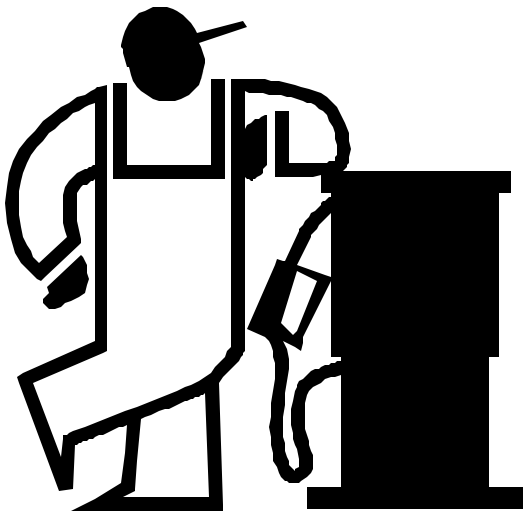
California Environmental Protection Agency

Air Resources Board

HEARING NOTICE AND STAFF REPORT

INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING, PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE UNIHOSE DISPENSER REQUIREMENTS IN THE REGULATION FOR CERTIFICATION OF VAPOR RECOVERY SYSTEMS OF DISPENSING FACILITIES (GASOLINE SERVICE STATIONS)

June 4, 2004



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STAFF REPORT:
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Staff wishes to acknowledge the participation and assistance of individuals from the following organizations in providing input on proposed amendments:

American Petroleum Institute
California Air Pollution Control Districts
California Air Pollution Control Officers Association (CAPCOA) Vapor Recovery Committee
California Independent Oil Marketers Association
Western States Petroleum Association

Staff also appreciates the input from the following vapor recovery equipment manufacturers:

Healy Systems, Inc.
OPW Fueling Products

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I. INTRODUCTION AND RECOMMENDATIONS

Introduction

In March of 2000, the Air Resources Board (ARB or Board) approved the Enhanced Vapor Recovery (EVR) regulations. The EVR regulations established new standards for vapor recovery systems to reduce emissions during storage and transfer of gasoline at gasoline dispensing facilities (service stations). In December 2002, the Board approved amendments to the EVR regulations, including revisions to operative and effective dates of the EVR standards to allow more time to develop and certify EVR vapor recovery systems. However, the date for all stations to comply with the Onboard Refueling Vapor Recovery (ORVR) compatibility standard by April 1, 2005 did not change as ORVR compatible systems have been certified since 1998.

A detailed cost analysis was included in the February 4, 2000 EVR staff report and was updated as part of the December 2002 rulemaking. Costs associated with equipment upgrades to meet the ORVR requirement assumed that only the "hanging hardware" (nozzles, hoses, etc.) attached to the dispenser would need to be replaced at existing stations. This assumption was based on the design of the ORVR compatible system certified in 1998. Although an application is under review to certify similar equipment as a retrofit for one popular existing system, the retrofit would not be available until early 2005, assuming that the system passes all certification tests. Thus, it is expected that many stations upgrading to ORVR compatibility may require a change to a different vapor recovery system. Changing over to one of the three certified ORVR compatible systems available now involves modification of the vapor piping in the gasoline dispensers as well as changes to the dispenser "hanging hardware".

Under existing regulations, vapor recovery system modifications that affect 50% or more of the vapor piping inside the dispenser trigger a conversion of a "six-pack dispenser" (individual nozzles for each grade of gasoline) to a "unihose dispenser" (same nozzle for all grades of gasoline). The cost to convert to a unihose dispenser can be quite expensive for some older dispensers.

Recommendations

Staff proposes to modify the regulations so that upgrades to make systems ORVR compatible do not require conversion to unihose until the dispenser is eventually replaced. This action will keep the ORVR compatibility requirement cost-effective.

Staff recommends that the Board adopt the following:

1. Amendments to the California Code of Regulations to incorporate the proposed certification and test procedures by reference (Appendix 1); and

2. Amendments to the incorporated vapor recovery system certification procedure

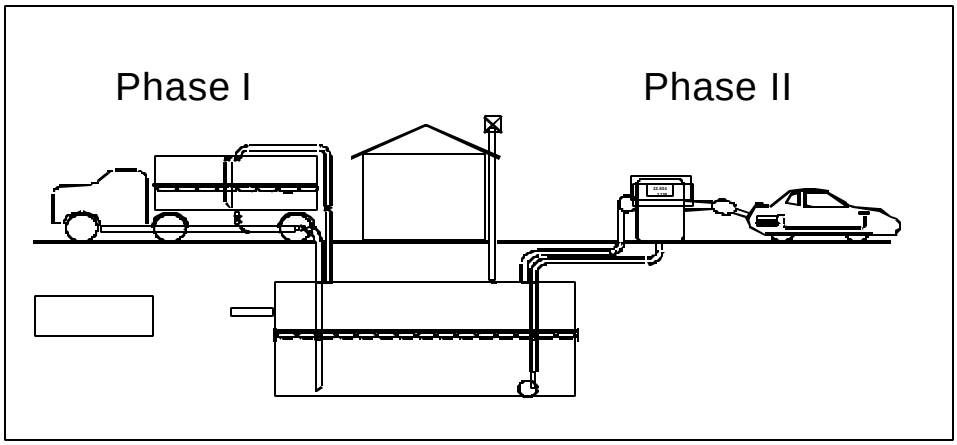
(Appendix 2).

