I/M) mandatory for several areas across the country, based upon various criteria, such as air quality classification, population, and/or geographic location. On September 18, 1995, EPA finalized its I/M Flexibility Amendments (40 CFR Part 51), which are designed to give states more options to meet the enhanced I/M program requirements under the Clean Air Act Amendments of 1990. EPA's original enhanced I/M regulations included a single performance standard for enhanced I/M, which was based on EPA's model enhanced I/M program.[11] EPA continues to recognize the vehicle I/M program as a substantial tool that assists in efforts to improve air quality by identifying high-emitting vehicles in need of repair (through visual inspection, emissions testing, and/or the downloading of fault codes from a vehicle's OBD system) and causing them to be fixed as a prerequisite to vehicle registration within a given non-attainment area. At this time, the I/M program has not been identified in EPA's Plan for Retrospective Review.

While it is true that vehicle I/M programs do not achieve the same absolute level of emission reductions as they did during the 1990s, they do still produce significant reductions that can help achieve attainment and are required under the Clean Air Act Amendments of 1990. One of the reasons that I/M programs get fewer reductions nowadays is because manufacturers have responded to I/M requirements by building vehicles that stay cleaner longer, leaving fewer excess emissions to reduce. It should also be noted that at the same time emission reductions from I/M programs have come down, the cost of testing vehicles has also come down, thanks to the introduction of onboard diagnostic (OBD) systems on vehicles. Like I/M, OBD is a requirement of the Clean Air Act Amendments of 1990, which also required that all I/M programs include OBD testing once it became available. EPA has found that testing vehicles using the OBD system is generally quicker, more convenient, less costly, and more accurate than previous vehicle tests, including tailpipe tests like the idle, the Acceleration Simulation Mode (ASM), and the IM240 tests, which were used by various I/M programs throughout the 1990s

[11] (57 FR 52950, November 5, 1992)

and are still used to test non-OBD-equipped vehicles in some programs. The fact that the majority of vehicles in use nowadays are OBD-equipped means that there are many options for improving the cost effectiveness and convenience of existing and new I/M programs, including the use of remote testing and self-serve testing kiosks. Areas interested in optimizing the effectiveness of their local I/M programs should work with their EPA Regional offices to determine which program options make the most sense given local conditions.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0054) indicated that their state adopted Benzene Airborne Toxic Control Measures (ATCM), intended to reduce the public exposure to benzene, a known carcinogen. As a result of this control measure, virtually all gasoline dispensing facilities were required to install Stage I and Stage II vapor recovery systems. The commenter further indicated that in March of 2000, the state adopted Enhanced Vapor Recovery (EVR). The requirements for the EVR upgrade included new Stage I and Stage II systems, ORVR-compatibility, and In-Station Diagnostics. The commenter affirmed that virtually all of the state is required to have Stage II as per the Benzene ATCM and will continue to the program without waiving Stage II requirements.

The commenter realized that in 2013, non-ORVR vehicles may remain, but attrition over time will eliminate most of those vehicles. The commenter asserted that non-ORVR vehicles are generally not being used as frequently as ORVR vehicles, and, consequently, not receiving comparable gasoline throughput that the ORVR vehicles receive. The commenter indicated that benzene content has recently been recommended to not exceed an annual average of 0.62% by volume by the end of 2011 by the state. The commenter asserted that the reduction in benzene content may be sufficient reason for the state to consider modification of the ATCM. The commenter speculated that if the ATCM is modified, the air district will revise its State Implementation Plan to reflect increased VOC emissions. The commenter also indicated that the district will also propose new regulations to offset the additional VOC emissions from the Phase II equipment removal. The commenter also realized that there are air districts within the state that need all of the benzene and associated VOC reductions possible. However, the commenter's District does not believe that the "one-size-fits-all" vapor recovery approach is appropriate for the entire state. The commenter believed that air districts in the more remote and sparsely populated areas of the state do not receive a significant air quality benefit from Phase II vapor recovery. The commenter concluded that many low throughput gasoline dispensing facilities throughout the state have closed or have become convenience store-only operations because of the cost to install and maintain vapor recovery equipment.

Response: EPA appreciates the perspectives presented by the commenter. The Stage II requirement in this AQMD was generated by a state requirement not under section 182(b)(3). The issues raised by the commenter are important in their regulatory scheme for ozone and air toxics control, but must be resolved within the state.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0055) supports EPA's effort to fulfill this CAA requirement. The commenter further states that establishment of a widespread-use date for ORVR will allow states and localities that currently have Stage II vapor recovery systems in

place to decommission these systems if they so choose and will also allow areas designated nonattainment for ozone in the future to forego installation of Stage II recovery systems. The commenter recommends that the final rule should note that decommissioning of Stage II recovery systems is not mandatory. In the final rule, therefore, EPA must clearly and prominently state that its action establishes a date on which EPA believes ORVR is in widespread use, but whether Stage II will be decommissioned or retained in a specific region is a decision reserved for each state or locality.

The commenter cautioned EPA not to undermine the ability of states and localities that wish to retain Stage II recovery systems. The commenter indicated that for many ozone nonattainment areas, Stage II recovery systems have served as an effective means for reducing VOC evaporative emissions from gasoline refueling. The commenter added that many areas rely on Stage II to reduce toxic air contaminants, such as benzene, found in gasoline. The commenter asserted that reduced exposure to toxic air contaminants in gasoline at the point of refueling and the impact on the neighborhood immediately surrounding the refueling station are especially important considerations since older non-ORVR-equipped vehicles tend to be located in lower income and environmental justice communities.

The commenter agreed that with widespread use of ORVR-equipped vehicles, the benefits of Stage II recovery systems diminish over time. However, the commenter also recognized that for numerous regions, Stage II has yielded additional environmental co-benefits and is more effective at achieving emissions reductions than the national average of 86 percent assumed by EPA in the proposed rule. The commenter concluded that Stage II recovery systems will likely be effective in reducing VOC and air toxics in some regions long after the June 30, 2013 date proposed for the widespread-use determination. The commenter suggested that EPA should be mindful of this and include a discussion of the potential benefits of retaining properly operated and maintained Stage II recovery systems in the final rule.

Response: EPA agrees with the commenter that Stage II vapor recovery systems have been an effective means for reducing VOC emissions and controlling toxics exposure during refueling. However, with the introduction and use of ORVR-equipped passenger cars and trucks and their phase-in with fleet turnover, the incremental emission reduction benefits of Stage II vapor recovery systems over those achieved by ORVR diminish over time. Moreover, EPA's analysis indicates that aggregate VOC emission reductions and air toxic reductions achieved from vehicles being equipped with ORVR alone will soon surpass those achieved from application of Stage II alone.[12] As discussed above, EPA estimates, based on a substantial volume of data, that ORVR in-use control efficiency is at 98 percent. The activated carbon canister used in the vehicle evaporative/ORVR system captures the air toxic compounds (e.g., benzene, toluene, xylene) at least as effectively as it captures the butane and pentane compounds

[10] See EPA Memorandum, "Updated Data for ORVR Widespread Use Assessment." A copy of this memorandum is located in the docket for this action EPA-HQ-OAR-2010-1076.

which make-up the majority of the mass in the emissions.[13] Thus, EPA would similarly expect control efficiency for air toxics with ORVR efficiency of 98 percent during refueling events. From a nationwide perspective, EPA estimates ORVR reductions will surpass those from Stage II in May 2013. After that date, reductions from ORVR-equipped vehicles will exceed those from Stage II, and the margin by which ORVR's reductions exceed Stage II's will continue to increase as fleet turnover continues.[14] With the onset of widespread use of ORVR, EPA concludes that basic ORVR technology and its greater efficiency and wider implementation in Stage II areas will provide sufficient overall VOC emission reductions, even without Stage II, to support our determination to waive the CAA section 182(b)(3) Stage II requirement that is directed to serious and above ozone nonattainment areas. Subsequently, of course, area-specific decisions of whether to revise SIPs to remove Stage II requirements will depend upon the specific needs of individual ozone nonattainment areas. Finally, whether additional controls of air toxics emissions from GDF operations are technologically feasible or necessary to protect public health are beyond the scope of this action, which addresses whether ORVR is factually in widespread use and whether it is reasonable to continue to impose, as a general and national minimum requirement for ozone control purposes, the section 182(b)(3) requirement for Serious and above ozone nonattainment areas.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0037) was concerned that EPA had not considered how an agency's (state or local) request to remove Stage II will impact environmental justice communities. The commenter pointed out that gasoline dispensing operations cause significant emissions of volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) and stated that this source category represents significant potential for public exposure to these pollutants. The commenter indicated that HAP exposures included, but are not limited to, benzene, ethyl benzene, toluene, and xylene. The commenter presented earlier EPA analysis that indicated that GDFs emit more than 25,000 tons of emissions nationally for these four pollutants. The commenter stated that many of these facilities are located in residential areas, including environmental justice communities, and that research indicated that individuals living in close proximity to GDFs are exposed to elevated levels of several HAPs and that the highest short-term exposures to benzene occur during refueling operations. The commenter

[13] See Society of Automotive Engineers Paper 860531, "Vehicle Evaporative and Exhaust Emissions as Influenced by Benzene Content of Gasoline".

[14] On the margin, into the future there could be continued limited reductions of VOCs and air toxics if Stage II is retained. The amount would vary by calendar year depending on ORVR vehicle penetration, Stage II efficiency, and Stage II exemption criteria. This would occur when a non-ORVR vehicle is refueled at a Stage II GDF. However, as demonstrated in Table 1 of the EPA Memorandum "Updated Data for ORVR Widespread Use Assessment," overall emission reductions (this includes VOC and air toxics) from ORVR vehicles will greatly surpass those achieved from Stage II. For example, in 2015 ORVR would control about 86 percent of gasoline and control 84 percent of emissions while Stage II would control only 12 percent of gasoline and control about 10 percent of emissions. By 2020, OVR would control 92 percent of emissions while Stage II reductions are less than 5 percent of emissions. (The Stage II calculations assume 10% of gasoline throughput occurs at exempt GDFs, Stage II efficiency remains at 86%, and ignores the ORVR/Stage II compatibility impact). Including the ORVR/Stage II compatibility impact would likely lead to net VOC and air toxics emission increases before 2020 from the combination of ORVR equipped vehicles being refueled at vacuum-assist Stage II pumps.

explained that facilities equipped with properly maintained Stage II systems substantially mitigate public exposures to these pollutants.

The commenter reminded EPA that in 2009, it was recommended that EPA develop a technical assessment of toxic emissions and exposures at GDF operations. The commenter pointed out that in the preamble of the Proposed Widespread Use rule, EPA stated that the proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. However, the commenter stated that EPA did not analyze the potential increased local exposure to air toxics, either generally or for environmental justice communities. The commenter requested that EPA provide any environmental justice analysis it conducted for this proposed rule. The commenter further urged EPA to ensure that an adequate analysis has been completed, and, if necessary, supplemented with an examination of the potential impacts of this proposed rule on environmental justice communities and on local air toxics emissions.

Commenter (EPA-HQ-OAR-2010-1076-0053) urged EPA to discuss other environmental benefits of Stage II systems such as reduced toxic air contaminants exposure to gasoline at the point of refueling and potential environmental justice impacts.

Commenter (EPA-HQ-OAR-2010-1076-0035) concluded that the proposed federal action to waive Stage II vapor recovery requirements is an option that the commenter did not believe is viable for their areas. The commenter maintained that Stage II systems remaining in place will have an ongoing benefit and capture approximately 31 tons of VOCs per day in 2017 and 15 tons per day in 2020. The commenter stated that Stage II vapor recovery is required in their state as a control measure for benzene emissions and Stage II removal would adversely impact human health protection. The commenter concludes that their area has a critical need for reducing smog-forming emissions and will continue to use Stage II vapor recovery until such time in the future a re-examination of ORVR and Stage II programs.

Commenter (EPA-HQ-OAR-2010-1076- 0037) stated that some areas may need additional VOC emission reductions to attain the ozone NAAQS or address environmental justice or toxic concerns and that EPA should continue to allow states to maintain Stage II and be clear on what is required to maintain the program.

Response: The National Ambient Air Quality Standards (NAAQS) for Ozone final rule (73 FR 16436, March 27, 2008), based on a review of the air quality criteria, set standards to provide the requisite protection of public health and welfare. In that rulemaking, EPA determined that the levels set for criteria pollutants will not have disproportionately high and adverse human health or environmental effects on minority or low income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population including any minority or low-income population.

