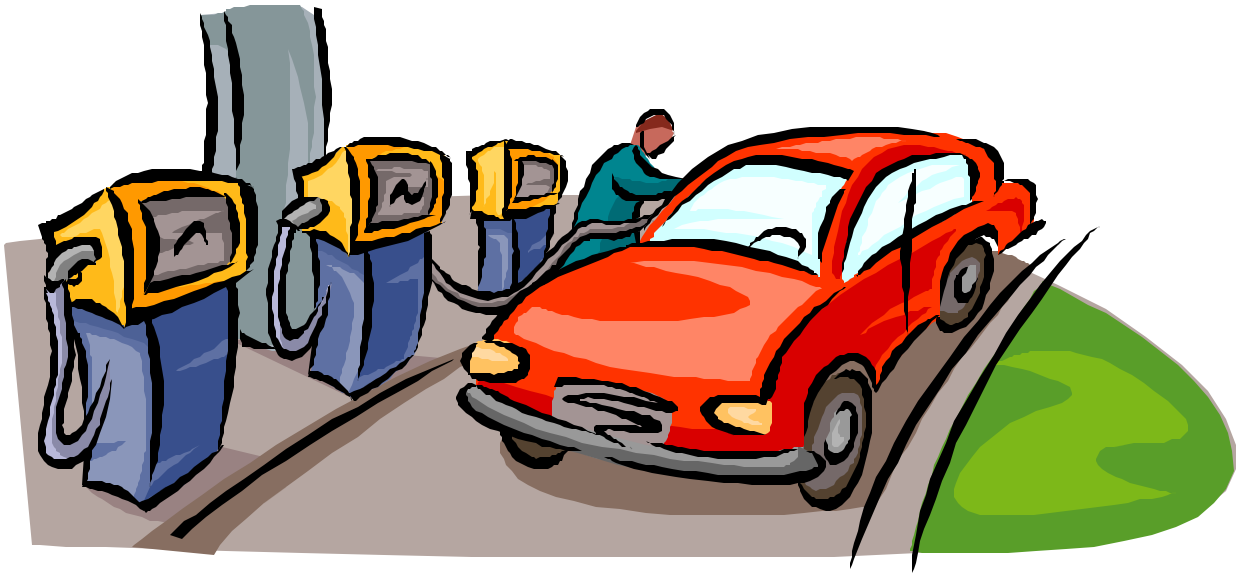
California Environmental Protection Agency

Air Resources Board

HEARING NOTICE AND STAFF REPORT

INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING, PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE EFFECTIVE AND OPERATIVE DATES FOR ENHANCED VAPOR RECOVERY STANDARDS IN THE REGULATION FOR CERTIFICATION OF VAPOR RECOVERY SYSTEMS OF GASOLINE DISPENSING FACILITIES (SERVICE STATIONS)

October 1, 2004



California Environmental Protection Agency

Air Resources Board

STAFF REPORT:
INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING, PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE EFFECTIVE AND OPERATIVE DATES FOR ENHANCED VAPOR RECOVERY STANDARDS IN THE REGULATION FOR CERTIFICATION OF VAPOR RECOVERY SYSTEMS OF GASOLINE DISPENSING FACILITIES (SERVICE STATIONS)

Date of Release: October 1, 2004

Scheduled for Consideration: November 18 or 19, 2004

Location: California Environmental Protection Agency (Cal-EPA)
Headquarters Building
1001 I Street
Sacramento, CA 95814

Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

STAFF REPORT:
INITIAL STATEMENT OF REASONS FOR PROPOSED RULE MAKING, PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE EFFECTIVE AND OPERATIVE DATES FOR ENHANCED VAPOR RECOVERY STANDARDS IN THE REGULATION FOR CERTIFICATION OF VAPOR RECOVERY SYSTEMS OF DISPENSING FACILITIES
(GASOLINE SERVICE STATIONS)

Prepared by:

Cindy Castronovo
Monitoring and Laboratory Division

Reviewed by:

William V. Loscutoff, Chief, Monitoring and Laboratory Division
George Lew, Chief, Engineering and Certification Branch
Kirk Oliver, Senior Staff Counsel

ACKNOWLEDGEMENTS

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

American Petroleum Institute (API)
Automotive Trade Organizations of California (AUTO-CA)
California Air Pollution Control Districts
California Air Pollution Control Officers Association (CAPCOA)
CAPCOA Vapor Recovery Committee
California Independent Oil Marketers Association (CIOMA)
California Retail Management Association
California Service Station & Automotive Repair Association (CSSARA)
San Diego Service Station Coalition (SDSSC)
Western States Petroleum Association (WSPA)

Staff appreciates the input from the following petroleum marketers:

BP-ARCO
Chevron Products Company
Circle K Stores
Conoco-Phillips
Cross Petroleum
Shell Oil Products US
Tesei Petroleum

Staff would especially like to thank the individual service station owners who took the time to come to the workshop and/or provide comments.

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

ARID Technologies
EZ-Flo Nozzle & Equipment Company
Healy Systems, Inc.
Husky Corporation
OPW Fueling Products

Table of Contents

		Page
I.	Introduction and Recommendations	1
II.	Background	3
III.	Rule Development Process and Public Outreach Efforts	10
IV.	Reasons for and Summary of Proposed Amendments of the Certification Procedure (CP-201)	11
V.	Economic and Environmental Impacts	19
VI.	Outstanding Issues	21
VII.	Alternatives Considered	22
VIII.	References	23

Appendix 1 Proposed Amendments to Title 17, California Code of Regulations

Appendix 2 Proposed Amendments to the EVR Effective and Operative Dates

Appendix 3 Vapor Recovery Health and Safety Code Statutes

Appendix 4 Cost Assumptions and Calculations

Appendix 5 CAPCOA Proposed Implementation Schedule

I. INTRODUCTION AND RECOMMENDATIONS

Introduction

Staff's proposal would change the implementation schedule of the Enhanced Vapor Recovery program. This proposal does not impose additional standards or relax existing standards, but provides more time for gasoline dispensing facility operators to comply with existing requirements.