II. BACKGROUND

A. Vapor Recovery Program Overview

Gasoline vapor emissions are controlled during two types of gasoline transfer. As illustrated in Figure II-1, Phase I vapor recovery collects vapors when a tanker truck fills the service station underground tank. Phase II vapor recovery collects vapors during vehicle refueling. The vapor recovery collection efficiency during both of these transfers is determined through certification of vapor recovery systems. Vapor recovery systems serve both as control for reactive organic gases (ROG) that lead to the formation of ozone and as control for benzene, a toxic air contaminant.

Figure II-1
Phase I and Phase II Vapor Recovery Systems at Service Stations



The ARB and the air pollution control and management districts (districts) share implementation of the vapor recovery program. ARB staff certifies prototype Phase I and Phase II vapor recovery systems installed at operating station test sites. District rules and state law require that only ARB-certified systems be installed. District staff inspects and tests the vapor recovery system upon installation during the permit process and conducts regular inspections to check that systems are operating as certified.

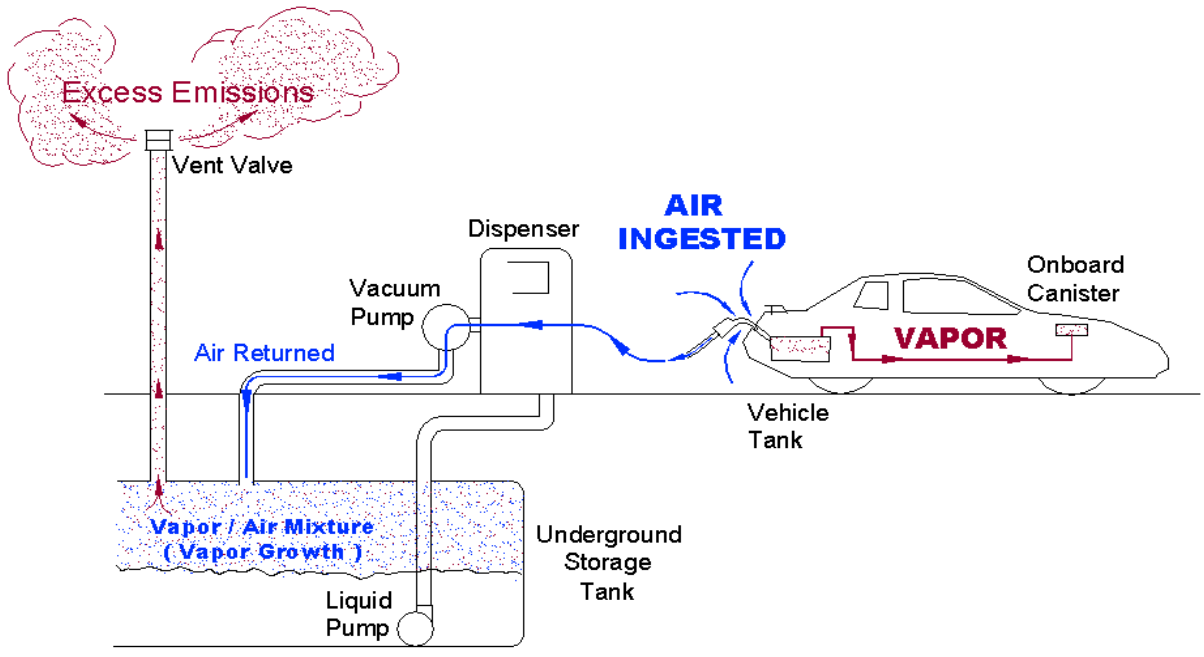
The vapor recovery requirements affect a multitude of stakeholders. These include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems, and air pollution control districts who enforce vapor recovery rules. In addition, California certified systems are required by most other states and many countries.

B. ORVR Compatibility Requirement

Federal regulations require that vehicles be equipped with Onboard Refueling Vapor Recovery (ORVR) beginning in the 1998 model year and phased in over several years. ORVR works by routing gasoline vapors displaced during vehicle fueling to the onboard canister on the vehicle. For a non-ORVR vehicle, these displaced vapors are captured by the facility's Phase II vapor recovery system. Thus, ORVR and Phase II equipment seek to control the same emissions – the vapors displaced from the vehicle fuel tank during gasoline refueling.

ARB field tests have shown that fueling ORVR vehicles with some currently certified Phase II vapor recovery systems can lead to excess emissions. This is because some Phase II systems draw air into the underground storage tank (UST) during fueling of an ORVR vehicle. The air ingestion leads to vapor growth in the UST with corresponding fugitive and vent emissions of gasoline vapor shown as excess emissions in Figure II-2 below.

Figure II-2
Phase II Vapor Recovery System Incompatible with ORVR Vehicles



In recognition of the need for Phase II/ORVR compatibility, amendments to Health and Safety Code section 41954 (c)(1)(C), effective January 1, 2001, require that all Phase II systems be certified to be ORVR compatible.

The ORVR compatibility standard eliminates the excess emissions which can occur during fueling of an ORVR vehicle with a Phase II vapor recovery system that is not ORVR compatible. Compatibility is determined by verifying that the Phase II system can refuel ORVR vehicles without causing the vapor recovery system emissions to exceed the 0.38 lbs/1000 gallon performance standard.