In addition, Section 112 of the Clean Air Act (the Act) governs the regulation of hazardous air pollutants (HAP) and establishes a two-phased regulatory approach. First, subsection 112(d) requires the EPA to promulgate technology-based emission standards for

categories and subcategories of industries that are major or area sources. CAA Section 112(d) standards include new and existing source maximum achievable control technology (MACT) standards, health threshold standards, and generally available control technology or management practices (GACT) standards for area sources, in this case GDFs. The standards that apply to GDFs and the control of HAP are based on GACT pursuant to CAA section 112(d)(5).

Because Congress was concerned that these controls might not eliminate all emissions posing unacceptable health risks to exposed populations, subsection 112(f)(2) requires the EPA to determine for each category or subcategory of industries subject to MACT standards whether more stringent emission standards should be promulgated to control residual risks, and under subsection 112(f)(5) EPA has the discretion to do so for area sources subject to GACT standards. EPA's GACT rule for GDFs was adopted on January 10, 2008, 73 FR 1916, and amended on January 24, 2011, 76 FR 4156. See 40 CFR part 63, subpart CCCCC, § 63.11110 *et seq*. In both of these rulemakings, EPA concluded that its actions regulating HAP emissions from GDFs did not have a disproportionate impact on minority populations and low-income populations. *See* 73 FR at 1933, and 76 FR at 4176. Determining whether additional HAP emission reductions at GDFs might be necessary and appropriate under CAA section 112 is beyond the scope of today's action, which is focused on the narrower factual issue of whether ORVR systems are in widespread use in the motor vehicle fleet, and, consequently, whether it is appropriate to revise of waive the CAA section 182(b)(3) requirement for Stage II in Serious and above ozone nonattainment areas for purposes of ozone control. Any analysis of whether further HAP controls at GDFs are warranted is a subject for EPA's future technology review for subpart CCCCC under section 112(d)(6).

Comment: Commenter (EPA-HQ-OAR-2010-1076-0059) is a manufacturer of a vapor processor which enhances the reduction of overall gasoline vapor emissions at the GDF. The commenter believed that EPA's proposal to eliminate Stage II vapor recovery, if followed, will not result in the most cost effective means to reduce pollutants and will not save valuable fuel. The commenter claimed that emissions will be significantly increased above the levels possible with state-of-the-art technology; which has already been proven and is commercially robust. The commenter detailed the assertion by stating that vapor emissions at GDFs are comprised of refueling emissions and storage tank emissions. In turn, refueling emissions are generated at the nozzle/vehicle interface and at the outlet from the carbon canister used on the ORVR systems. The storage tank emissions are comprised of vent line emissions through the pressure/vacuum valve (p/v valve) and fugitive emissions through various point sources within the vapor containing hardware; where the fugitive emissions are a function of storage tank pressure. The commenter stated that the goal for the GDF is to minimize the total emissions (Volatile Organic Compounds and Hazardous Air Pollutants); which is the sum of the refueling and storage tank emissions. The commenter further explained that a practical tradeoff exists where the Air to Liquid ratio of the Stage II system could be increased to improve vapor collection at the nozzle/vehicle interface for a vacuum assist Stage II system; however, this increase in and to liquid ratio results in air ingestion into the storage tank with a penalty in fuel evaporation,

increased tank pressurization with resulting vent and fugitive emissions. The commenter added that with ORVR alone, air ingestion into the storage tank is minimized, however many non-ORVR vehicles will not capture refueling emissions. The commenter concluded that to adequately optimize a solution for the GDF, both sets of emissions must be considered simultaneously. The commenter referenced an Emissions Inventory summary provided by ARID Technologies to State of Illinois EPA.

The commenter asserted that capturing and containing refueling vapor yields a favorable economic payback. The commenter referenced section 2.1.15 of "EPA's Preliminary Plan for Periodic Retrospective Reviews"; page 22-23, where EPA says, "Available and affordable technology choices define the potential range of environmental solutions for many environmental problems. Moreover, technology innovation can lead not only to better environmental outcomes, but better economic opportunities and outcomes, too. EPA efforts in the past 40 years have spurred technology developments responsible for profound improvements in environmental protection through preventing, reducing, and sequestering pollutants, and monitoring environmental conditions…… During retrospective reviews and new rulemakings, EPA intends to assess innovative technology opportunities and market drivers, and implement a strategy to enhance the degree to which EPA's regulatory processes leverage market opportunities and encourage continued development of new sustainable technologies to achieve improved environmental results at lower costs."

On this basis, the commenter believed that the concept of ORVR widespread use is a flawed idea and presented an alternative that the commenter believed fulfills the intent of section 2.1.15, referenced above. The commenter started out by stating the primary flaw in EPA widespread use criteria centers on the "breakeven" or "cross over point" where the emissions from ORVR alone are said to equal the emissions from Stage II only. The commenter asserts that EPA uses improper math in Table 1 of the proposed rule, specifically column 5, where the commenter alleged that emissions from non-ORVR equipped vehicles are not accounted for where Stage II systems are not in use. On pages 3 and 4 of his comment letter, the commenter provided a detailed example of the emission reduction benefits and fuel savings associated with ORVR + Stage II and added technology to reduce Stage I storage tank emissions at a given GDF. The commenter concluded that the approach allowing states to remove Stage II when ORVR is in widespread use is not optimal as it leads to fewer overall emission reductions than ORVR + Stage II+ added technology to further reduce storage tank emissions.

Furthermore, the commenter stated his belief and presented an illustration on page 5 of his comment letter of why he believes that the ORVR only case is not an optimum alternative. The commenter further added that the state-of-the-art approach provides an emissions decrease of about 83 percent in comparison to the EPA ORVR only proposal. These emissions, as seen in the supporting documentation represent a significant reduction in atmospheric emissions (in close proximity to the motorist), while at the same time saving a large volume of salable fuel and yielding a rapid payback on invested capital for the gasoline dispensing facility owner/operator.

In addition to increased operating efficiency, the risk of groundwater contamination via below grade fugitive emissions is also significantly reduced.

Response: EPA agrees that, as discussed in AP-42, in general GDF emissions are comprised of refueling emissions and storage tank emissions. Spillage during refueling is also important. As part of the analysis for the final rule, EPA presented an assessment of the emission rates from these three sources with ORVR and Stage II and found that the only significant difference was in the emissions which occur from the vehicle fuel tank during the refueling event and the incompatibility emissions when ORVR vehicles are refueled by a vacuum assist type Stage II system.[15] We do not disagree with the commenter that potentially more could be done to address storage tank emissions beyond the requirements in 40 CFR part 63 subpart CCCCCC and related state provisions, but an assessment of these issues is beyond the scope and purpose of this action.

The commenter took the view that the "widespread use" approach used by EPA was flawed and instead that EPA should take a more holistic and integrated view of GDF emissions that could result in more control. The commenter's approach seemed to envision a scheme which included ORVR + Stage II + additional storage tank controls. The commenter also asserted this could lead to additional fuel savings.

EPA acknowledges that the commenter does not favor the widespread use approach, but EPA's proposal was simply to propose a date for ORVR widespread use in response to the provisions of the CAA. It does not compel any state to take action to remove Stage II or prevent a state from enhancing its GDF emission control requirements. We do not agree with the commenter's assertion that EPA's analysis in the NPRM used improper math or that within EPA's analysis emissions from non-ORVR vehicles are not accounted for where Stage II systems are not in use. EPA conducted an area or region wide efficiency analysis which incorporated all of the GDFs and refueling events in a given area per year including (a) ORVR vehicles at Stage II GDFs, (b) ORVR vehicles at non Stage II GDFs, (c) non-ORVR vehicles at Stage II GDFs, and (d) non-ORVR vehicles at non Stage II GDFs. The data used in EPA's analysis can be used to calculate the gallons and emissions in any of these four segments. It did not address storage tank emissions since the EPA memorandum to the docket referenced above concluded that these emissions would be about the same with ORVR alone or with Stage II alone.

Based on the criteria EPA used for widespread use assessment, the purpose of EPA's analysis was to identify the "crossover" point where ORVR reductions would equal Stage II reductions so that if Stage II was removed there would be equivalent or greater reductions from

[15] AP-42, the EPA's emission factors document, identifies three sources of refueling emissions: displacement, spillage, and breathing losses. In the EPA Memorandum "Onboard Refueling Vapor Recovery Widespread Use Assessment"(available in the public docket), the EPA determined that for separate Stage II and ORVR refueling events, spillage and breathing loss emission rates are similar. Thus, this analysis focuses on differences in controlled displacement emissions and incompatibility effects related to ORVR and Stage II vacuum assist systems.

ORVR.[16] This is not to suggest that there would not be additional reductions available from non-ORVR vehicles at Stage II GDFs after the crossover date if Stage II was retained or that there would not be uncontrolled emissions (non-ORVR vehicles at non-Stage II GDFs), but these would be relatively small and decreasing each year.

For example, using the ORVR penetration rates and ORVR efficiency values from column 5 of Table 2 of the FRM preamble and 86 percent efficiency and 10 percent exemption rate for Stage II, equal control occurs in May of 2013 on a nationwide average basis. At that point about 77.4 percent of gasoline refueling emissions would be controlled by ORVR and if there were no ORVR the control would also be 77.4 percent for Stage II. However, there is an ORVR requirement and a Stage II requirement so at that point the remaining available reductions from non-ORVR vehicles going to Stage II stations would be about 16 percent. (1-0.79)(.86)(0.90) before accounting for the Stage II vacuum assist system incompatibility effect.[17] This would decrease each year as the ORVR penetration increases.

As mentioned above, the commenter asserted that emissions from non-ORVR equipped vehicles are not accounted for where Stage II systems are not in use. This is simply not true. As can be seen in the crossover discussion above, within the NPRM analysis there are actually four segments. This includes a segment (d) (non-ORVR vehicles at non-Stage II GDFs) which is part of the total of all dispensed gasoline (a)+(b)+(c)+(d). Expanding the example above, assuming an even distribution of ORVR and non-ORVR equipped vehicles, of the 21 percent of gasoline going into non-ORVR vehicles if Stage II is still in place, 90 percent (non-exempt) of the 21 percent would be controlled by Stage II at an 86 percent efficiency (segment (c)) while 10 percent (exempt) of the 21 percent (about 2.1 percent) would be uncontrolled (non-ORVR cars going to non-Stage II stations (segment (d)).

EPA appreciates the information and analysis provided by the commenter with regard to ARID Technologies' vapor processor technology including its merits in terms of emission reductions and fuel savings and ARID's experience in field installations. However, further consideration of this technology for controlling GDF emissions and any incentives to do so are beyond the scope of this rule. The commenter provided no evidence that any potential action to remove Stage II would necessarily reduce the incentive of a state to address storage tank emissions beyond current EPA or local requirements.

IV. Comments Regarding State Implementation Plan Revisions

[16] Since in our earlier analysis we concluded that the difference was in vehicle tank displacement emissions during refueling, the analysis becomes a function of ORVR penetration, ORVR efficiency, Stage II efficiency, and Stage II exemptions.

[17] The 0.79 value is the quotient of 0.774/0.98 and is the fraction of gallons dispensed to ORVR vehicles at that point in time.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0042) requested that EPA provide further information on the overall expectations and steps needed for states to be granted a waiver and properly retire a Stage II program. The commenter stated that the guidance should include the following: 1) a listing of the timing and required elements for an approvable State Implementation Plan (SIP) revision to discontinue the Stage II program, including the types of information needed to demonstrate compliance with Section 110(l) requirements, 2) if a quantitative area-specific calculation of vehicle refueling emissions is needed, EPA should provide guidance on estimating excess emissions from ORVR incompatibility with vacuum assist systems, and 3) a definition of the options available to states to discontinue the requirement for new or remodeled gasoline dispensing facilities to install Stage II vapor recovery equipment in advance of either a state-specific or the national widespread use date. The commenter urged EPA to define the legal basis on how states may, if possible, stop requiring new installations and any enforcement activities for states with current SIP-approved Stage II programs.