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). The EVR standards apply to both new and existing facilities and are being phased in from 2001 to 2009. In December 2002, the Board approved amendments to the EVR regulations, including revisions to operative and effective dates of several EVR standards to allow more time to develop and certify EVR vapor recovery systems. However, the April 1, 2005 deadline for all stations to comply with the Onboard Refueling Vapor Recovery (ORVR) compatibility standard (one module of the EVR program) did not change because ORVR compatible systems have been certified and available since 1998.

At that December 2002 hearing, stakeholders raised concerns that the amended EVR schedule could result in gasoline service stations having to upgrade equipment twice, once to meet ORVR compatibility and then a second time to meet full EVR standards. In Resolution 02-35, the Board directed staff to determine the adequacy of lead-time after certification of the first full EVR system in order to avoid the need to upgrade twice.

Since December 2002, several EVR standard effective dates have been delayed again as it has taken longer than anticipated to certify a full EVR system. The existing regulations allow the Executive Officer to allow continued installation of pre-EVR systems when EVR systems are not commercially available. Executive Order G-70-203 extended the EVR Phase II system deadline for new installations from April 1, 2004 to October 1, 2004. Executive Order G-70-205 further extended the EVR Phase II implementation date to January 1, 2005.

At the July 22, 2004 board meeting approving the unihose dispenser amendments, stakeholders again pointed out that the unavailability of EVR Phase II systems would lead to two equipment upgrades for full EVR compliance. Gasoline marketers requested a one-year extension for the ORVR compatibility requirement to April 2006 to allow station owners the option for only one equipment upgrade. The California Air Pollution Control Officers Association (CAPCOA) also testified in favor of an ORVR compatibility extension, primarily to facilitate orderly implementation of the ORVR compatibility requirement. CAPCOA suggested increments of progress to assure all stations will be in compliance by April 2006. Staff agreed to gather input from all stakeholders on the suggested ORVR extension, assess the economic and environmental impacts of an ORVR compatibility

delay and return to the Board in November with a recommendation.

Staff maintains that the EVR program is cost-effective even if two equipment upgrades are needed. This is because the costs for equipment upgrades for ORVR compatibility serve as a down payment for a full EVR system. Staff agrees that costs associated with permitting and station downtime will double if two upgrades are required, and avoiding this is desirable.

Staff recommends that the ORVR compatibility date be extended one year to April 1, 2006 to provide sufficient time for all stations to comply. An extension would also allow stations to install a full EVR Phase II system before the ORVR compatibility deadline, thus complying with both ORVR and EVR Phase II requirements with one station modification. Staff has calculated emission reductions of 1.9 tons/day would be foregone for one year, however, installation of full EVR systems in advance of the full EVR deadline could result in early emission reductions of up to 8.3 tons/day for 2006, 2007 and 2008.

Recommendation

Staff proposes to modify the regulations to extend the ORVR compatibility deadline to April 1, 2006 and amend other EVR regulation dates to be consistent with the extensions provided in Executive Orders G-70-203 and G-70-205. Because a full EVR Phase II system will be available soon, this action will provide station owners with the option to upgrade vapor recovery equipment once to achieve full EVR compliance.

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

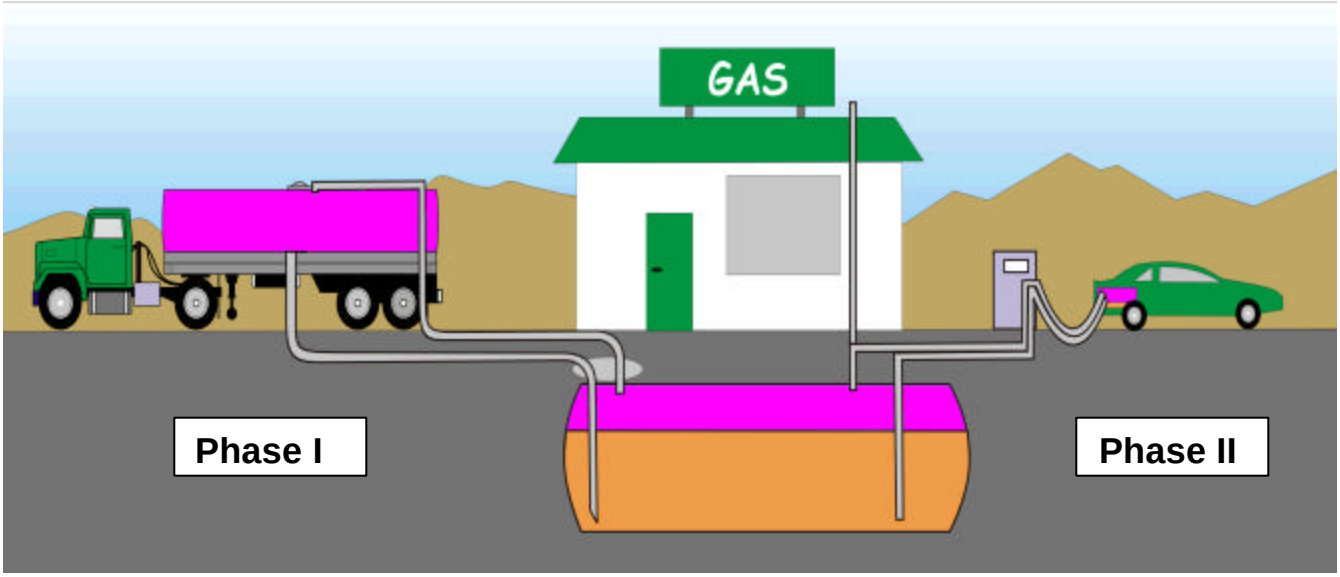
2. Amendments to the incorporated vapor recovery system certification procedure (Appendix 2).