Since 1998, ARB has certified several Phase II vapor recovery systems as being ORVR compatible. Systems were tested to verify that the Phase II system either 1) prevented ingestion of excess air when fueling an ORVR vehicle or 2) allowed air ingestion, but provided a method to control emissions related to vapor growth. The three ORVR systems that are commercially available are listed below.

Table II-1
Currently Certified ORVR Compatible Phase II Vapor Recovery Systems

Phase II System	ARB Executive Order & Approval Letters
Healy	G-70-186, G-70-191
Balance	G-70-52, Letter 03-04
Hirt	G-70-177-AA, Letter 03-06

C. EVR Emission Reductions

The EVR program requirements can be characterized in six EVR modules. Module 1 contains the standards for EVR Phase I systems. Modules 2 through 5 comprise the EVR Phase II system requirements. Module 6 is for in-station diagnostics, which monitors the performance of the Phase I and Phase II systems. Table II-2 summarizes the emission reductions associated with each module.

Table II-2
EVR Emission Reduction Summary

		2010 ROG Reductions Statewide, tons/day	**Phase II & ISD Only** 2010 ROG Reductions Statewide, tons/day
Module	Description		
1	Phase I	5.5	
2	Phase II	3.1	3.1
3	ORVR Compatibility	4.5	4.5
4	Liquid Retention	0.2	0.2
5	Spillage/Dripless Nozzle	3.9	3.9
6	In-Station Diagnostics	8.5	8.5
	Total	25.7	20.2

The emission reductions for Gilbarco and Wayne Phase II systems were estimated based on field tests conducted in 1998 simulating approximately 40% ORVR vehicle penetration. The estimated emission reductions from the three predominant existing Phase II systems are shown in Table II-3 below. Details on the emission reduction calculations are available in the staff reports for the March 2000 and December 2002 EVR rulemakings.

Table II-3
EVR Phase II and ISD Emission Reductions by System Type*

Module	Description	Balance ROG Reductions Statewide, tons/day	Gilbarco ROG Reductions Statewide, tons/day	Wayne ROG Reductions Statewide, tons/day
2	Phase II	0.0	3.0	0.1
3	ORVR Compatibility	0.0	4.3	0.2
4	Liquid Retention	0.1	0.1	0.0
5	Spillage/Dripless Nozzle	1.8	1.4	0.8
6	In-Station Diagnostics	5.6	1.9	1.0
	Total	7.4	10.6	2.1

* NOTE: Modules 2 and 3 emissions from ARB baseline and simulated ORVR field tests
Modules 4 and 5 emissions are prorated by system throughput
Module 6 emissions calculated using ARB-district audit results as per App. 3 of 2002 EVR Tech Review
Reductions are estimated based on Gilbarco and Wayne systems because those are the predominant assist systems used in California

D. Legal Authorities

Section 41954 of the Health and Safety Code (Appendix 3 contains a copy of section 41954) requires ARB to adopt procedures and performance standards for controlling gasoline emissions from gasoline marketing operations, including transfer and storage operations to achieve and maintain ambient air quality standards. This section also authorizes ARB, in cooperation with districts, to certify vapor recovery systems that meet the performance standards. Section 39607(d) of the Health and Safety Code (HSC) requires ARB to adopt test procedures to determine compliance with ARB and the districts' non-vehicular standards. State law (HSC section 41954) requires districts to use ARB test procedures or their equivalent for determining compliance with performance standards and specifications established by ARB.

To comply with state law, the Board adopted the certification and test procedures found in title 17, Code of Regulations, sections 94110 to 94015 and 94101 to 94165. These regulations reference procedures for certifying vapor recovery systems and test procedures for verifying compliance with performance standards and specifications.

E. Comparable Federal Regulations

There are no comparable federal regulations that certify gasoline vapor recovery systems for service stations; however, changes to ARB vapor recovery certification regulations may have a national impact. ARB certification is required by most other states that mandate the installation of vapor recovery systems in gasoline dispensing facilities.

III. EVR PROGRAM IMPLEMENTATION

The EVR standards are being phased in over several years and apply both to new and existing facilities. This section discusses the timetable for EVR implementation for existing and future service station installations.

A. State Law Requirements and Four-Year Clock

The EVR program that the Board approved in March 2000 significantly modified standards for Phase I and Phase II vapor recovery systems. This means that existing vapor recovery system certifications expire on the EVR operative date of the new requirements. New vapor recovery systems installed after that date must be certified to the new EVR standards.

State law (HSC section 41956.1) provides that vapor recovery systems certified under procedures in effect prior to adoption of revised standards and installed prior to the effective date of the revised standards may continue to be used for a period of four years after the effective date of the revised standards. This is commonly referred to as the "4-year clock." Thus, for example, if the effective date of the new standard is April 1, 2001, station owners who purchased and installed new vapor recovery systems before April 1, 2001, would have until April 1, 2005, before their systems would be required to be replaced or upgraded to meet the EVR standard. State law requires that replacement parts and components must be certified.