Another commenter (EPA-HQ-OAR-2010-1076-0037) provided their belief that additional guidance from EPA is needed on how to incorporate the proposed rule elements into a SIP. In many states, removing the Stage II program from the SIP requires addressing several separate sections of the Clean Air Act. States need clear and detailed guidance from EPA on how to develop appropriate and complete SIP revisions. Whether or not Stage II can be removed will depend on EPA's review and approval of such SIP revisions. The commenter urged EPA to develop this guidance as soon as possible and preferably well in advance of finalizing the Proposed Widespread Use Rule. The NESCAUM states would welcome working with EPA on the issues identified below where the commenter believed specific guidance is needed.

The commenter stated that EPA must provide clear guidance as to what is needed in order to ensure that the integrity of the SIP is maintained when Stage II equipment is removed. The commenter declared that at a minimum, EPA must provide guidance on how to address requirements, including what analysis must be done and key issues to address concerning CAA sections 110(l), 184(b)(2), and 193. Additionally, the commenter indicated that states need clear and consistent guidance as to the appropriate base year that should be used for the equivalency and/or interference with maintenance demonstrations. The commenter recommended that EPA require that states use the first phase-out year of the Stage II program as their baseline year. The commenter pointed out that states are confused about assessing emission reductions from an existing Stage II program. The commenter expressed their understanding that emissions resulting from the incompatibility between ORVR vehicles and vacuum-assist Stage II systems as well as reduced system efficiency for the Stage II program can be used in states' SIP demonstrations. The commenter believed that if a state can demonstrate that ORVR obtains equal or more VOC reductions than Stage II, no additional measures should be required. The commenter requested that EPA work together with states to identify a complete list of issues related to SIP revision development with the goal of providing the states with clear and consistent guidance that will ensure consistent application among those states conducting these analyses.

Response: When a state wishes to remove the requirements for Stage II, the CAA requires EPA to ensure that such removal of the Stage II requirements would not interfere with other applicable CAA requirements under section 110(l), which precludes the Administrator from approving a SIP revision if it would interfere with applicable CAA requirements (including attainment and maintenance of the ozone NAAQS). In their SIP analysis, states may elect to conduct area-specific analyses, specifying parameters that are reflective of the types and ranges of equipment and operating patterns in use in the relevant area. Subsequent to the effective waiver date of the section 182(b)(3) Stage II requirement, areas currently implementing SIP-approved Stage II programs, as a result of obligations under the 1-hour or 1997 8-hour ozone NAAQS, would be required to continue implementing these programs until an EPA SIP revision approves removal of the requirement from the state's ozone implementation plan.

Of course, even after EPA takes final action to find widespread use of ORVR has occurred and issues a waiver of the section 182(b)(3) requirement, states remain free under CAA section 116 to choose to implement Stage II programs in any area, and would not be forced to remove existing Stage II provisions from a SIP. Some states may find that by removing Stage II requirements they are reducing the overall level of reductions for which they have previously obtained credit. Such states would need to show that foregoing any additional VOC emissions reductions resulting from Stage II would not interfere with attaining and maintaining the ozone NAAQS in violation of section 110(l). In such circumstances it is possible that additional emissions reductions may be needed to offset the removal of Stage II. It should also be noted that removing Stage II may affect mobile source emissions budgets, so we urge states to consult with the state and local transportation agencies. States could choose to keep Stage II for an additional period of time to allow further ORVR penetration in the motor vehicle fleet, or instead obtain equivalent emissions reductions from other sources.

EPA recognizes the need for providing guidance on SIP revisions for removing Stage II requirements and will release such guidance a short time after the final rule is published. Central to this guidance will be discussion on what should be included in a revised SIP as well as indications of what data is needed and suggestions on how the analysis could be conducted. EPA is aware that new construction that is prior to the waiver date may have capital costs for installing Stage II that may only be required for a short time. EPA shares the commenters' concerns about an inefficient use of resources to meet a regulatory requirement which may have a short period of applicability and will work with the states to find a way forward on this matter. However, this is ultimately an issue for each state. EPA cannot unilaterally change existing state SIPs or state regulations addressing Stage II requirements.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0037) urged EPA to provide states with clear guidance as to whether MOVES is required to conduct Stage II removal analyses. If so, the commenter specified that EPA must issue guidance on how states should run MOVES for analyzing removal of the Stage II program. The commenter denoted that States have been compiling a list of issues related to using MOVES for such an analysis. A preliminary list of issues include: (1) determining appropriate Reid Vapor Pressure (RVP) factors; (2) accounting

for excess emissions due to ORVR incompatibility; and (3) running the model for one representative county rather than statewide.

Response: While it may be preferable, MOVES 2010(a) is not the only means by which states could support a revised SIP. Mobile model runs or MOVES 2010 or some other approach may be sufficient if the submitter can demonstrate the accuracy of the outcomes. EPA's Office of Transportation and Air Quality (OTAQ) has developed the MOtor Vehicle Emission Simulator (MOVES). MOVES2010 has become EPA's approved motor vehicle emission factor model for estimating volatile organic compounds (VOCs), nitrogen oxides (NOx), carbon monoxide (CO), direct particulate matter (PM10 and PM2.5) and other pollutants and precursors from cars, trucks, motorcycles, and buses by state and local agencies outside of California. This new emission modeling system estimates emissions for mobile sources covering a broad range of pollutants and allows multiple scale analysis. The MOVES model currently estimates emissions from cars, trucks & motorcycles. The modeling system can be downloaded at the following website: http://www.epa.gov/otaq/models/moves/index.htm.

MOVES2010 can be used to estimate air pollution emissions from cars, trucks, motorcycles, and buses. It is approved for use in official state implementation plan (SIP) submissions to EPA and for transportation conformity analyses outside of California. It can also be used to estimate the benefits from a range of mobile source control strategies, for more general analyses of national or local emissions trends, and for policy evaluation. MOVES2010 is EPA's best available tool for quantifying criteria pollutant and precursor emissions, as well as for other emissions analyses of the transportation sector.

Prior to this official release of MOVES2010, the MOBILE6.2 motor vehicle emission factor model was the only model approved for performing SIP and transportation conformity analyses. EPA intends to address some of the commenter's specific questions related to issues such as RVP and county versus statewide MOVES runs in separate guidance.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0037) is concerned with the 98 percent control efficiency rating for ORVR. The commenter urged EPA to conduct a robust analysis of the ORVR efficiency rating and incorporate the capability in MOVES for states and EPA to apply an ORVR refueling adjustment factor, similar to that for the Stage II vapor recovery program, in order to allow a realistic analysis, or alternatively, if warranted, EPA should adjust the 98 percent control efficiency in the model to account for deterioration with age or realistic effectiveness.

Response: Concerning the 98 percent ORVR overall efficiency used in EPA's analysis, EPA referenced the manufacturer in-use verification program where there were over nearly 1,200 laboratory tests of in-use ORVR equipped vehicles which lead to an in-use efficiency of about 98 percent. For the final rule, EPA has updated its analysis to include an additional 478 refueling emission test results for ORVR-equipped vehicles that were conducted in calendar years 2010 and 2011. The data set, which now includes over 1,600 vehicle tests for vehicles from

model years 2000-2010 with mileages ranging from 10,000 to over 100,000, continues to support the conclusion that the 98 percent in-use efficiency values remain appropriate.[18]

Comment: Commenter (EPA-HQ-OAR-2010-1076-0048) suggested EPA provide States with guidance on how to prepare a non-interference demonstration that meets the intent of Section 110(l) of the Clean Air Act in a straightforward and simplified way that facilitates expeditious approval of the SIP revision by EPA. The commenter contended that this is particularly important because EPA is claiming a long-term cost savings associated with this rule to be approximately $87 million per year. The commenter asserted that these cost savings will not be realized if EPA does not work with the states to develop, submit, and approve these SIP revisions in an efficient and timely manner. The commenter declared that EPA is misleading the public by implying that these savings result directly from EPA's action on this rulemaking and that EPA should make it clear in the record that the savings will occur only if the states make changes to their own rules and only after EPA approves revisions to their SIP.

The commenter also established that EPA should be clear in the final rule that the process for physically decommissioning the Stage II equipment should be left to the individual states and regions and not dictated in a rule or guidance document by EPA.

Response: EPA recognizes the need for providing guidance on SIP revisions for removing Stage II requirements and will release such guidance subsequent to this final rule. Central to this guidance will be discussion on what should be included in a revised SIP as well as indications of what data is needed and suggestions on how the analysis could be conducted. While we agree that approved revised state SIPs are needed for Stage II decommissioning to begin, we note absent the widespread use determination the cost savings would not be possible. We acknowledge the commenter's request that EPA not specify by regulation or guidance any specific decommissioning criteria or requirements. We do not intend to do so, but we encourage the states to review and strongly consider guidelines published by the Petroleum Equipment Institute and to consider criteria already put in place by Maine, Vermont, New Hampshire and New York. Central to these considerations is a safe process which ensures system tightness and minimizes unnecessary fugitive emissions from dispenser or vapor pipe leaks.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0059), a manufacturer of a vapor processor which enhances the control of gasoline vapor emissions at GDFs stated their interest in the section in the Federal Register which addresses SIP Revision; this includes the CAA section 110 (l) requirements as well as the section 116 where States remain free to choose to implement Stage II programs in any area. The commenter supposed that States choosing to continue using Stage II, in conjunction with a vapor processor will qualify for special state-of-the-art, or MACT status. The commenter supposed that this qualification could trigger financial incentives to the GDF owner/operator such as reduced taxes on motor vehicle fuel and/or a subsidy to help cover the capital and installation expenses of installing vapor processor hardware. Moreover, the

[18] See EPA Memorandum Updated ORVR In-use Efficiency. A copy of this memorandum is located in the docket for this action EPA-HQ-OAR-2010-1076.

commenter suggested that the State may also qualify for various financial incentives while at the same time earning emissions reductions in their SIP. The commenter believed it would be reasonable to reward the proactive States and GDF owners/operators who employ a state-of-the-art approach to reduce emissions above and beyond mandated levels. The commenter concluded they would earn an attractive return by paying back their capital investment with saved fuel, but on the other hand, an extra incentive can help ensure that Stage II systems are not incorrectly removed by the majority of the GDF owners/operators. The commenter pointed out that as an added benefit to regulatory agencies, the efforts expended by the GDF owners/operator will be much stronger and more focused if their "good housekeeping" practices earn them the opportunity to realize an economic benefit – in other words; why ensure leak integrity of your vapor piping system, if you know the losses are constantly occurring through the p/v valve? However, if the GDF owner/operator installs and maintains Stage II technology along with a vapor processor; they have a strong incentive to make sure all systems on the forecourt are properly operating and that the associated piping system remains leak free. The commenter raised this notion in correspondence to Mr. Thomas A Driscoll, USEPA, 28 September 2004, this letter was attached to the comments submitted to the NPRM.

The commenter also lays out ideas regarding retaining Stage II and potentially enhancing its performance through additional vapor processing technologies. The commenter provided data demonstrating the performance of its systems in reducing overall vapor emissions at GDFs.

Response: EPA acknowledges that these concepts may have merit and states at their discretion may want to consider them as part of any overall hydrocarbon emission reduction strategy. However, any further analysis or consideration here is outside of the scope of this rulemaking.

The commenter neither identified an existing program nor indicated how States choosing to continue using Stage II, in conjunction with a vapor processor would qualify for special state-of-the-art, or MACT status. The commenter also stated that states may qualify for financial incentives, yet did not identify any incentives that may be currently available to states in this regard. EPA did not propose a financial incentive program to states continuing to operate Stage II systems, nor to states that enhance their Stage II systems. Instead, EPA proposed a waiver of Stage II requirements upon which the States may choose to decommission the Stage II systems. Nonetheless, as has been discussed before States may elect to retain Stage II and the commenter made no technical connection that removing Stage II would decrease the incentive to add other GDF vapor control requirements if a state elected to do so. If the commenter is simply advocating for a revision to tax policy in order to create new incentives for states to control emissions beyond levels required by the CAA, that subject is outside the scope of this rulemaking, and we currently take no position on the merits of this suggestion.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0037) indicated that several states have or are being considered for EPA "Clean Data Determinations." These states have questions regarding whether or not these determinations will affect their requirements for analysis and removal of the Stage II program. The NESCAUM states urged EPA to clarify in the final rule

how Clean Data Determinations affect the type and level of analysis required to remove a Stage II program.

Response: Under EPA's Clean Data Policy[19] and the regulation that embodies it, 40 CFR 51.918 (1997 8-hour ozone), EPA may issue a determination of attainment (formally known as a Clean Data Determination (CDD)) after notice and comment rulemaking determining that a specific area is attaining the relevant standard.