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) 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.

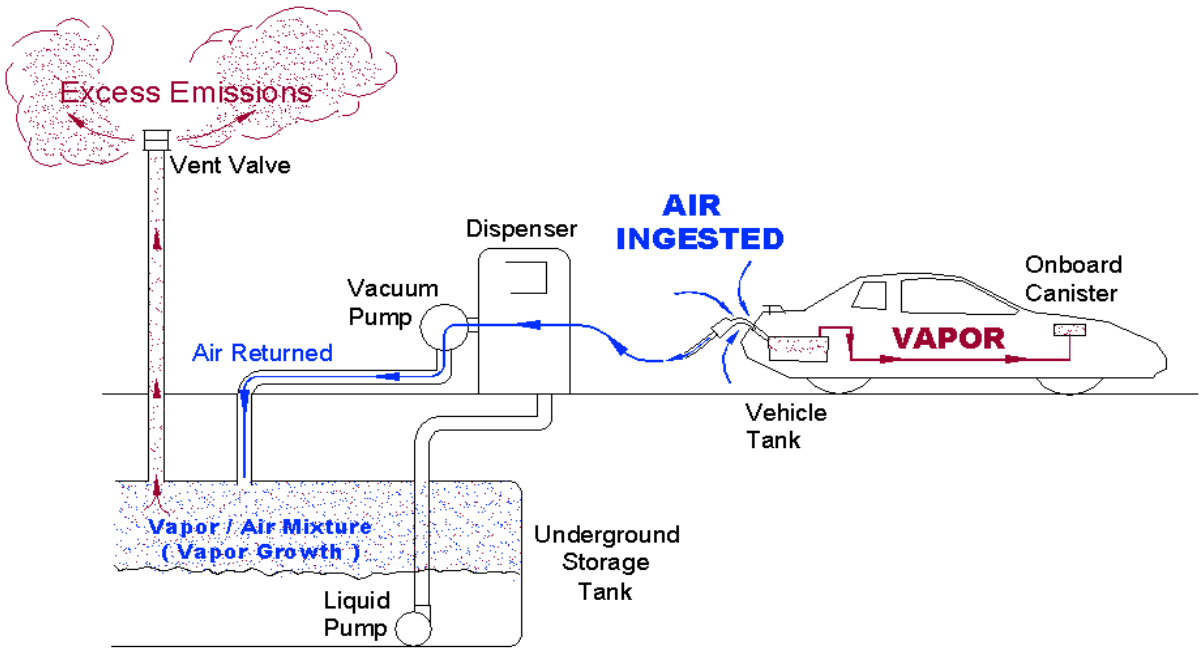
The vapor recovery requirements affect a multitude of stakeholders. These include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems, and air pollution control districts who enforce vapor recovery rules. 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 four 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
Gilbarco/OPW*	G-70-204*

*anticipated certification by October 2004

C. EVR Emission Reductions

The EVR program will achieve 25.7 tons/day of ROG emission reductions by 2010. The EVR 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 (ISD), which monitors the performance of the Phase I and Phase II systems. Table II-2 summarizes the emission reductions associated with each module to be achieved by 2010.

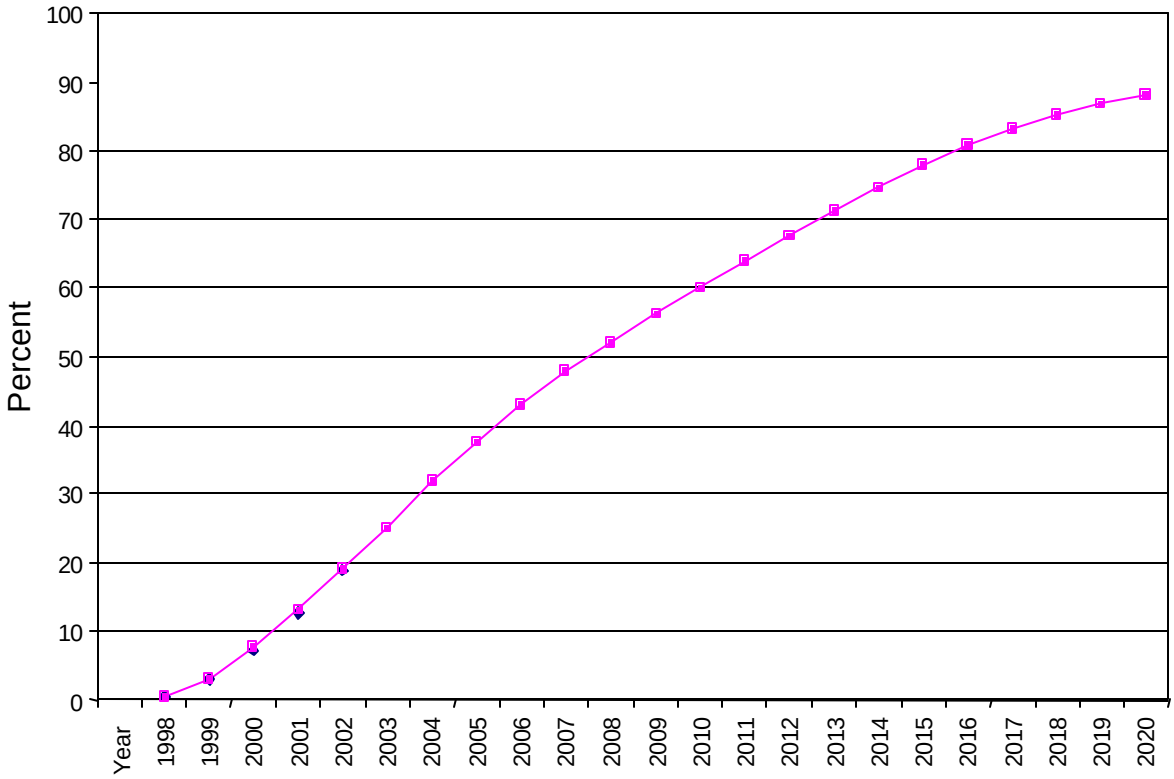
Table II-2
EVR Emission Reduction Summary

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

	Total	25.7

The emission reductions associated with ORVR compatibility vary for each year depending on the percentage of fuel dispensed to ORVR equipped vehicles. The predicted penetration of ORVR vehicles in the California fleet is provided in Figure II-3. This curve was developed using information on vehicle miles traveled obtained from the Department of Motor Vehicles. Details on the calculations are provided in Reference 1.