New facilities must use certified vapor recovery systems that meet the EVR requirements in effect at time of installation. The "operative date" concept was developed by staff and adopted by the Board to provide additional time to certify systems for new installations after the start of the 4-year clock is triggered by the standard's effective date. For example, the effective date for the ORVR compatibility requirement is April 1, 2001. This started the 4-year clock. However, the operative date for ORVR compatibility is April 1, 2003, which allowed two years before the ORVR requirement was imposed on new facilities. All facilities must comply with the ORVR requirement at the end of the 4-year clock on April 1, 2005. Facilities that undergo a major modification as defined in the EVR regulations are considered to be new facilities and must also install, or upgrade to, EVR systems.

B. Phase-In of EVR Requirements

The EVR standards are being phased-in from April 1, 2001, to April 1, 2009, to allow time to develop systems that meet the technology-forcing standards and that accommodate the 4-year clock discussed above. The operative dates of the EVR standards, which apply to equipment sales and new facilities, are represented by the beginning of each shaded bar in Figure III-1. The end of each bar indicates when all facilities must comply with the standard; thus, it represents the end of the 4-year clock period. The open, dotted bars show the time between the standard's effective date, which triggers the 4-year clock, and

the standard's operative date, when the standard must be met by through equipment sales and at new facilities.

For example, the fourth bar in the timeline shows the phase-in of the ORVR compatibility standard. As described above, all new facilities after the April 1, 2003, operative date must install an ORVR compatible Phase II system. Existing facilities have until April 1, 2005, to upgrade their Phase II systems to be ORVR compatible. In this case, the effective date of the ORVR compatibility standard is April 1, 2001, the operative date is April 1, 2003, and the end of the 4-year clock is April 1, 2005.

C. Replacement Parts

As discussed above, HSC section 41956.1 provides that existing systems may be used for four years after the effective date of new standards. However, many vapor recovery components, such as nozzles and hoses, are expected to need replacement during this four-year period. Because state law requires that all necessary repair or replacement parts or components used during the four-year period be certified, a limited-term certification of replacement components was adopted to allow installed systems to continue operation with the best replacement parts available. The certifications for these replacement parts will expire at the end of the four-year clock if the parts do not meet all of the requirements of the new standards. However, when replacement parts certified to meet the new standard are commercially available and are compatible with the existing vapor recovery system, only those replacement parts will be allowed to be installed.

D. Effect of EVR Requirements on New Service Stations

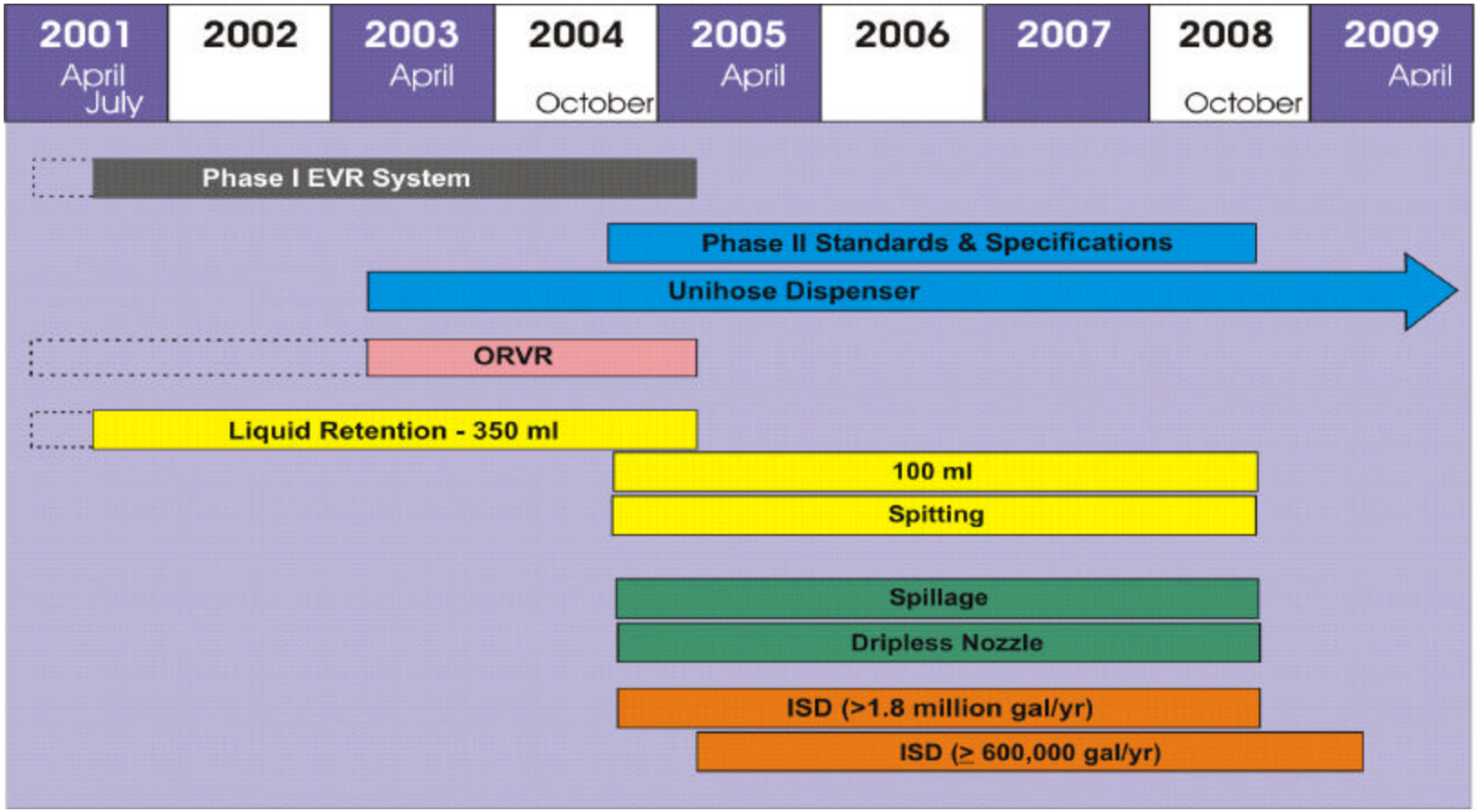
As stated above, new facilities must meet the operative EVR requirements at the time of installation. Because of the phase-in of the requirements, a new station installed in May 2004 is likely to have a vapor recovery system that meets only some of the EVR standards. For example, a new station installing a system that meets the requirement to be compatible with vehicles equipped with on-board-refueling-vapor recovery (ORVR) will have until 2008 or 2009 to install, or upgrade to, a system that meets all of the EVR requirements.