If a state in the OTR wishes to shift requirements of Stage II to comparable measures or if a non-OTR state wishes remove the requirements for Stage II, the CAA requires EPA to ensure that such de-activation of the Stage II requirements would not interfere with other applicable CAA requirements under section 110(l), which precludes the Administrator from approving a SIP revision if it would interfere with applicable CAA requirements (including attainment and maintenance of the ozone NAAQS).

When de-activating Stage II control programs, states should assess the VOC emissions impact in the affected area during the phase-out period. The final rule and the subsequent guidance provides methods and calculations for evaluating the emissions impact of phasing-out Stage II programs. In their SIP analysis, states may elect to conduct area-specific analyses, specifying parameters that are reflective of the types and ranges of equipment and operating patterns in use in the relevant area.

A planned Stage II deactivation that is shown not to result in an increase in area-wide VOC emissions should be consistent with the conditions of CAA section 110(l). A planned Stage II phase-out that is shown to result in an area-wide emissions increase can also be consistent with the conditions of CAA section 110(l) if the state offsets the increase in emissions by incorporating additional emissions controls into the SIP. In general, in an area that is attaining the standard, it should be easier to demonstrate that phasing out State II controls is consistent with the provisions of section 110(l).

[19] EPA's Clean Data Policy titled "Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard, John S. Seitz, Director, Office of Air Quality Planning and Standards (MD-10), May 10, 1995.

V. Comments Regarding Effects to Stage II Programs in Ozone Nonattainment Areas of the Ozone Transport Region

Comment: Commenters (EPA-HQ-OAR-2010-1076-0032, 0034, 0046, 0049, 0050 and 0051) indicated that CAA section 184(b)(2) is a separate Stage II related requirement that all areas in the Ozone Transport Region (OTR) must implement either Stage II or measures that achieve "comparable" emissions reductions. This independent requirement is not affected by any widespread use determination or waiver of the CAA section 182(b)(3) Stage II requirements. Thus, unless areas in the OTR implement measures that achieve "comparable" emissions reductions, they appear to still remain obligated to require Stage II vapor recovery systems. The commenters further believe that under the Agency's current interpretation of section 184(b)(2), refueling stations in the OTR may be unable to take advantage of the section 182(b)(3) Stage II waiver and the costs savings indicated. The commenters urged EPA to revise it interpretation of section 184(b)(2) to permit ORVR to be recognized as an emission reduction measure considered "comparable" to Stage II. Commenters (EPA-HQ-OAR-2010-1076-0032, 0034) also requested that EPA delay the deadline for comments on the proposed rule, specifically to comment on Section 184(b)(2), to at least one month after the Agency revises its interpretation of the aforementioned section.

Commenter (EPA-HQ-OAR-2010-1076-0039) endorsed and supported the comments offered by another commenter (EPA-HQ-OAR-2010-0037) and offered further comment on issues related to the following: 1) EPA guidance regarding the implementation of the rule through the OTR; 2) coordination between OTC and EPA regarding SIP incorporation of EPA's proposal; and 3) maintenance of Stage II systems. The commenter urged EPA to release the implementation guidance for the OTR prior to promulgation of the Widespread Use Rule and to clarify in the guidance what comparable measures may be counted and how to conduct the comparability analysis. The commenter also requested that EPA provide clear and consistent guidance as to the appropriate base year that should be used for the demonstrations of comparability. The commenter also indicated that EPA should provide an opportunity to comment on EPA's draft OTR guidance before it is finalized. The commenter recommended that if a state can demonstrate that ORVR obtains VOC reductions equal to or more than Stage II systems, then no additional measures should be required. The commenter also recommended that as part of guidance, EPA should require that states use the first phase-out year of the Stage II program as the baseline year. On the subject of maintaining Stage II systems, the commenter recommended for states that need additional VOC emission reductions to reach attainment of the NAAQS and to address environmental justice or toxic concerns, that EPA continue to allow states to maintain the option to keep Stage II and be clear on what is required to maintain a Stage II program moving forward. The commenter recognized that states have this option, but the commenter believed that EPA should address issues related to quantifying excess emissions that may occur when refueling ORVR equipped vehicles at gasoline stations using vacuum-assist Stage II technology, as well as potential excess emissions from removal of Stage II systems.

Commenter (EPA-HQ-OAR-2010-1076- 0052) stated that in EPA's proposal to eliminate Stage II, the EPA also determined that the independent requirements of the OTR are "not affected by any widespread use determination or waiver of section 182(b)(3) Stage II requirement." The commenter contended that OTR states are granted no relief from Stage II requirement under this proposal and remain subject to redundant regulatory requirements. The commenter asserted that this results in confusion in the marketplace and presents an unfair advantage for stations in nearby states without these requirements.

Commenter (EPA-HQ-OAR-2010-1076-0037) indicated that a number of states are troubled by the lack of information provided to OTR states regarding OTR-specific CAA requirements for Stage II. The commenter acknowledges that section 184(b)(2) of the Act requires that OTR states adopt (or maintain) Stage II or achieve comparable emission reductions. The commenter recalled that the preamble of the proposed Widespread Use Rule indicated that states in the OTR must have adopted measures achieving emissions reductions that are at least equivalent to those achievable by Stage II and "incremental" to ORVR before EPA would approve a SIP revision removing Stage II controls. The commenter represented that states need clarification on what an "incremental" analysis means and what it includes. The commenter believed that OTR states should be allowed to use the year that they phase out Stage II as their baseline year for their comparable measures demonstrations. The commenter interposed that if an OTR state can demonstrate that ORVR obtains equal or more VOC reductions than Stage II, no additional measures should be required. The commenter urged EPA to work with the Ozone Transport Commission to develop this guidance.

Response: This rulemaking is taking final action only under CAA section 202(a)(6) to find that ORVR is in widespread use and to waive only the CAA section 182(b)(3) Stage II requirement for serious and worse ozone nonattainment areas. This rulemaking is not taking final action under CAA section 184(b)(2) regarding the separate but related requirement that OTR states implement either Stage II or other measures that obtain comparable emissions reductions, and our proposed rule proposed no such action. States in the OTR, therefore, even after today's rule, remain subject to a separate requirement under section 184(b)(2) of the CAA to implement measures that achieve comparable emissions reductions to those achievable by Stage II. The CAA does not provide the Administrator with authority to waive this independent requirement. The section 202(a)(6) waiver authority only applies to the section 182(b)(3) requirement.

In the proposed rule, EPA did not propose any action related to section 184(b)(2) and did not solicit comments on CAA section 184(b)(2). As a result, EPA does not believe it is necessary or appropriate to offer an extension to the comment period of the proposed rule regarding this issue. However, as discussed below EPA will issue new guidance on fulfilling the comparable measures requirement and conducted outreach to the states and other parties in the preparation of this guidance. The intent of this effort is to update the degree of emissions reductions that would be expected to be achieved for a control measure to be considered

"comparable" to Stage II, in light of Stage II's declining ability to obtain reductions as ORVR penetration increases in the motor vehicle fleet.

Since ORVR is independently required under section 202(a)(6), simply treating it as a comparable measure that an OTR SIP must additionally contain would arguably render the section 184(b)(2) requirement a nullity, which would therefore not be a permissible statutory interpretation. However, what has changed is the expected level of emissions reductions that Stage II programs can obtain, in light of the fact that in the OTR areas, Stage II systems (or other comparable measures) were fully implemented more than a decade ago and ORVR is now in force with ORVR-equipped vehicles phasing in at the rate of 3-4 percent of the fleet each calendar year. Thus, the factual circumstances influencing EPA's estimate of what level of emissions reductions are "comparable" to those achieved by Stage II, incremental to ORVR, are truly different today as compared to the mid-1990s. In fact, comparable measures could in some cases mean no additional control beyond ORVR is required if Stage II is achieving no additional emission reduction benefit in an area or only a declining *de minimis* benefit. It is worth noting that the CAA calls for "comparable emission reductions," not necessarily Stage II- equivalent reductions, which preserves some discretion when evaluating the adequacy of an OTR state's SIP revision submission under section 184(b)(2).

This issue will be addressed in EPA's anticipated update to the forthcoming guidance titled (tentatively), "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures." This future guidance will be issued after the publication of this rulemaking, but it is not part of this final rulemaking and does not itself constitute final agency action that has binding and enforceable effect. Final action regarding the section 184(b)(2) issues will be taken only in response to any SIP revision submissions from OTR states. Only at that point will EPA's implementation of section 184(b)(2) be subject to judicial review under CAA section 307(b).

Comment: Commenter (EPA-HQ-OAR-2010-1076-0038) stated that EPA must immediately require the State of Pennsylvania to submit the Stage II or comparable measures SIP revision required by Section 184(b)(2) of the Clean Air Act. The commenter asserted that Pennsylvania has not completed the required 184(b)(2) Stage II comparability analysis SIP submission to EPA. The commenter further asserted that EPA has not issued to Pennsylvania a finding of failure to submit the analysis. The commenter alleged that the state has failed the Stage II comparability requirement for the 55 of the state's 67 counties where a section 182(b)(3)-based Stage II program is not in operation. The commenter reiterated the proposed rule where it stated that EPA intends to provide additional guidance for OTR states on how they can conduct updated comparability analyses. The commenter assumed that "updated" obviously means that there is an existing comparability analysis and that the state is 15 and one half years overdue. The commenter stated that EPA must rectify this oversight immediately by making a finding of failure to submit.

Response: We appreciate the commenter's concern, and have shared the commenter's concerns with EPA Region 3, Office of Air Program Planning, in order to address the situation

appropriately. The commenter's statements regarding Pennsylvania's status and regarding its CAA section 184(b)(2) obligations, is beyond the scope of today's final rule, and we have referred the commenter's contentions to EPA Region 3.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0040) commended EPA for proposing this rule that eliminates Stage II vapor recovery requirement in those areas where the use of ORVR systems is widespread. The commenter also believed this rule will improve air quality while also reducing regulatory burdens. However, the commenter indicated that the proposed rule did not adequately address the waiver of Stage II requirements for states located within the OTR. The commenter also stated that EPA's proposed rule relied on what the commenter believed to be an impractical framework for EPA review and approval of revised SIPs prior to removal of Stage II requirements.

The commenter indicated that their state cannot benefit from the proposed rule without also considering provisions of section 184(b)(2). The commenter stated that EPA's proposed rule does not allow states within the OTR, subject to 184(b)(2), to obtain relief upon a demonstration that ORVR systems are in widespread use. The commenter recommended that EPA revise the proposed rule to clarify that the Stage II waiver provisions are applicable in the OTR to the same extent as elsewhere.

The commenter recognized that the proposed rule identified an emission control efficiency of 86 percent for Stage II systems. The commenter believed this number to be inflated because it assumes annual inspections of all Stage II equipment. The commenter stated that that assumption is impracticable given the vast number of GDFs in each state and the limited state resources to perform annual inspections. The commenter added that the 86 percent control efficiency does not account for fugitive emissions related to Stage II and ORVR incompatibility, even though EPA acknowledged the incompatibility that exists between some vapor recovery systems. The commenter further added that EPA based the efficiency determination on a report that is more than 20 years old, which over-estimates the current effectiveness of these systems. The commenter recommended that EPA reexamine in-use Stage II installations to determine the actual effectiveness of the program utilizing present day studies and date and adjust the assumed control efficiency downward. The commenter suggested the control efficiency should be 62 percent due in part to poor maintenance of gasoline dispensing equipment by facilities, less frequent inspections, and existing incompatibilities between ORVR and Stage II. The commenter avers that when factoring incompatibility and the over-estimation of Stage II efficiency, equivalency and widespread use would occur prior to 2013 and has already occurred in the commenter's state.

The commenter indicated that EPA's framework for review and approval of a revised SIP prior to removal of Stage II requirements appears to be impractical and may compromise air quality. The commenter labeled EPA's process cumbersome and results in a delay in EPA approving of SIP revisions. The commenter contended that such delay could increase the potential for excess emissions. The commenter suggested that since the proposed rule included the analytical approach for widespread use determinations, where states use this analytical

approach to establish widespread use they should be authorized to discontinue use of Stage II requirements without any need for review or approval by EPA.