Figure II-3
Predicted ORVR Vehicle Penetration in California Vehicles



The ORVR vehicle penetration can be combined with emission factors developed from field tests to estimate annual emission reductions achieved through ORVR compatibility. The calculations originally described in the February 4, 2000 staff report (Reference 2) and updated in the EVR Technology Review Report (Reference 3) have been modified further as described below.

Previously, the ORVR emission calculations assumed that 55% of the state's gasoline throughput was dispensed at gasoline dispensing facilities (GDFs) with non-compatible vapor recovery systems. As of April 1, 2003, new installations have been required to have ORVR-compatible systems and some existing stations have already converted their vapor

recovery systems to be ORVR compatible. The South Coast Air Quality Management District (SCAQMD) staff estimates that about two-thirds of the 3400 existing stations in the SCAQMD are ORVR compatible or in the process of converting to ORVR compatibility. If we assume that one-third of the existing stations statewide use assist systems that are not ORVR compatible and that these stations are estimated to dispense 40% of the state's gasoline throughput, then the emissions remaining due to ORVR incompatibility are 1.9 tons/day in 2005 as shown in Table II-3.

Table II-3
Estimated Excess Emissions due to Incompatibility of Phase II Vapor Recovery Systems Fueling ORVR Vehicles

Year	Percent of Vehicle Miles Traveled by ORVR Vehicles	Excess Emissions Calculated in 2002 (55% of throughput at non-ORVR compatible stations)	Excess Emissions Calculated in 2004 (40% of throughput at non-ORVR compatible stations)
1998	0.48	0.0	0.0
1999	3.19	0.2	0.1
2000	7.88	0.4	0.3
2001	13.27	0.8	0.6
2002	19.11	1.1	0.9
2003	25.11	1.6	1.2
2004	31.79	2.0	1.6
2005	**37.66**	**2.5**	**1.9**
2006	43.04	2.9	2.2
2007	47.84	3.3	2.6
2008	52.11	3.7	2.9
2009	56.15	4.1	3.2
2010	60.10	4.5	3.5

F. EVR Implementation Schedule

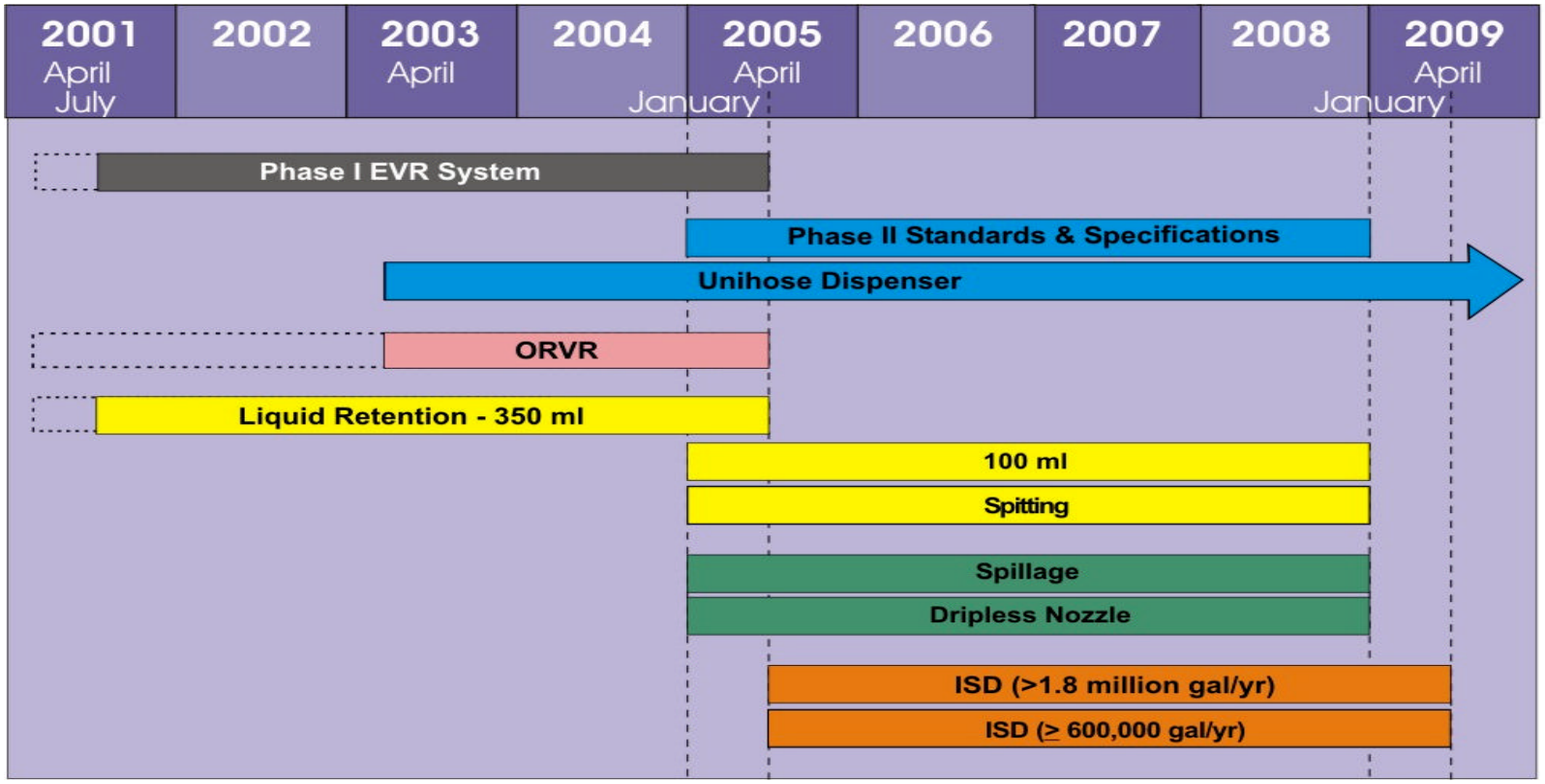
The EVR standards are being phased in over several years and apply both to new and existing facilities. New facilities must meet EVR requirements in effect at time of installation. Existing facilities may use equipment installed prior to the effective date of an EVR standard for a period of up to four years after the effective date. This is commonly referred to as the "4-year clock."