E. Effect of EVR Requirements on Existing Service Stations

As described above, existing stations may continue to use their current vapor recovery systems for four years and maintain these systems with certified replacement parts. Stations that have installed an ORVR compatible vapor recovery system will need to upgrade or replace the vapor recovery system to meet all of the proposed EVR requirements by 2008 or 2009. Stations with Phase II systems that are not ORVR compatible will have to upgrade to a system that is ORVR compatible by April 1, 2005. When an EVR Phase II system is certified (expected September 2004), stations will have the option to meet all EVR requirements by April 1, 2005, but are not required to do so until either October 1, 2008, or April 1, 2009, depending on the station gasoline throughput.

Existing stations undergoing a major modification as defined in the EVR regulations are treated as new facilities and must meet the EVR requirements upon installation.

Figure III-1
EVR Timeline



Dotted box: time between start of 4-year clock and operative date
Start of solid bar: date required for new or modified facilities (operative date)
End of solid bar: date required for existing facilities (installed before start of bar)
Not required for dispensers installed before April 2003

IV. RULE DEVELOPMENT PROCESS AND PUBLIC OUTREACH EFFORTS

The staff proposal was communicated to and discussed with Enhanced Vapor Recovery stakeholders through individual meetings, ARB's web site, and a listserve via the internet. Additional discussions are planned via a public workshop.

A. Workshops

ARB staff plans to conduct a workshop in Sacramento on June 16, 2004.

B. Meetings

Meetings were held with a number of stakeholders as summarized below.

Table IV-1
ORVR Compatibility Meetings Held in 2004

Stakeholder	Date(s)
American Petroleum Institute (API)	March 9, March 16, March 30
CA Independent Oil Marketers (CIOMA)	March 9, May 21
CAPCOA Vapor Recovery Committee	April 15
Healy Systems	February 4
Western States Petroleum Association (WSPA)	January 20, March 9, March 16, March 30, April 14

C. Internet

Stakeholders were encouraged to join the vapor recovery list-serve to receive electronic mail (e-mail) notifications when new materials are posted on the vapor recovery webpage (www.arb.ca.gov/vapor/vapor.htm). The workshop notices, agendas, and presentations, as well as the letters to the manufacturers are all available on the webpage. Stakeholders were encouraged to submit formal comments by letter, but they were also permitted and encouraged to address questions and comments to staff via e-mail.

V. REASONS FOR AND SUMMARY OF PROPOSED AMENDMENTS TO THE CERTIFICATION PROCEDURE (CP-201)

The proposed amendment will reduce the cost to comply with the ORVR compatibility requirement for stations that do not currently have unihose gasoline dispensers. It is expected that many stations upgrading to ORVR compatibility will require a change to a different vapor recovery system. Changing over to one of the three certified ORVR compatible systems available now involves modification of the vapor piping in the gasoline dispensers as well as changes to the dispenser "hanging hardware."

Under existing regulations, vapor recovery system modifications that affect 50% of the vapor piping inside the dispenser trigger a conversion of a six-pack dispenser (individual nozzles for each grade of gasoline) to a unihose dispenser (same nozzle for all grades of gasoline). The cost to convert to a unihose dispenser varies, because retrofit kits are available for newer dispensers, while older dispensers cannot be retrofitted and would need to be replaced.

CP-201, "Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities," contains the EVR system performance standards and specifications. Staff proposes revisions to the unihose dispenser requirement specified in CP-201 (section 4.11) as shown below:

> *There shall be only one hose and nozzle for dispensing gasoline on each side of a multi-product dispenser (MPD). This shall not apply to facilities installed prior to April 1, 2003 unless the facility replaces more than 50 percent of the dispensers ~~or makes a modification, other than the installation of required sensors, that modifies over 50 percent of the vapor piping in the dispensers~~. Facility modifications that meet the definition of "major modification" for a Phase II system in D-200 trigger the unihose requirement as the facility is considered a "new installation". Exception: dispensers which must be replaced due to damage resulting from an accident or vandalism may be replaced with the previously installed type of dispenser.*

The staff's proposal affects only existing facilities with non-unihose dispensers. Existing facilities that replace more than 50% of the dispensers will still be required to convert to unihose dispensers. New service stations are required to have unihose dispensers. When the non-unihose dispensers reach the end of their useful life (7 to 10 years), the facility normally will purchase new dispensers for all fueling points, and these are required to be unihose dispensers. EVR Phase II vapor recovery systems will be certified for use with both unihose and non-unihose dispensers.