Response: EPA recognizes that some states in the OTR are implementing Stage II controls to meet both section 182(b)(3) (that requires Stage II in Serious and above ozone nonattainment areas) and section 184(b)(2) (that requires all OTR attainment and nonattainment areas to implement measures that achieve emissions reduction comparable to those achieved by Stage II); others are implementing Stage II controls in order to meet section 184(b)(2) alone. As previously explained, today's final rule takes no action with respect to CAA section 184(b)(2). Since ORVR is independently required under section 202(a)(6), simply treating it as a comparable measure that an OTR SIP must additionally contain would arguably render the 184(b)(2) requirement superfluous, which would not be a permissible statutory interpretation. However, what has changed is the expected level of emissions reductions that Stage II programs can obtain, in light of the fact that in the OTR areas, Stage II systems (or other comparable measures) were fully implemented more than a decade ago and ORVR is now in force with ORVR-equipped vehicles phasing in at the rate of 3-4 percent of the fleet each calendar year. Thus, the factual circumstances influencing EPA's estimate of what level of emissions reductions Stage II now obtains, and what reductions are therefore "comparable" to those achieved by Stage II, incremental to ORVR, are different today compared to the mid-1990s. Therefore, in a separate guidance document, EPA is updating its estimate of what emissions reductions are needed to be comparable to those obtained by Stage II. This issue will be further addressed in EPA's anticipated updated guidance titled (tentative), "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures." This guidance will be issued some time after the publication of this rulemaking, but is not part of this final rulemaking.

We share the commenter's concerns regarding Stage II efficiency. Many Stage II installations have been in place for twenty years or more, Much of the above ground hardware is now approaching the second replacement cycle EPA projected in its initial Stage II technical guidance document.[20] However, we believe this is an issue best addressed in the SIP revision process because that is where the inspection, testing, and maintenance provisions for the GDF owners/operators and the inspection and enforcement requirements for the states were identified. States are encouraged to review and as needed, update the Stage II efficiency value used in this assessment considering their inspection and enforcement resource commitments. Through this revision the state can adjust its Stage II efficiency if necessary and address ORVR/Stage II incompatibility. Some Stage II in-use efficiency data is provided in the references cited below.[21]

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[20] See Table B-15 in the EPA report "Draft Regulatory Impact Analysis: Proposed Refueling Emission Regulations for Gasoline-Fueled Motor Vehicles – Volume 1", EPA-450/3-87-001a, July 1987.

[21] "Stage II Vapor Recovery Systems Issues Paper," U.S. EPA, Office of Air Quality Planning and Standards, August, 2004, "Analysis of Future Option's for Connecticut's Gasoline Dispensing Facility Vapor Control Program," Connecticut Department of Energy and Environmental Protection, December 2011, "Draft Vapor Recovery Test Report," CARB and CAPCOA, April, 1999, "Performance of Balance Vapor Recovery Systems at Gasoline Dispensing Facilities," San Diego Air Pollution Control District, May 18, 2000.

EPA understands that making the Stage II waiver automatic, without the need to revise SIPs, would shorten the time before a state could act to allow GDF owners/operators to decommission their Stage II installations. However, it is not a possible result under the cooperative federalism approach of the CAA, under which states first adopt control strategies under state law and then submit those for incorporation by EPA into federal law. States currently have their Stage II programs established in their own legislation and regulations, and EPA does not have the unilateral power to alter state law. Moreover, where states have submitted their laws to EPA and EPA has approved them into SIPs, the only way to remove those state law provisions from SIPs is for states to later seek such SIP revisions through new submissions, which EPA would then act on under CAA section 110. In addition, when a state wishes to remove the requirements for Stage II, the CAA requires EPA to ensure that such an action would not interfere with other applicable CAA requirements under section 110(l), which precludes the Administrator from approving a SIP revision if it would interfere with applicable CAA requirements (including attainment and maintenance of the ozone NAAQS). Some states may find that by removing Stage II requirements they are reducing the overall level of reductions for which they have previously obtained credit. Such states would need to show that foregoing any additional VOC emissions reductions resulting from Stage II would not interfere with attaining and maintaining the ozone NAAQS in violation of section 110(l). EPA is providing additional guidance to the states to facilitate completion of these analyses, although that guidance is not part of today's final rule.

Comment: Commenters (EPA-HQ-OAR-2010-1076-0046, 0049, 0051 and 0052) believed that if Stage II controls are mandated in the OTR for several more years, it will lead to a net emissions increase. The commenter explained that when an ORVR equipped vehicle is fueled at a Stage II equipped service station, a lack of compatibility between the two controls may actually cause emission reduction of the two systems together to be less than the emission reduction achieved by either system alone. The commenter contended that by removing Stage II, states would actually be reducing the amount of emissions because a substantial majority of cars on the road will have ORVR and will increase as older vehicles continue to be phased out. The commenter assumed that if EPA does not revise its section 184(b)(2) guidance for "comparable" measures, states in the OTR will need to achieve additional emissions reductions in order to offset the removal of Stage II. The commenter encouraged EPA to clearly state that this reduction in emissions from the removal of Stage II can act as an offset for purposes of the comparability analysis. In other words the vapor emissions that would result if Stage II and ORVR were used in conjunction with one another should be deducted from the total emission reductions states would otherwise need to achieve in implementing another "comparable" emissions reduction policy. The commenter also recommended that the guidance contain detailed data on the percentage of vehicles on the road projected to have ORVR systems that would be used in the comparability analysis.

Response: We acknowledge the points raised by the commenters, although they are not directly relevant to the ORVR widespread use finding and waiver of the section 182(b)(3) requirement that is the subject of this rulemaking. Part of the purpose for developing the separate section 184(b)(2) guidance released after the publishing of this final rule is to describe these kinds of concerns and address how they might be handled in future SIPs.

Comment: Commenters (EPA-HQ-OAR-2010-1076-0032, 0046, 0049, 0051 and 0052) indicated that in 1995, EPA released a study identifying control measures capable of achieving emission reductions "comparable" to those achievable by Stage II vehicle refueling controls in the OTR.[22] The commenter pointed out that in the study, EPA interpreted section 184(b)(2) as saying only measures not already prescribed under the CAA can be considered "comparable" measures sufficient to eliminate the Stage II requirement for areas in the OTR. The commenters concluded that under EPA's interpretation, ORVR controls cannot be considered a "comparable" measure because ORVR systems area already required under section 202(a)(6). The commenters urged EPA to reconsider this interpretation. The commenters further alleged that it is not reasonable to interpret the statute as saying a technology designed to replace Stage II is not comparable to Stage II. The commenters asserted that such an interpretation ignores the plain and contextual meaning of the statute. The commenters added that by requiring areas in the OTR to implement Stage II or policies that achieve emission reductions "comparable" to Stage II, Congress wanted states to achieve mechanisms not already in place. The commenters further stated that this is to be distinguished from mechanisms not already prescribed under the statute. The commenter contended that when the 1995 study was released, ORVR standards were promulgated less than one year earlier. The commenters indicated that automobile manufacturers generally did not begin installing ORVR on new passenger cars until 1998 when 40 percent of new cars were required to have ORVR. Since 2000, all new cars have been required to be equipped with ORVR, and all light duty trucks and vans have been so required since 2003. The commenters concluded that under the CAA, states in the OTR could not point to ORVR to avoid requiring Stage II in 1995 because ORVR was not yet in place, not because ORVR was already prescribed under the statute. The commenters stated their belief that ORVR was designed to phase out the Stage II requirement, not augment it.

The commenters pointed out that EPA stated in the July 15, 2011, preamble that when an ORVR vehicle is fueled at a service station equipped with vacuum assist Stage II vapor recovery system, a lack of compatibility between the two controls may actually cause the emission reduction of the two systems together to be less than the emission reduction achieved by either system alone. The commenters offered a 2007 study published by the Northeast States for Coordinated Air Use Management (NESCAUM), titled "Onboard Refueling Vapor Recovery

[22] U.S. EPA, Office of Air Quality Planning and Standards, "Stage II Comparability Study for the Northeast Ozone Transport Region."

Systems Analysis of Widespread Use," noted the potential for significant excess emissions throughout the northeast as early as 2012 caused by the incompatibility of the two systems.[23]

The commenters also offered that beyond the increasing prevalence of ORVR controls, interpreting the word "comparable" in section 184(b)(2) as referring to measures not already prescribed under the CAA disregards EPA's own control efficiency data. The commenters contended that according to EPA, ORVR-equipped vehicles achieve 98 percent control efficiency, while Stage II alone achieves just 77.4 percent control efficiency. The commenters indicated their belief that ORVR has infiltrated the market to the point that the EPA no longer believes Stage II will be necessary within two years, largely because ORVR is more successful at reducing emissions than Stage II. Nonetheless, under EPA's current interpretation of section 184(b)(2), states in the OTR are currently unable to point to ORVR's prevalence as achieving "comparable" emissions reductions. The commenters believed this is arbitrary and unreasonable. The commenters further speculated that EPA intends to provide additional guidance for OTR states on how they can conduct updated comparability analyses based on the 1995 study for purposes of removing Stage II under section 184(b)(2). The commenters recommended that EPA should revise its interpretation of the word "comparable" in that section. The commenters asserted that until EPA releases new guidance that clarifies its interpretation of the word "comparable" in section 184(b)(2), they lack sufficient information to provide EPA with informed comments on the Proposal. The commenters further maintain that if EPA does not revise its outdated interpretation of the word "comparable" in section 184(b)(2), the proposed rule will be of little benefit to refueling facilities located in the OTR. The commenters offered their belief that cash-strapped states will spend their limited resources on independent comparability analyses and revise their SIPs to eliminate the Stage II requirement. The commenters conclude that if the EPA updates its interpretation to reflect fifteen years of progress, facilities in the OTR stand to reap substantial benefit.

Response: See our earlier responses to similar comments regarding the separate and related, but not directly relevant, CAA section 184(b)(2) issues. Today's rulemaking takes no final action under section 184(b)(2), but instead only under section 202(a)(6) to find widespread use of ORVR and to exercise our express authority to waive the specific section 182(b)(3) requirement. The commenter is free to re-raise its section 184(b)(2) concerns in the context of future SIP action implementing that section. EPA acknowledges the concerns raised by the commenters with regards to comparable measures and the OTR states. The NPRM discussed this issue by describing the emissions of concern as being those captured by Stage II incremental to ORVR as opposed to all emission reductions from Stage II in the absence of ORVR, as was the case in the mid-1990's. What has changed is the expected level of emissions reductions that Stage II programs can obtain, in light of the fact that in the OTR areas, Stage II systems (or other comparable measures) were fully implemented more than a decade ago and ORVR is now in

[23] NESCAUM, "Onboard Refueling Vapor Recovery Systems Analysis of Widespread Use," Appendix B and C, August 20, 2007. http://www.nescaum.org/documents/onboard-refueling-vapor-recovery-systems-analysis-of-widespread-use/

force with ORVR-equipped vehicles phasing in at the rate of 3-4 percent of the fleet each calendar year. Thus, the factual circumstances influencing EPA's estimate of what level of emissions reductions are "comparable" to those achieved by Stage II, incremental to ORVR, are different today compared to the mid-1990s. This issue will be further addressed in EPA's guidance which will be issued after publication of this rulemaking, but is not part of the final rule.

VI. Comments Regarding Decommissioning of Stage Vapor Recovery Systems

Comment: Commenter (EPA-HQ-OAR-2010-1076- 0037) insisted that where Stage II equipment is decommissioned, steps must be taken to minimize leaks and fugitive emissions, all of which may result in increased exposure to air toxics or groundwater and soil contamination. NESCAUM urges EPA to provide guidance to ensure that Stage II decommissioning occurs in a manner that minimizes potential for vapor releases from underground piping at facilities that remove their Stage II systems. This guidance should encourage state air offices to coordinate with their state counterparts that manage underground storage tanks to ensure that consistent procedures are in place to address liquid and vapor leak issues associated with decommissioning.

Commenter (EPA-HQ-OAR-2010-1076-0055) contends that for regions interested in decommissioning Stage II recovery systems, EPA must provide clear implementation guidance describing the CAA provisions that apply depending on an area's circumstances (i.e., Ozone Transport Region [OTR] states, states opting in to Stage II programs, states with Stage II recovery systems prior to 1990 and states with Stage II as a result of the 1990 CAA amendments), since the applicable CAA requirements vary depending on when Stage II was initially implemented or whether a particular area is part of the OTR. Although some states have successfully decommissioned Stage II recovery systems through the SIP revision process, for those areas eligible to decommission Stage II, the commenter believes EPA must still provide the 2 elements minimally needed for a SIP revision, including what is needed for areas subject to CAA section 110(l) and for those subject to section 193. The resulting SIP process should be a streamlined one, consistent with the principles underlying the ongoing NACAA-ECOS-EPA SIP Reform Workgroup.