Figure II-1 shows the current EVR implementation timeline. The beginning of each colored bar shows the date when new stations must comply. The final compliance date for all facilities to meet a standard is the date at the end of the colored bar.

The current EVR timeline also reflects changes in EVR implementation dates provided by

Executive Officer action in Executive Orders G-70-203 and G-70-205, which resulted in the delay of EVR implementation dates associated with Phase II vapor recovery to October 1, 2004 and January 1, 2005 respectively.

Figure II-1
Current 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

E. 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.

F. 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. RULE DEVELOPMENT PROCESS AND PUBLIC OUTREACH EFFORTS

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

A. Workshops

A workshop was held on August 19, 2004 in Sacramento. The workshop notice requested specific information regarding number of stations needing to upgrade to ORVR compatibility, time needed to complete the upgrade process, and effect of the proposed delay on vapor recovery equipment manufacturers. The workshop audio was broadcast over the internet and the workshop presentation posted on the vapor recovery webpage. Twenty-nine stakeholders attended the workshop and four e-mail comments were received from internet participants. The workshop attendees included representatives from air pollution control districts, equipment manufacturers, petroleum marketers and individuals who own and operate service stations.

B. Meetings

Staff has met with stakeholders on several vapor recovery issues in the past year. Meetings where the ORVR compatibility deadline was discussed are summarized below.

Table III-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, June 4, July 15
Healy Systems	February 4
Western States Petroleum Association (WSPA)	January 20, March 9, March 16, March 30, April 14, June 4

C. EVR Advisory

Advisory 327, entitled "Enhanced Vapor Recovery Implementation Update" and dated September 10, 2004, was provided to stakeholders through a mail-out, e-mail listserve and webpage posting. The advisory alerted affected parties that extensions to EVR implementation dates were to be considered at the November board meeting and comments were encouraged on the staff's proposal to be made available on October 1, 2004.

D. 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.

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

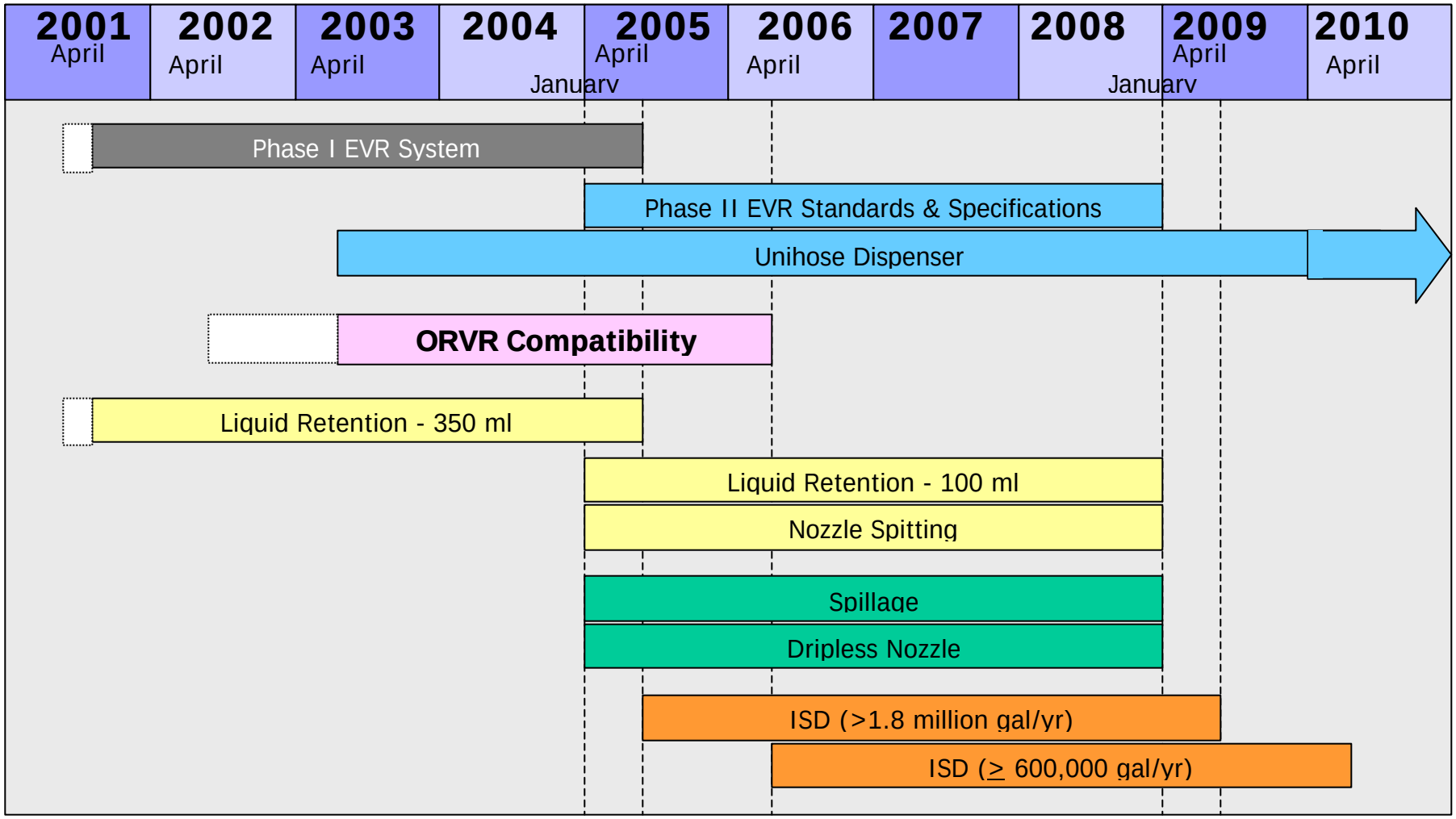
The proposed amendments will extend the ORVR compatibility requirement deadline for 12 months; from April 1, 2005 to April 1, 2006. This is 16 months after the expected certification of the first EVR Phase II system. Staff has concluded that 16 months is sufficient time for the estimated 3500 stations to upgrade either to an ORVR compatible system or a full EVR Phase II system.