A. History of Unihose Dispenser Requirements

Gasoline dispensers with the unihose configuration have one hose for all grades. The unihose configuration reduces the number of hoses, nozzles and other hanging hardware by two-thirds compared to the "six-pack" configuration (3 nozzles per dispenser side). As the hanging hardware equipment has leak sources, such as nozzle check valves, minimizing the amount of hanging hardware reduces the potential for leaks. In the February 4, 2000 staff report (Reference 1) for the March 2000 EVR rulemaking, staff proposed that all EVR Phase II systems have unihose dispensers.

Based on comments received prior to the March 23, 2000 hearing as to the considerable cost to upgrade existing dispensers to meet this requirement, proposed section 4.11 was modified before adoption to exempt dispensers installed before the effective date of the unihose requirement. The intent was to allow existing dispensers to be used until replacement at the end of the dispenser useful life (7 to 10 years). This allowed station operators to recover their investment of approximately $10,000 per dispenser. The exemption is voided if the facility replaces more than 50% of the dispensers or makes a modification, other than the installation of required sensors, that modifies over 50% of the dispenser piping. Section 4.11 also allows that dispensers that are damaged due to accident or vandalism may be replaced with the previously installed type of dispenser.

B. Cost to Comply with ORVR Compatibility

The excess emissions due to ORVR incompatibility are attributed to the two predominant assist systems in the state, the Wayne and Gilbarco systems. As shown previously in Table II-2, these two systems combined generate 4.5 tons/day related to ORVR vehicle fuelings as projected in the 2002 EVR rulemaking. Staff, in cooperation with WSPA, is presently re-evaluating these emission estimates that are expected to increase. Staff used the estimated costs to modify Wayne and Gilbarco systems to be ORVR compatible that were provided by WSPA and CIOMA in their letter dated January 30, 2004 (Reference 3). It should be noted that upgrading Wayne and Gilbarco systems to be ORVR compatible may require modification of over 50% of the dispenser vapor piping, thereby triggering the unihose requirement. The total fixed costs per facility vary depending on the number of dispensers at the facility. Costs are estimated for five model gasoline dispensing facilities (GDFs) designated as GDF1 through GDF5, which vary from 2 to 6 dispensers (4 to 12 fueling points) as described in Table V-1 below:

Table V-1
Gasoline Dispensing Facility (GDF) Model Stations used in Cost Analysis

GDF Model	GDF 1	GDF 2	GDF 3	GDF 4	GDF 5
Typical throughput, gal/mo	13,233	37,500	75,000	150,000	300,000
Throughput range, gal/mo	0-25,000	25,001-50,000	50,000-100,000	100,001-200,000	200,001 and up
Number of dispensers	2	2	4	5	6

number of stations	458	1,375	4,456	3,052	409
(% of statewide total)	4.7%	14.1%	45.7%	31.3%	4.2%

Tables V-2 and V-3 summarize the estimated costs to make Gilbarco and Wayne systems ORVR compatible under the existing regulation. As can be seen, the cost is especially high for the older non-Advantage Gilbarco and Wayne non-VISTA dispensers. The difference in cost is due to the availability of a retrofit kit to convert the Gilbarco Advantage and Wayne Vista dispensers. No such kit exists for the Gilbarco Non-Advantage dispensers and the Wayne Non-Vista dispensers.

Table V-2
Summary of WSPA Estimated Costs to Convert to Currently Available ORVR Compatible Systems for an Existing Gilbarco System under Existing Regulation
Total Fixed Costs (Equipment Purchase and Installation)

Starting GDF Type		Gilbarco Unihose		Gilbarco 6-pack			
				Advantage		Non-Advantage	
Ending GDF Type		Unihose, Balance	Unihose, Healy	Unihose, Balance	Unihose, Healy	Unihose, Balance	Unihose, Healy
Model GDF	Number of dispensers						
GDF 1	2	$3,100	$7,500	$6,100	$10,500	$28,600	$30,000
GDF 2	2	$3,100	$7,500	$6,100	$10,500	$28,600	$30,000
GDF 3	4	$4,700	$13,500	$10,700	$19,500	$52,200	$55,000
GDF 4	5	$5,500	$16,500	$13,000	$24,000	$64,000	$67,500
GDF 5	6	$6,300	$19,500	$15,300	$28,500	$75,800	$80,000

Table V-3
Summary of WSPA Estimated Costs to Convert to Currently Available ORVR Compatible Systems for an Existing Wayne System under Existing Regulation
Total Fixed Costs (Equipment Purchase and Installation)

Starting GDF Type		Wayne Unihose		Wayne 6-pack			
				VISTA		Non-VISTA	
Ending GDF Type		Unihose, Balance	Unihose, Healy	Unihose, Balance	Unihose, Healy	Unihose, Balance	Unihose, Healy
Model GDF	Number of dispensers						
GDF 1	2	$3,100	$7,500	$6,100	$10,500	$11,900	$16,300
GDF 2	2	$3,100	$7,500	$6,100	$10,500	$11,900	$16,300
GDF 3	4	$4,700	$13,500	$10,700	$19,500	$22,300	$31,100

GDF 4	5	$5,500	$16,500	$13,000	$24,000	$27,500	$38,500
GDF 5	6	$6,300	$19,500	$15,300	$28,500	$32,700	$45,900

By contrast, Tables V-4 and V-5 show the lower costs to convert to ORVR compatibility if the staff's proposal is adopted to defer the unihose requirement until 50% of the dispensers at a facility are replaced.