Commenter (EPA-HQ-OAR-2010-1076-0043) pointed out that EPA did not provide any guidance on the proper decommissioning or removal of Stage II equipment from facilities. The commenter expressed concern that Stage II systems be decommissioned properly and requested that EPA provide proper shut down procedures and final inspection criteria to certify a proper shut down.

Commenter (EPA-HQ-OAR-2010-1076-0042) requested that EPA provide further information on the overall expectations and steps needed for states to be granted a waiver and properly retire a Stage II program. The commenter stated that the guidance should include the following: 1) a listing of specific steps necessary for gasoline dispensing facilities to

decommission their existing Stage II equipment, 2) a description of the State's role in the decommissioning procedure and outline any required follow-up with the affected GDFs.

Commenter (EPA-HQ-OAR-2010-1076-0048) requested that EPA should be clear in the final rule that the process for physically decommissioning the Stage II equipment should be left to the individual states and regions and not dictated in a rule or guidance document by EPA.

Response: EPA understands the request for clear guidelines for decommissioning Stage II systems safely and effectively. EPA has often referenced that industry association codes and standards be followed (where applicable) to ensure that Stage II systems are properly designed, constructed, installed, and, in this case, dismantled or decommissioned. Industry codes and standards provide a means for improving methods or developing alternative methods of Stage II system decommissioning and we encourage States and local agencies to reference these codes. EPA realizes that industry codes and standards may be updated periodically and EPA also recognizes that State and local requirements may supersede industry codes and standards or be inherently more stringent. EPA regulations do not require the use of a particular issue of any code. EPA encourages owners/operators to use the version of the code or standard that is current at the time the Stage II decommissioning activity occurs. The Petroleum Equipment Institute (PEI) and at least four states have recommended practices or specific requirements for decommissioning Stage II systems. The PEI guidance, "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-09," is especially instructive as it was developed by industry experts with a focus on regulatory compliance and safety. It basically contains the steps which involve dismantling Stage II hardware and applies to both balance and vacuum assist type systems. Please be aware that there may be other codes or standards not listed here that may be used to ensure proper Stage II decommissioning.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0060) described themselves as a company that has valid emissions monitoring data from sites where Stage II vapor return has been disconnected. The commenter supplied data that showed the effectiveness of conducting continuous pressure monitoring inside storage tanks at locations where Stage II vapor recovery has been removed.

Response: EPA is encouraged that continuous pressure monitoring inside storage tanks can be very effective in monitoring the liquid and vapor containment integrity of the system. EPA encourages the commenter to make available their technology to the states to consider in SIP actions and for the GDF operators to follow federal, state and local requirements for tank integrity testing. We did not propose nor at this point are we considering any mandatory integrity testing beyond that contained in 40 CFR part 63 subpart CCCCCC.

VII. Comments Regarding EPA's Proposed Estimated Cost Savings

Comment: Commenters (EPA-HQ-OAR-2010-1076-0046, 0049, 0050, 0051 and 0052), estimated the cost for purchase and installation of new Stage II equipment to be $50,000 per retail site, exclusive of annual maintenance costs. The commenters further stated that overall

escalating costs at retail locations is increasingly burdensome for small business petroleum marketers and largely unnecessary given what the commenters believed is current attainment of widespread use of ORVR nationwide. In regards to the Stage II waiver, the commenters stated that the waiver should be self-effective on June 30, 2013, when nationwide widespread use is set to occur, rather than conditioned on the lengthy process involving the preparation, submission and approval of a SIP for the NAAQS. The commenters added that this action would be far more likely to achieve the Administration's regulatory and cost-savings objectives, rather than requiring states with strained resources to develop and submit a SIP revision.

Response: EPA thanks the commenters for providing support for the waiver of CAA Section 182(b)(3) Stage II vapor recovery requirements. EPA also recognized a cost savings in the decommissioning of Stage II vapor recovery systems and we share the commenter's interest in a quick and orderly decommissioning of Stage II installations and avoidance of installations at new GDFs where they may be in place for a very short time assuming such actions meet state requirements.

EPA understands that making the Stage II waiver automatic, without the need to revise SIPs would shorten the time before a state could act to allow GDF owners/operators to decommission their Stage II installations. However, as previously explained, such an approach is not possible under the cooperative federalism scheme of the CAA, which depends upon state adoption and submission of proposed SIP revisions before EPA can revise any SIP that currently requires Stage II under state law. Moreover, when a state wishes to remove from its EPA-approved SIP its own state law requirements for Stage II, the CAA requires EPA to ensure that such an action would not interfere with other applicable CAA requirements under section 110(l), which precludes the Administrator from approving a SIP revision if it would interfere with applicable CAA requirements (including attainment and maintenance of the ozone NAAQS).

Of course, even after EPA takes final action to find widespread use of ORVR has occurred and issues a waiver of the section 182(b)(3) requirement, states remain free under CAA section 116 to choose to implement Stage II programs in any area, and would not be forced to remove existing Stage II provisions from a SIP. States may choose to continue to require or enhance Stage II controls in a particular area or areas assuming they continue to achieve air quality benefits.

Comment: Commenter (EPA-HQ-OAR-2010-1076-0036) believed that EPA's rule changes did not address the incompatibility of ORVR and State II vapor recovery systems. The commenter stated that EPA failed to highlight the unique differences between the two types of State II vapor recovery systems, the balanced system and the assisted systems. The commenter offered inherent advantages in the balance system and stated that EPA proposal neglected to implement programs that can lower a station's operating costs and save substantial quantities of gasoline by preventing air pollution. The commenter contends that funds would be better spent converting existing Stage II assist and balance sites into enhanced vapor recovery (EVR) systems. The commenter claimed EVR systems would save over 66 million gallons of gasoline between mid-2013 and the end of 2020.

Response: In the proposed rule, EPA believes it addressed the incompatibility of ORVR and Stage II vapor recovery systems by indicating that when an ORVR vehicle is fueled at a GDF equipped with a vacuum assist Stage II vapor recovery, a lack of compatibility between the two controls may actually cause the emission reduction of the two systems together to be less than the emission reduction achieved by either system alone. This issue was discussed in the NPRM and documents related to this issue were placed in the docket at that time. A guidance document related to this issue, to help states address this issue in future SIP actions, will be released subsequent to this final rule. EPA proposed a waiver of the requirements of section 182(b)(3) and did not propose a waiver of a certain type of Stage II vapor recovery technology in favor of another Stage II technology. In fact the section 182(b)(3) requirement does not specify which type of Stage II hardware should be used. This specification was left to the affected states. EPA is taking final action to find widespread use of ORVR has occurred and has issued a waiver of the section 182(b)(3) requirement. The waiver of the section 182(b)(3) requirement does not depend upon whether an area has chosen to use a balance system or a vacuum assist system. States remain free under CAA section 116 to choose to implement Stage II programs in any area, and would not be forced to remove existing Stage II provisions from a SIP. Those States may implement any particular type of technology they may choose. In the draft Regulatory Support Document, EPA's intent was to associate national cost savings with the decommissioning and removal of Stage II equipment. However, EPA has not prohibited any area that maintains its Stage II requirements from allowing investment into enhanced Stage II systems or any other system which enhances emission controls at GDFs.

Comment: Commenters (EPA-HQ-OAR-2010-1076-0046, 0049, 0051, and 0052) welcomed EPA's desire to eliminate Stage II vapor recovery requirements. NACS has urged EPA move in this direction for many years. However, the commenters articulated that if the Proposed Rule were finalized as written, it would achieve only 41 percent of the Administration's desired savings, leaving over $52,000,000 of the projected annual savings unrealized. The commenters indicated that 15,937 retail fuel outlets are within the OTR. The commenters asserted that this is approximately 59 percent of the total number of dispensing facilities (outside California) that are required to have Stage II vapor recovery systems. The commenters claimed that based on EPA's estimated cost savings, affected stations would save approximately $3,277 annually if Stage II requirements were eliminated. The commenters determined that the total dollars saved by eliminating Stage II in the OTR would be approximately $52,225,000. The commenters concluded that according to EPA's estimate for the total savings achieved by the Proposal ($88 million), nearly 60 percent of such savings would be lost if areas in the OTR are still required to mandate Stage II controls.

Response: EPA's analysis indicates that there are about 17,000 public, government, and private GDFs in the OTR with Stage II. This count varies almost daily as current GDFs close and new ones are opened. This final rule will allow states with Serious and above ozone nonattainment areas that are now required by CAA section 182(b)(3) to have Stage II gasoline vapor recovery equipment on these GDFs to be relieved of this requirement after the waiver date.

States in the Ozone Transport Region (OTR) may already choose, in lieu of Stage II requirements in areas that are cleaner than Serious ozone nonattainment, to adopt measures to achieve emissions reductions that are comparable to those achievable by Stage II. After the Stage II waiver is effective, Serious and above ozone nonattainment areas in the OTR would also be able to make this choice. Separate from this rulemaking, EPA will develop additional updated guidance for OTR states on determining "comparability" of emissions reductions in light of continuing growth of the vehicle fleet equipped with ORVR. We believe this guidance will facilitate state analysis regarding comparable reductions if they choose to both act on the Stage II waiver to revise their section 182(b)(3) SIPs and to revise their section 184(b)(2) SIPs. EPA's estimate of potential cost savings was based on the assumption that states in the OTR currently subject to the section 182(b)(3) requirement would be able to remove Stage II and adopt comparable measures as needed, and we still believe this is a valid view. Indeed such actions are now underway to varying degrees in Maine, Vermont, and New Hampshire.

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OFFICE OF
AIR AND RADIATION

MEMORANDUM June 9, 2011

SUBJECT: Onboard Refueling Vapor Recovery Widespread Use Assessment

FROM: Glenn W. Passavant, Office of Transportation and Air Quality

Glenn W. Passavant

TO: Public Docket EPA-HQ-OAR-2010-1076

A. Introduction:

This memo addresses technical and emission aspects of the proposed onboard refueling vapor recovery (ORVR) widespread use determination. It is not designed to assess the merits of ORVR and Stage II vapor recovery systems (Stage II VRS). That policy decision was made in the 1990 Clean Air Act Amendments (CAAA) and enacted in subsequent rules by EPA and the states involved. Stage II is now installed in many ozone non attainment areas, in areas of the ozone transport region, and elsewhere as well. ORVR vehicles are now phasing into the in-use fleet. This analysis provides information to support assessment of when ORVR vehicles are in widespread use (see CAA section 202(a)(6)) and provide equivalent emission reductions to Stage II in these areas.

This memo is divided into three sections based on the aspects of vehicle refueling emissions identified in EPA's emission factor document (AP-42).[1] The first addresses ORVR fleet in-use efficiency for control of vehicle tank refueling vapor displacement emissions. The second examines gasoline spillage related to refueling events and data comparing spillage emission rates and amounts related to refueling events with conventional nozzles and Stage II nozzles to see if there is an incremental benefit to Stage II. The third looks at breathing/ emptying loss emissions from underground storage tanks (UST) to assess if retaining Stage II VRS provides an additional benefit.

B. ORVR:

1. Fleet Penetration:

ORVR is now installed on all newly manufactured gasoline-powered highway motor vehicles sold in all states except for motorcycles and incomplete heavy gasoline duty vehicles (HDGVs). ORVR is required on complete HDGVs of less than 10,000 lbs GVWR.[2] ORVR control was phased in according to the schedule in Table 1.

[1] AP-42, Compilation of Air Pollutant Emission Factors, Volume 1, Fifth Edition, Chapter 5.
[2] An HDGV is a gasoline-powered heavy-duty vehicle with a gross vehicle weight rating (GVWR) of > 8,500 lbs. A complete vehicle has its load carrying device installed by the original chassis manufacturer.

Table 1: ORVR Phase-in Schedule

Vehicle Category	Year Adopted	Year Phase-In Began	Phase-In rate	Year Phase-In Complete
Light-duty vehicles (LDVs)	1994	1998	40/80/100%	2000
Light light-duty trucks (LLDTs)	1994	2001	40/80/100%	2004
Heavy-light duty trucks (HLDTs)	1994	2004	40/80/100%	2006
Complete HDGVs < 10,000 lbs GVWR	2000	2004	40/80/100%	2006

Using the current version of the MOVES model, EPA conducted an assessment of the penetration rates of ORVR vehicles in three basic ways: percent of highway gasoline-powered vehicles (LDVs, LLDTs, HLDTs, HDGVs, and motorcycles) each year, percent of VMT by ORVR-equipped vehicles in each year, and percent of gasoline dispensed to ORVR vehicles each year. This is shown below for the period 1999-2020.