The proposed amendments also formalize changes in effective and operative dates affected by ARB Executive Officer actions as described in Executive Orders G-70-203 and G-70-205. The proposal also changes the in-station diagnostics (ISD) effective date for medium throughput facilities to maintain the one-year timeframe after ISD is required for high throughput facilities. The ISD phase-in provides an opportunity to evaluate ISD system performance before full ISD implementation.

CP-201, "Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities," contains the EVR program operative dates. Staff proposes revisions to Table 2-1 of CP-201 as shown in Appendix 2. The proposed changes are summarized in the revised EVR timeline shown in Figure IV-1.

Certification of an EVR Phase II system has taken longer than staff had anticipated. As a result, many stations that have not yet made ORVR upgrades will not have the option of making one upgrade to their station which meets both ORVR and EVR requirements. Thus many stations will have to upgrade twice, once for ORVR by April 1, 2005, and again for EVR by April 1, 2009. The delay of the ORVR deadline by one year will allow station owners the choice of satisfying both ORVR and EVR requirements at one time, at a reduced cost and inconvenience. The rationale for this change is discussed in more detail below.

Figure IV-1 PROPOSED 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

A. Time needed to Make Existing Stations ORVR compatible

Based on information gathered from districts, petroleum marketers and vapor recovery equipment manufacturers, staff has determined that 12 additional months are needed to make all stations in California compatible with fueling ORVR vehicles. This timeframe is based on the number of stations remaining to be upgraded, time necessary to choose systems and plan station upgrades, time needed to obtain construction, district and other necessary permits, time to obtain and schedule contractors and time to install compliant vapor recovery systems.

1. Number of stations to be upgraded

The US Department of Energy estimates there are 9,750 gasoline dispensing facilities statewide (Reference 4). Approximately 3400 (35%) are located in the South Coast Air Quality Management District (SCAQMD). The SCAQMD permitting staff estimates that 2000 of the GDFs have ORVR compatible systems, 300 are in the permit process to upgrade to ORVR compatible systems and 1100 have not yet submitted paperwork, but need to upgrade. This is consistent with the Western States Petroleum Association (WSPA) survey of four large air pollution control districts in California that indicates that 35-40% of the retail facilities are not ORVR compatible and conclude that approximately 3500 facilities statewide need ORVR compatibility upgrades (Reference 5).

2. Time to choose system, plan upgrade and prepare permit application

Gasoline marketers commented at the workshop that at least two months is needed after the first EVR Phase II system is certified for operators to review the certified system features, make decisions on which system (EVR or ORVR) is best for their facility, determine commercial availability of the system and prepare permit applications.

3. Time to obtain necessary permits

Station operators have commented that obtaining permits from air pollution control districts can vary from two weeks to over three months under normal conditions. These time periods could be longer if hundreds of stations are seeking permits at the same time.

4. Time to schedule contractors

Gasoline marketers are currently scheduling contractors for upgrading to EVR Phase I systems by the April 2005 deadline, as well as to conduct work for other agency requirements, such as UST work required by the State Water Resources Control Board. Although it appears that contractors remain available in southern California, one oil company indicated that northern California contractors are currently experiencing backlogs.

One contractor advised in August 2004 that jobs were scheduled through December 2004 and predicted a 6-8 month backlog by the end of August.

B. Previous Board Direction Regarding Avoiding Two Equipment Upgrades

During the comment period for the December 2002 EVR Technology Review amendments, gasoline marketers expressed concern that existing facilities may be forced to upgrade equipment twice; once by April 2005 to meet the ORVR compatibility deadline, and again by April 2007 to meet the full EVR requirements. In Resolution 02-35, the Board directed staff to:

> *"assess, following the initial certification of the first EVR Phase II system, the adequacy of the lead time to install complying certified EVR Phase II systems prior to the deadlines for complying with on-board refueling vapor recovery (ORVR) requirements. It is the intent of the Board that the assessment determine the adequacy of lead time in order to minimize the necessity that existing gasoline dispensing facilities (service stations or GDFs) will need to upgrade vapor recovery systems or equipment more than once in order to comply with both the EVR Phase II standards and specifications and ORVR. The Executive Officer and Board staff are directed to consult with the Districts, WSPA and other stakeholders in preparing the assessment and to report the findings to the Board within three months of the initial certification of the first EVR Phase II system."*

At the time of the December 2002 board meeting, staff was anticipating testing a full EVR system beginning in January 2003. Unfortunately, delays in the equipment manufacturers completing certification testing prevented having a certified EVR Phase II system available and installed by the adopted deadline of April 1, 2004. Because a system would not be commercially available at the regulation deadline, the Executive Officer extended the EVR Phase II deadline by 6 months to October 1, 2004 as allowed under section 19.2 of CP-201. The Executive Officer issued a second extension to January 1, 2005 as an EVR Phase II system was not commercially available by October 1, 2004.