Table V-4
Summary of WSPA Estimated Costs to Convert to Currently Available ORVR Compatible Systems for an Existing Gilbarco System under Staff's Proposal
Total Fixed Costs (Equipment Purchase and Installation)

Starting GDF Type		Gilbarco Unihose		Gilbarco 6-pack	
Ending GDF Type		Unihose, Balance	Unihose, Healy	6-pack, Balance	6-pack, Healy
Model GDF	Number of dispensers				
GDF 1	2	$3,100	$7,500	$4,700	$11,100
GDF 2	2	$3,100	$7,500	$4,700	$11,100
GDF 3	4	$4,700	$13,500	$7,900	$20,700
GDF 4	5	$5,500	$16,500	$9,500	$25,500
GDF 5	6	$6,300	$19,500	$11,100	$30,300

Table V-5
Summary of WSPA Estimated Costs to Convert to Currently Available ORVR Compatible Systems for an Existing Wayne System under Staff's Proposal
Total Fixed Costs (Equipment Purchase and Installation)

Starting GDF Type		Wayne Unihose		Wayne 6-pack	
Ending GDF Type		Unihose, Balance	Unihose, Healy	6-pack, Balance	6-pack, Healy
Model GDF	Number of dispensers				
GDF 1	2	$3,100	$7,500	$4,700	$11,100
GDF 2	2	$3,100	$7,500	$4,700	$11,100
GDF 3	4	$4,700	$13,500	$7,900	$20,700
GDF 4	5	$5,500	$16,500	$9,500	$25,500
GDF 5	6	$6,300	$19,500	$11,100	$30,300

As shown by the tables, the conversion to a balance system for a GDF5 facility with the Gilbarco non-Advantage system is reduced from $75,800 to $11,100, saving $64,700. A similar conversion for a Wayne non-VISTA system provides savings of $34,800.

C. Cost-Effectiveness of ORVR Compatibility Upgrades

Data on the configurations of vapor recovery systems statewide are difficult to obtain, so some assumptions are necessary to estimate the cost-effectiveness of ORVR system upgrades statewide. WSPA estimates that 15% of Gilbarco systems are already in the unihose configuration based on information for the greater Bay Area (Reference 2). This 15% unihose assumption is used for both Wayne and Gilbarco statewide.

As discussed in the previous section, the cost of converting a 6-pack to a unihose configuration varies because newer dispensers can be retrofitted, but older dispensers do not have retrofit kits available and must be replaced. Staff have assumed that 40% of existing sites have 6-pack dispensers of the older type (non-Advantage or non-VISTA), 45% have 6-pack dispensers that are newer and can be retrofitted (Advantage or VISTA), and 15% are unihose.

The total fixed costs per facility vary depending on the number of dispensers at the facility. The EVR cost analysis (References 1 and 3) considers costs for five station types designated as GDF1 through GDF5, which are described in Table V-1. The total number of stations statewide is assumed to be 9,750 as provided on the US Department of Energy web site (Reference 4). Staff has also assumed that half of the stations in each GDF category are assist and half are balance.

The cost analysis assumes a conversion to a balance system as it is the lowest cost conversion. However, the conversion to a Healy system has the advantages of being a first step towards installing a full EVR Phase II system. The Healy EVR Phase II system is completing certification testing and is expected to be certified by late summer.

Cost-effectiveness is a generally accepted measure of the regulatory costs incurred to reduce one pound of pollutant. It is a useful tool for comparing how cost efficient the proposed action is for reducing a given amount of pollutant relative to prior regulations.

The cost-effectiveness is calculated as follows:

$$\text{Cost-Effectiveness} = \frac{\text{Annualized Costs}}{\text{Annual Emission Reductions}} = \frac{(\$/\text{station})(\#\text{ of stations statewide})}{(\text{tons/day})(2000\text{ lb/ton})(365\text{ days/yr})}$$

The following tables show that the staff's proposal significantly improves the cost-effectiveness compared to the existing regulation. As expected, the overall ORVR cost-effectiveness is higher than the $1.74 calculated in 2002 with the assumption that only "hanging hardware" replacement would be necessary to achieve ORVR compatibility. The effect on the total cost-effectiveness of the EVR program (Modules 1 through 6) is an increase from $5.24/lb to $5.65/lb.