Table 2: ORVR Penetration by Calendar Year

End of Calendar Year	VMT Fraction	Population Fraction	Gasoline Fraction	Refueling Vapor Controlled
1999	5.9%	4.7%	5.0%	4.9%
2000	11.1%	8.7%	9.4%	9.2%
2001	17.1%	13.3%	14.9%	14.6%
2002	23.7%	18.4%	21.3%	20.9%
2003	27.8%	21.4%	24.7%	24.2%
2004	34.7%	27.2%	31.8%	31.2%
2005	42.0%	33.4%	39.4%	38.6%
2006	48.7%	39.5%	46.2%	45.3%
2007	54.9%	45.3%	52.5%	51.5%
2008	60.0%	50.1%	57.6%	56.4%
2009	64.5%	54.3%	62.1%	60.9%
2010	69.3%	59.0%	66.9%	65.6%
2011	73.9%	63.6%	71.5%	70.1%
2012	78.0%	67.9%	75.6%	74.1%
2013	81.6%	71.7%	79.3%	77.7%
2014	84.6%	75.2%	82.6%	80.9%
2015	87.2%	78.4%	85.3%	83.6%
2016	89.4%	81.2%	87.7%	85.9%
2017	91.2%	83.6%	89.7%	87.9%
2018	92.7%	85.6%	91.3%	89.5%
2019	93.9%	87.5%	92.7%	90.8%
2020	94.9%	89.0%	93.9%	92.0%

There is a steady increase in the fraction of gasoline dispensed to ORVR-equipped vehicles. This value will approach but never reach 100 percent because motorcycles and those HDGVs that are not required to install ORVR represent about 1.5 percent of annual gasoline consumption.[3]

2. ORVR In-Use Efficiency:

The next step to this assessment is to consider the efficiency of ORVR systems in-use. As part of the work done in the manufacturer in-use verification program (IUVP), there have been over 1100 laboratory tests of in-use ORVR equipped vehicles. This work, as summarized below, shows an average emission rate of about one-third of the level of the 0.20 g/gal emission standard. This leads to an in-use efficiency of about 98 percent for this set of test results and is an appropriate efficiency value for this analysis.

Table 3: ORVR In-Use Efficiency Based on 2000-2009 MY IUVP Results (as of December 2009)[4]

Model Year	Total # Tested	Total Avg g/gal[5]	Total % Efficiency	Total Avg Odometer
2000	22	0.07	97.9	68730
2001	68	0.06	98.2	67168
2002	78	0.08	97.5	69357
2003	99	0.08	97.5	68312
2004	277	0.10	97	42525
2005	207	0.07	97.9	32393
2006	163	0.05	98.5	22327
2007	144	0.07	97.9	18896
2008	96	0.04	98.8	18019
2009	6	0.05	98.5	14812
All	1160	0.07	98.0	42254

Another useful way of presenting ORVR emissions control is to look at the control of gasoline vapor displaced from the vehicle tank during the refueling event. Quite simply,

[3] The 1.5 percent value was calculated using EPA's Mobile6 model for 2010. It is worth noting that HDGVs and highway motorcycles are not part of the Stage II system certification regimen specified in ARB TP 201.2A and related updated matrix memo at http://www.arb.ca.gov/vapor/vmatrix2009.pdf. For this reason and the different basic design of the fuel tanks on HDGVs and highway motorcycles compared to LDVs, LDTs, etc (large diameter fill openings and no fill neck), it is not clear how effective Stage II controls are for these vehicle classes.

[4] Efficiency calculation based on laboratory test conditions used in the IUVP as prescribed in 40 CFR 86, Subpart B. The equation for calculating the uncontrolled emission rate for the efficiency calculations was taken from the 1988 CRC report prepared by ATL entitled, *A Study of Uncontrolled Automotive Refueling Emissions*. This report is available in public docket A-87-11. Test uncontrolled emission rate (g/gal) = exp [-1.2798-0.0049(ΔT) +0.0203(Td) +.1315(RVP)] =3.32 g/gal (Td=67°F, ΔT=13 F°, RVP=9 psi.).

[5] Measured values in Table 3 rounded to same number of digits to the right of the decimal point as the refueling emission standard for purposes of the efficiency calculations.

for ORVR, in-use control in any year is the product of the system in use efficiency (98%) and the ORVR gasoline fraction for any year from Table 2. The right column on Table 2 shows the percent of gasoline vapor each year that is displaced from gasoline highway motor vehicle fuel tanks that is captured by ORVR systems. The emissions to the atmosphere are comprised of both the emissions from vehicles without ORVR in any given year and the in-use inefficiency in ORVR systems as shown above.

C. Gasoline Spillage: There have been two comprehensive field studies on gasoline spillage during refueling which compared the performance of conventional nozzles and Stage II nozzles. A study published by the American Petroleum Institute (API) in 1989 indicated spillage emission rate values of 0.14 g/gal for conventional nozzles and 0.23 g/gal for Stage II nozzles in the metropolitan Washington DC area.[6] Work published by the California Air Resources Board (ARB) in 1992 focused on refueling spillage from Stage II nozzles and conventional nozzles in northern California.[7] The ARB report indicates greater spillage amounts from conventional nozzles (0.28 g/gal) than from Stage II nozzles (0.19 g/gal) and that if one outlier data point is excluded from the conventional nozzle data set, the emission rates from Stage II and conventional nozzles are very close (0.19 g/gal vs. 0.23 g/gal, respectively).

The source document for AP-42, which is based on conventional nozzles, breaks gasoline fuel spillage into four categories and contains information which allows calculation of the average spill amount in each category, as shown in Table 5.[8] The first category of interest is "Spit-back loss" which the study describes as, "Spit-back of gasoline from the fuel tank filler pipe resulting from pressure buildup in the vapor space in the fuel tank during an automatic fill."

Table 4: Gasoline Spillage During Refueling

Category	Emission rate (g/gal)
Nozzle Loss (pre-fill)[9]	0.02
Spit-back Loss	0.15
Overfill Loss	0.10
Nozzle Loss (post-fill)[9]	0.03
Total	0.30

[6] "A Survey and Analysis of Liquid Gasoline Released to the Environment During Vehicle Refueling at Service Stations", API Publication No. 4498, Health and Environmental Sciences Department, June 1989.
[7] Comparison of Spill Frequencies and Amounts at Vapor Recovery and Conventional Service Stations in California, Journal of Air and Waste Management Association, Vol. 42 pp 284-289.
[8] Investigation Of Passenger Car Refueling Losses: Malcolm Smith, Scott Research Laboratories, Society of Automotive Engineers, Paper 720931.
[9] Pre-and post fill nozzle losses are essentially drips from the spout related to handling of the nozzle by the user. The California ARB has standards addressing these emissions as part of their Enhanced Vapor Recovery (EVR) program. EVR program module 4, Gasoline Liquid Retention in Nozzles and Hoses, addresses pre-fill losses (see ARB TP 201.2E) and Module 5, Post Fueling Drips from Nozzles, addresses post fill losses (see ARB TP201.2D).

The refueling emissions test procedure is conducted in an enclosure known as a sealed housing for evaporative determination (SHED). In that test, using a conventional nozzle, the vehicle is refueled from a 10 percent fill level until at least 85 percent of tank capacity has been added and automatic nozzle shut-off occurs to terminate the refueling. If any gasoline spills in the SHED at automatic shut-off (either pre-mature or at end of fill) it is counted as part of the refueling emission mass used in determining the g/gal emission rate for compliance with the standard. The refueling emission standard is stringent, and effectively any spillage in the SHED would be likely to cause a failure of the standard.[10] As laid out in the ORVR final rule, EPA believes that the refueling emission test forced manufacturers to greatly reduce spit-back losses by improving the vehicle fill characteristics. This redesign coupled with a limit on in-use dispensing rates (10 gal/ min) greatly reduced spit-back emissions.[11]

The geometry of vacuum-assist type Stage II nozzles is very similar to that of conventional nozzles and in-use dispensing rate limits are in effect, so it is reasonable to project that the spillage reduction emission benefits would extend to gasoline dispensing facilities (GDFs) using bootless or mini-boot vacuum-assist type Stage II nozzles as well.

The API and ARB studies suggest that spillage emission rates are similar for conventional and Stage II nozzles. The vehicle engineering changes related to controlling spit-back emissions together with the limit on gasoline dispensing rates were both implemented after the API and ARB studies were completed. These are reducing spillage emissions in ORVR vehicles while the dispensing rate limits are at least directionally reducing spillage from the non-ORVR portion of the fleet as well. Based on the information discussed above, in an overall sense, there is no difference between Stage II and ORVR spillage emission rates for purposes of the widespread use determination.

D. UST Breathing /Emptying Losses: The other refueling emission sources identified in AP-42 are breathing/emptying losses from the UST. This includes any vapor loss between the UST and gas pump; these are sometimes referred to as fugitive emissions.[12] The question to be assessed in the context of widespread use is whether removing Stage II VRS would increase UST emissions relative to continuing Stage II VRS with ORVR.

Breathing losses are attributable to gasoline evaporation into the fresh air which enters the UST due to diurnal changes in barometric pressure and air temperature. Emptying losses are those caused by the evaporation of gasoline into fresh air drawn into the UST to replace gasoline volume dispensed to the vehicles. For non-Stage II GDFs actively refueling vehicles, the fresh air volume drawn in during each refueling event is only a fraction of the dispensed gasoline volume because fuel evaporation into any fresh air drawn in from the previous refueling event(s) helps to offset the total fresh air volume

[10] In this program the spit back emission rate averaged 1.19 g/gal
[11] Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines; Refueling Emission Regulations for Light-Duty Vehicles and Light-Duty Trucks; Final Rule, 59 FR 16272, April 6, 1994.
[12] Fugitive emissions are vapor leaks from points such as pumps, nozzle check valves, breakaways, vapor adaptors, fill adaptors, and UST access ports.

required for equilibrium. This gasoline evaporation increases vapor volume in the UST and can lead to emissions if the vapor is vented to the atmosphere sometime during the course of a 24-hour day.

Breathing/emptying loss emissions occur only when a tank has a positive pressure relative to atmospheric pressure. Under these positive pressure conditions, if the system is not tight, vapor leaks can occur from other points between the UST and the gas pump as well as from other points in the UST. Similarly, air can leak into the UST system if it is not tight and it is under negative pressure relative to atmospheric pressure.

In practice, it is very hard to distinguish which emissions are related to UST breathing and which are caused by emptying. They are often measured and considered together as one source of emissions and addressed in that manner from a technology perspective. For convenience will be referred to as breathing losses through the remainder of this document.

EPA estimates that Stage II VRS covers about 40 percent of national gasoline consumption and is installed at about 45,000 GDFs in part or all of 27 states and the District of Columbia, as shown in Figure 1. Of these 28 jurisdictions, 20 are required to have Stage II VRS in one or more areas under section 182(b)(3) of the CAA and two implemented Stage II as part of the Ozone Transport Region under section 182(b)(4).[13] The remaining six states and some areas in the other states implemented Stage II VRS in areas not covered by section 182(b)(3) to address reductions in ozone precursors, air toxic emissions, or both.[14]

For the Stage II VRS systems in place today, it is estimated that about 70 percent are vacuum-assist type systems and 30 percent are balance-type systems. The vacuum-assist systems tend to be concentrated more in states/areas which required Stage II VRS installation after the 1990 Clean Air Act Amendments while balance systems are more prevalent in areas where Stage II VRS was installed in the 1970s and 1980s.

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[13] Of the 28 jurisdictions with Stage II VRS, 20 now have or did in the past have one or more designated ozone nonattainment areas classified as serious severe or extreme. The States of Arizona, California, Connecticut, Delaware, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Texas, Virginia, Wisconsin, and the District of Columbia have GDFs with Stage II VRS under these provisions Approximately 70 percent of the gasoline controlled by Stage II VRS is dispensed in these states. In addition Vermont and Maine implemented Stage II VRS under the provisions of CAA section 182(b)(4), but these controls are scheduled to phase-out by 2013. In the past, Stage II VRS was be required by state regulations in portions of Utah and Florida, but those requirements are no longer in force.