The history of changes to the EVR Phase II system deadline and the effect on the time available between the EVR Phase II deadline and the ORVR deadline are provided in Table IV-1.

Table IV-1
History of Amendments to EVR Phase II System Deadlines

Action Taken	Adoption Date	ORVR Compatibility required for existing GDFs	EVR Phase II required for new GDFs	Time between ORVR deadline and required first EVR Phase II System
Board Approval 3/22/2000	2/1/2001	4/1/2005	4/1/2003	24 months
Board Approval 12/12/2002	3/7/2003*	4/1/2005	4/1/2004	12 months
EO Approval**	3/11/2004	4/1/2005	10/1/2004	6 months
EO Approval**	8/30/2004	4/1/2005	1/1/2005	3 months

*adopted via emergency regulation
** extended by ARB Executive Officer as per section 19.2 of CP-201 as certified EVR Phase II system not commercially available.

C. Risk Associated with Installing ORVR Compatible vs. Full EVR Systems

It is expected that the four certified ORVR Compatible Phase II systems available now will eventually be upgraded and certified as full EVR Phase II systems. However, there are no guarantees that these systems will eventually become certified to all EVR standards. Table IV-2 compares the currently available ORVR compatible systems and assesses the probability that the system will complete the additional steps needed to achieve full EVR compliance.

Table IV-2
Status of ORVR Compatible Systems Becoming Compatible with Full EVR Phase II Systems

ORVR System	Status Toward Full EVR	Additional Equipment to Convert ORVR system to Full EVR	Comments
Healy	Completed operational test and preparing Executive Order (without ISD). System with ISD completing testing	Nozzles, Clean Air Separator and ISD	Healy EVR Executive Order expected November 2004
OPW Membrane	Full EVR system sealed and under test	Nozzles and ISD	OPW/Gilbarco ORVR Certification anticipated October 2004
Balance	Application under review	Nozzles and ISD and possible processor	Processor may or may not be needed to meet pressure limits
Hirt	R&D site approved Application anticipated	Nozzles and ISD	

Gasoline marketers prefer to minimize the risk on their significant capital investment for upgrading vapor recovery equipment. The worst-case scenario would be to install an ORVR compatible system now and then have to replace the entire system in 4 years because the ORVR compatible system could not be modified to meet full EVR requirements. The Healy ORVR system is currently the lowest risk system, as the Healy EVR Phase II system has met all certification testing requirements and the Executive Order is being finalized. Stations that install a Healy ORVR compatible system now would need to update the Healy nozzles, add the Clean Air Separator and install ISD by 2008. The OPW Membrane is also likely to be part of a full EVR system. Stations currently operating with a Gilbarco VaporVac Phase II system can add the OPW membrane processor to achieve ORVR compatibility now, and add EVR nozzles and ISD systems by 2008 for full EVR compliance. Stations operating with balance systems will need EVR nozzles, ISD, and possibly a vapor processor for to meet full EVR. The Hirt system already meets pressure limits, and would need EVR nozzles and ISD to comprise a full EVR system.

D. Comparison of Costs for One vs. Two Upgrades

In the 2002 EVR Technology review, staff estimated that the total equipment and

installation costs to upgrade a station with 6 dispensers (12 fueling points) to full EVR Phase II and ISD compliance would be approximately $43,000 (Reference 3). The staff's analysis assumed only one upgrade would be needed. The data in Table IV-3 indicate that estimated costs associated with two system upgrades range from $38,800 to $50,800 depending on the system chosen. Thus, staff concludes that the two-step approach to full EVR compliance remains cost-effective. The cost assumptions and calculations are provided in Appendix 4. Note that staff's assumptions do not include equipment discounts from retail prices that are often available to station operators.

Table IV-3
Estimated Equipment and Installation Costs to Upgrade Gilbarco VaporVac Station with 12 Fueling Points (Unihose) to ORVR Compatibility and EVR in Two Steps

ORVR System	Estimated ORVR system conversion cost	Additional Equipment to Convert ORVR system to Full EVR	Additional EVR system conversion cost	Total cost for Two Upgrades
Healy	$16,800	EVR Nozzles, Clean Air Separator and ISD	$28,000	$44,600
OPW Membrane	$22,800	EVR Nozzles and ISD	$22,800	$45,600
Balance	$16,000	EVR Nozzles, ISD and possible processor	$22,800	$38,800
			$34,800 with processor	$50,800 with processor

Under staff's proposal, station operators would have the option of upgrading stations once to a full EVR Phase II system. The cost of converting to a Healy EVR Phase II system is estimated at approximately $40,700 for a station with six dispensers. The difference in cost from the two upgrades estimate is the cost to replace the ORVR nozzles with EVR nozzles estimated at approximately $4,000. Note that nozzles and hanging hardware (hoses, etc.) have a working life of approximately one to three years and thus would need to be replaced anyway.

Table IV-4
Estimated Equipment and Installation Costs to Upgrade Gilbarco VaporVac Station with 12 Fueling Points to Full EVR in One Step

EVR Phase II System	Estimated EVR system conversion cost

Healy with ISD	$40,700

Staff's analysis does not include costs associated with obtaining permits (estimated at $1500 in Reference 6) or loss of business associated with shutdown of the station during equipment installation. Staff recognizes that these costs are real and significant and would be minimized for one equipment upgrade to full EVR compliance.