Table V-6
ORVR Cost-Effectiveness (C.E.) per Model GDF
Under Existing Regulation

GDF Model	GDF 1	GDF 2	GDF 3	GDF 4	GDF 5
number assist stations (50% of GDF cat total)	229	688	2228	1526	205
ORVR em red (tpd)	0.03	0.24	1.54	2.12	0.57
Total Fixed Cost per station for ORVR Upgrade	$3,100 to $28,600	$3,100 to $28,600	$4,700 to $52,200	$5,500 to $64,000	$6,300 to $75,800
Annualized Cost for ORVR upgrade ($/yr/station)	$2,544	$2,544	$4,730	$5,823	$6,916
2004 ORVR C.E. ($/lb)	$26.60	$9.98	$9.37	$5.74	$3.40
2004 Overall ORVR C.E. ($/lb)	**$7.05**				

Table V-7
ORVR Cost-Effectiveness (C.E.) per Model GDF
Under Staff's Proposal

GDF Model	GDF 1	GDF 2	GDF 3	GDF 4	GDF 5
number assist stations (50% of GDF cat total)	229	688	2228	1526	205
ORVR em red (tpd)	0.03	0.24	1.54	2.12	0.57
Total Fixed Cost per station for ORVR Upgrade	$4,700	$4,700	$7,900	$9,500	$11,100
Annualized Cost for ORVR upgrade ($/yr/station)	$1,531	$1,531	$2,818	$3,461	$4,104
2004 ORVR C.E. ($/lb)	$16.01	$6.01	$5.58	$3.41	$2.02
Overall 2004 ORVR C.E. ($/lb)	**$3.99**				

VI. OUTSTANDING ISSUES

1. Different Schedules for ORVR Compatibility and other Phase II System Standards

ORVR compatibility is required for all facilities by April 2005. All EVR Phase II standards must be met by all facilities by April 2009. Equipment installed or upgraded to meet ORVR compatibility by April 2005 may also need to be replaced or modified again before April 2009. Petroleum marketers have requested that the ORVR implementation schedule be aligned with the Phase II requirement so that only one system installation or upgrade is necessary (Reference 2).

Staff believes it is unnecessary and inappropriate to delay the ORVR compliance date for up to four years as suggested by petroleum marketers. First, staff's assessment shows that equipment modifications needed to comply with ORVR requirements will be compatible with EVR systems now undergoing certification testing. Thus, it should not be necessary to repeat ORVR modifications that are made now. Second, ORVR compliance will achieve emission reductions within the next year, rather than by 2009. Delaying the ORVR compliance date as requested will deprive Californians of cleaner air unnecessarily.

2. ORVR Upgrades are not Cost-Effective

Industry representatives have claimed that the ORVR systems available now are not cost-effective, even with the staff's proposed amendments (Reference 2). Based on the analysis presented in this ISOR, staff maintain that upgrading to an ORVR compatible system remains cost-effective. The overall cost-effectiveness for the ORVR requirement is $3.99/lb as shown in Table V-7.

VII. ECONOMIC AND ENVIRONMENTAL IMPACTS

A. Economic Impact of Proposed Amendments

The proposed amendments will allow station owners to upgrade to ORVR compatible Phase II vapor recovery systems without having to buy new unihose dispensers. Staff estimate the fixed capital cost savings, relative to the existing regulation, for these facilities ranges from $2,000 to $65,000, depending on the dispenser type and station size. The high end of the range represents savings to operators of facilities with older dispensers for which unihose retrofits are not available and where full dispenser replacement would be necessary for the unihose conversion. For example, Table V-2 shows that changing Gilbarco 6-pack dispensers to balance unihose dispensers costs $75,800 for a stations with 6 dispensers. Table V-4 shows that changing the same station to a balance station while keeping the 6-pack configuration costs $11,100, a difference of $64,700.

The 6-pack dispensers will eventually be replaced with unihose dispensers at the end of their useful life (estimated at 7 to 10 years). EVR Phase II systems will be certified to be used with both unihose and non-unihose dispenser configurations.

Environmental Impacts of Proposed Amendments

The unihose requirement reduces the number of possible leak sources at a gasoline dispensing facility with a corresponding decrease in the potential for fugitive gasoline vapor emissions. No EVR emission reductions will be lost under staff's proposal. However, it may be more difficult for facilities to comply with existing requirements that limit the total allowable leak for the vapor recovery system.

VIII. ALTERNATIVES CONSIDERED

We have considered as an alternative the option of not adopting the proposed vapor recovery amendments. Not adopting the proposed procedures would be detrimental as some service station operators would pay up to $65,000 more than necessary to meet the ORVR compatibility requirement.

IX. REFERENCES

1. Staff Report: Initial Statement of Reasons for Proposed Amendments to the Vapor Recovery Certification and Test Procedures for Gasoline Loading and Motor Vehicle Gasoline Refueling at Service Stations, February 4, 2000, Air Resources Board

2. January 30, 2004 letter from Jay McKeeman of California Independent Oil Marketers Association and Joe Sparano of Western States Petroleum Association to Diane Johnston of the Air Resources Board regarding Governor's retrospective review of regulations adopted, amended or repealed since January 6, 1999

3. EVR Technology Review Report, October 2002, Monitoring and Laboratory Division, Air Resources Board

4. California Petroleum Profile at US Department of Energy website <http://tonto.eia.doe.gov/oog/info/state/ca.html>, visited on May 10, 2004

Appendix 1

Proposed Amendments to Title 17, California Code of Regulations

Appendix 2

Proposed Amendments to the Unihose Requirement in the Regulation for Certification of Vapor Recovery Systems of Dispensing Facilities

Appendix 3

Vapor Recovery Health and Safety Code Statutes