[14] These include Kentucky, Nevada, Ohio, Oregon, Tennessee and Washington.

Figure 1: Stage II Vapor Recovery Areas – 2011

When refueling with a conventional pump/nozzle (non Stage II VRS), refueling vapor is displaced to the atmosphere or in the case of an ORVR vehicle to the activated carbon canister. In most cases, some fresh air is drawn into the UST to replace the volume of gasoline dispensed. As mentioned above, the fresh air volume ingested is not the same as the volume of fuel dispensed because gasoline in the UST evaporates into the fresh air ingested in a previous refueling event. This can occur in a matter of minutes and can be at a rate of up to 50 percent of fresh air volume, depending on fuel and air temperature and gasoline RVP. The value in AP-42, 1.0 lb/1000 gallons dispensed, was derived from testing done in Los Angeles in the early 1960s and does not consider the effects of Stage II controls or other differences across the nation such as ambient air temperatures, UST fuel temperatures, and reductions in RVP over time.[15] [16] For the widespread use analysis this applies only at exempt stations and does not directly enter in to the analysis.

As mentioned above, for air emissions to occur, the tank must have a positive pressure relative to atmospheric pressure. Most Stage II VRS installations in non attainment areas employ pressure/vacuum (p/v) valves attached to the GDF vent pipes to reduce breathing loss emissions.[17] When operating correctly, p/v valves moderately dampen fresh air in flow when the UST pressure is negative relative to atmospheric pressure and dampen

[15] Emissions from Underground Gasoline Storage Tanks, Journal of the Air Pollution Control Association, Volume 13 , No. 11, November, 1963, pp. 526-527.
[16] Pages 334-340 of the January 1994 EPA NESHAP document, Gasoline Distribution Industry (Stage I) - Back ground Information for Proposed Standards (EPA-453/R-94-002a) contain further discussion on breathing losses.
[17] See 40CFR63 PART CCCCCC

vapor out flow when UST pressure is positive relative to atmospheric pressure. When a p/v valve is installed the UST pressure must exceed the positive pressure setting on the p/v valve for vapor to be emitted from the vent pipe. Air emissions do not occur when tank pressures are negative. Many studies show that when GDFs using balance-type Stage II VRS are open for business, the vast majority of the time their USTs are operating in negative pressure relative to atmospheric pressure because the fuel volume dispensed exceeds the rate of air inflow and fuel evaporation. Data with regard to properly functioning p/v valves in tight UST systems shows reduction efficiencies ranging from 54-73 percent based on measured breathing loss emission rates with and without p/v valves relative to the uncontrolled rate discussed above.[18] Limited field data shows these percentage efficiencies hold for conventional USTs and USTs for balance-type Stage II VRS systems. Thus, EPA staff projects that breathing losses for these systems would likely not increase in non-attainment areas if Stage II VRS was removed provided the p/v valves remained.[19] The situation is different for vacuum-assist Stage II VRS and this will be discussed next.

A vacuum-assist system nozzle introduces a slight vacuum at the fill neck opening during refueling. This vacuum draws vapor from the vehicle fuel tank and air from around the fuel tank inlet through the nozzle boot and dedicated vapor lines back to the UST. The design ratio of the volume of air/vapor drawn into the UST to the volume of gasoline dispensed is referred to as the V/L ratio. A review of California ARB Executive Orders indicates that most vacuum-assist Stage II VRS certified now or in the past are designed to draw more air/vapor volume than the volume of liquid gasoline dispensed. This also creates a positive pressure in the UST. The V/L ratios of the earliest vacuum-assist systems were in the range of 1.4-2.4. These introduced so much excess air into the UST that a post-processor (e.g., thermal oxidizer) was required to reduce the excess emissions created when gasoline in the UST evaporated into this fresh air. Vacuum-assist Stage II VRS introduced in the late 1980s often employed bootless nozzle designs with V/L values in the range of 1.0-1.2. More recently certified systems which employ mini-boots have dropped the V/L ratio further to the range of 0.9-1.1.[20] This greatly reduced excess air relative to earlier vacuum-assist type Stage II VRS designs and in some cases allowed for the use of p/v valves in lieu of post processors.[21]

Subsequent to EPA's adoption of ORVR in 1994, the California ARB and some Stage II equipment manufacturers raised a concern that the refueling of an ORVR vehicle with vacuum–assist type Stage II equipment would increase breathing losses for these

[18] Underground Storage Tank Vent Line Emissions from Retail Gasoline Outlets, Western States Petroleum Association, AV-FR-92-01-204R2, May 1994.
[19] Measurement of Gasoline Vapor Emissions from Vehicles Equipped with On-board Vapor Recovery, ARB Project Number V-08-012, July 24, 2008.
[20] The California ARB certifies Stage II VRS systems if they meet their regulations. A full listing of all certified systems with design details can be found at http://www.arb.ca.gov/vapor/eo.htm
[21] Current California ARB EVR requirements addressing UST fugitive emissions essentially require designs/technologies which keep the V/L ratio around one. Any value much larger is likely to require a post processor.

systems.[22] This is often referred to as ORVR incompatibility and occurs because when refueling an ORVR vehicle with a vacuum assist Stage II VRS system, the vast majority of the fuel tank gasoline vapor is routed to the vehicle's onboard canister, not the UST. Thus, in these systems, the vacuum would draw mostly fresh air, thus further enhancing evaporation of gasoline in the UST.

Because of the emission concerns regarding incompatibility between ORVR systems and vacuum-assist Stage II VRS, there have been several studies which assessed the effects on breathing losses.[23] [24] [25] [26] The studies approached the experimental and technical questions differently, but each concluded that there is an incompatibility emissions effect for vacuum-assist Stage II VRS (i.e., breathing losses for vacuum assist Stage II VRS are greater for ORVR vehicles than non-ORVR vehicles). The magnitude of this effect varied depending on factors such as the percent of throughput dispensed to ORVR vehicles, the gasoline RVP, gasoline and ambient air temperature, and the V/L ratio.[27] Past EPA assessments used a long term incompatibility value of 0.86 lbs/1000 gal dispensed based on a vacuum-assist type Stage II VRS with a V/L ratio of 1.0-1.2.[28] The testing used to develop this value was conducted in California during months when the RVP was required not to exceed 7.8 psi. The same methodology used to estimate the long term value gives values of 0.611-0.717 lbs/1000 gal in the 2011-2015 time period, assuming all of the in-use Stage II VRS equipment was of the type assessed with the 1.0-1.2 V/L ratio.[29] Another manufacturer's Stage II VRS equipment (with a V/L ratio of 0.9-1.1) evaluated in the same report had projected incompatibility values of 0.044-0.052 lbs/1000 gal for the same time period.[30]

The analysis in reference 27 and recent discussions with an industry source indicate that a 65/35 percent weighting of these technologies is reasonable. Applying these weighting values gives an estimated incompatibility value of 0.46 lbs/1000 gal for the mid-point year of the five year period identified above (2011-2015), based on 7.8 RVP gasoline.

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[22] California Air Resources Board, Estimated Hydrocarbon Emissions of Phase II and Onboard Vapor Recovery Systems, as amended May 24, 1994, Engineering Evaluation Branch, Monitoring and Laboratory Division..

[23] Interaction of Simulated Vehicular Onboard Vehicular Vapor Recovery (ORVR) with Balance and Assist Phase II Vapor Recovery Systems, ARB Project Number C-095-073, November 22, 1996.

[24] ORVR Compatibility Study for the Gilbarco Vaporvac VRS, American Petroleum Institute by Tech Environmental, Inc. February 5, 2004

[25] California ARB, Preliminary Draft Test Report, Total Hydrocarbon Emissions from Two Phase II Vacuum Assist Vapor Recovery Systems During Baseline Operations and Simulated Refueling of Onboard Refueling Vapor Recovery (ORVR) Equipped Vehicles, Project Number ST-98-XX, June 1999.

[26] California ARB, Vapor Recovery Systems at Gasoline Dispensing Facilities On-board Vapor Recovery Effects, Final Report Contract No. 95-342, October 2000.

[27] By design, no incompatibility effect exists for balance-type Stage II VRS.

[28] Stage II Vapor Recovery Systems Issues Paper, U. S. EPA, Office of Air Quality Planning and Standards, August 12, 2004 and Stage II Vapor Recovery Systems Options Paper U.S. EPA Office of Air Quality Planning and Standards February 7, 2006 draft.

[29] Memorandum, William Loscutoff, Chief, Monitoring and Laboratory Division ARB to Prentiss Searles, Senior Marketing Issues Associate, American Petroleum Institute, August 5, 2002, p.6.

[30] Adjusting for vapor pressure and using the displacement emission rate equation in footnote 4 this incompatibility factor represents 1-10% of uncontrolled displacement emissions for the midpoint year of the analysis as discussed above.

Estimating that 30 percent of systems are balance type (which have no incompatibility effect) gives an overall incompatibility excess emission value of 0.32 lbs/1000 gal for the midpoint of this five year period.

There are two refinements which could be made to this estimate. First, as mentioned above, 27 states and DC have adopted Stage II VRS. However, California and Texas have also adopted regulations which require the use of ORVR-compatible vacuum-assist Stage II nozzles at their GDFs. [31] These greatly reduce the incompatibility effect because the designs greatly lower the V/L ratio (nominally to 0.33 or less) when refueling an ORVR vehicle.[32] Areas in these two states comprise about 35 percent of the gasoline consumption covered by Stage II and have about 32 percent of all of the vacuum-assist systems. Removing California and the portions of Texas with Stage II from the incompatibility effects analysis increases the balance fraction from 30 to 32 percent for the remaining states and DC. This is effect on the analysis is modest. Another effect which might seem potentially larger is that of the gasoline vapor pressure. A more representative annual RVP value for the 26 states and DC is about 11.8 psi versus the 7.8 psi from the field test work.[33] However, EPA estimates that the average gasoline temperature in the UST was about 20°F greater than in the areas of California where this field work was done than in the other 26 states and DC over the course of the year. This higher RVP increases emissions by only a few percent.[34] Practically speaking, these two potential refinements offset, leaving the value at about 0.32 lbs/1000 gal throughput as described above. Of course the value for any given situation depends on the ORVR penetration, the refueling activity level, the mix of balance- and vacuum- assist type Stage II VRS, the vapor pressure for the gasoline at the UST temperature, and the V/L ratios of the vacuum-assist systems.[35]

In summary, breathing losses are a function of the interaction of a number of complex variables which vary both geographically and temporally among the GDFs of interest. [36] Analysis of the available information and data indicates the following. For conventional (non-Stage II) GDFs, ORVR does not increase breathing losses relative to vehicles without ORVR. For balance-type Stage II VRS, if the p/v valve is retained, breathing loss emissions will be similar for refueling of ORVR and non-ORVR vehicles after the balance-type Stage II equipment is removed. Finally, removing vacuum-assist type Stage II VRS is likely to decrease overall breathing loss emissions in most states. Overall,

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[31] See ARB Executive Order VR-201–F as an example of this technology; available at http://www.arb.ca.gov/vapor/eos/eo-vr201/eo-vr201f/eo-vr201f.htm

[32] This is demonstrated in the data in Table 5-1 of reference 20

[33] For the 27 states and DC with Stage II VRS this value was estimated using the RVP values found in the EPA report "Gasoline Distribution Industry (Stage I) – Background Information for Proposed Standards." EPA-453/R-94-002a, January 1994 weighted by the gasoline consumption values in the EPA report "Technical Guidance – Stage II Vapor Recovery Systems for Control of Gasoline Refueling Emissions at Gasoline Dispensing Facilities Vol. 1," EPA-450/3-91-022a, November 1991.

[34] Based on comparison of true vapor pressures using UST gasoline temperatures as derived from "Survey of Service Station Fuel Temperatures, H.E. Harris, Society of Automotive Engineers Paper 770622.

[35] These are the key factors, which could either change over time or are likely to vary slightly in each case.

[36] See references 16 and 18 above.

retaining Stage II provides no additional breathing loss emission reductions and the incompatibility excess emission factor arguably reduces overall efficiency.

STATE OF ILLINOIS)
) **SS**
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CERTIFICATE OF SERVICE

I, the undersigned, an attorney, state that I have served the attached PUBLIC COMMENTS OF THE ILLINOIS EPA upon the following persons,

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