E. Delay in Certifying the First EVR Phase II System

The Board recognized in March 2000 that many of the EVR standards are technology forcing. The EVR Technology Review Report presented to the Board in December 2002 provided evidence from ARB and equipment manufacturers that EVR standards could technically be met. The EVR amendments also provide stringent certification testing to address concerns regarding durability of pre-EVR systems. Systems seeking certification must be installed in operating service stations and pass many field tests. Real-world certification testing of vapor recovery equipment over a minimum six-month period shows that it is difficult for vapor recovery systems to maintain compliance with the EVR standards over the certification test period.

At the time of the December 2002 EVR Technology Review Board meeting, there were fourteen approved EVR Phase II research and development test sites where seven vapor recovery system manufacturers were collecting data to support their certification applications. On July 29, 2003, the first EVR Phase II site was sealed for the minimum six-month operational test. Since that time, one other EVR Phase II system has been sealed but has had difficulties in completing the operational test. At this writing, only the Healy EVR Phase II system has successfully made it through the certification operational test period.

V. ECONOMIC AND ENVIRONMENTAL IMPACTS

A. Economic Impact of Proposed Amendments

The proposed amendments will provide cost savings for station owners by providing an option to avoid two vapor recovery system upgrades to meet full EVR Phase II requirements. Cost savings are estimated to range from $1,500 to $22,000. The lower end of the range represents costs for two upgrades for the Healy EVR system as installation of the currently certified Healy ORVR system serves as a down payment towards a full Healy EVR system. The excess costs are due to permitting for the EVR upgrade to the Healy ORVR system. The upper end of the range could apply to a station that purchased a vapor processor for an ORVR system that was never certified to be part of a full EVR system. This station would need to replace the ORVR compatible system with a full EVR system by October 2008.

The extension of the ORVR compatibility requirement could provide additional cost savings to operators if more ORVR compatible or EVR certified systems are certified in the next year, providing a more competitive market and possibly reducing system prices.

Service station operators commented at the workshop that a combination of several factors in recent years has made staying in business difficult, especially for small business owners. These include increased energy costs, liability expenses, worker's compensation, health insurance and a possible future increase in the minimum wage. One station operator estimated that compliance costs for environmental regulations range from $20,000 to $80,000 every two years, not counting loss of business due to downtime.

The proposed amendments will affect vapor recovery equipment manufacturers in different ways. Manufacturers who have already certified ORVR compatible systems may be adversely affected by the delay in the ORVR deadline as it will delay product sales and allow more time for their competitors to certify ORVR compatible systems. Equipment manufacturers who have recently entered the ORVR compatible system certification process will benefit from the delay if they can get systems certified before the new ORVR deadline.

Environmental Impacts of Proposed Amendments

Staff's analysis shows that there would be some emission reductions forgone in 2005 due to the 12 month delay, but early implementation to full EVR systems would achieve more emission reductions that originally claimed in 2006, 2007 and 2008. The emission reductions lost in 2005 could be minimized if significant numbers of stations are held to an earlier compliance date, as suggested by the CAPCOA increments of progress.

The emission reductions attributed to ORVR compatibility at the time of the 2002 EVR Tech Review were 4.5 tons/day of 2010 ROG emissions. These emissions assumed that 55% of the state's gasoline throughput was dispensed through the two main brands of assist systems. Recent data from districts suggest that 3500 of the 9750 stations in the state have one of these two assist systems (Gilbarco or Wayne) and still need ORVR compatible upgrades. If all of these stations were upgraded to full EVR systems by April 2006, the emission reductions would be 8.3 tons/day (includes ISD emission reductions) as shown in Table V-1. This "best-case" scenario would provide early emission reductions of 8.3 tons/day for 2006, 2007 and 2008. Note that actual "best case" emission reductions before 2010 would be slightly lower as emissions are based on total state gasoline throughput growth factors.

Table V-1
EVR Phase II and ISD 2010 ROG Emission Reductions by System Type*

Module	Description	Gilbarco ROG Reductions Statewide, tons/day	Wayne ROG Reductions Statewide, tons/day	ROG Reductions for Early EVR Implementation Statewide, tons/day
2	Phase II	3.0	0.1	3.1
3	ORVR Compatibility	4.3	0.2	NA
4	Liquid Retention	0.1	0.0	0.1
5	Spillage/Dripless Nozzle	1.4	0.8	2.2
6	In-Station Diagnostics	1.9	1.0	2.9
	Total	10.6	2.1	8.3

* 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

VI. OUTSTANDING ISSUES

1. ORVR Compatibility Increments of Progress

The California Air Pollution Control Officers Association (CAPCOA) agrees that the April 1, 2005 ORVR compatibility deadline cannot reasonably be met and supports an extension through a change in ARB regulations. CAPCOA recommends that permitting and installation milestones be included in the regulation amendments to help reduce adverse air quality impacts resulting from the proposed delay and minimize compliance difficulties that may arise from a last minute crunch given the limited number of available vendors and contractors. Gasoline marketers associations, including the Western States Petroleum Association (WSPA) and California Independent Oil Marketers Association (CIOMA), endorse the proposed CAPCOA schedule (Reference 5). The CAPCOA schedule is provided in Appendix 5.

ARB staff also supports the CAPCOA proposal; however, there are legal reasons why the proposed CAPCOA schedule cannot be incorporated into the vapor recovery regulations. The air pollution control districts have the primary authority for regulation of stationary sources, which includes permit program requirements. The ARB's role is to set standards for vapor recovery systems and certify systems to those standards. The ARB does not have the legal authority to adopt timelines for district permitting activities.

Staff alerted stakeholders to the legal conflict at the August 19, 2004 workshop. At that time, CIOMA suggested that the CAPCOA schedule could be implemented using a Memorandum of Agreement (MOA). Concerns were raised regarding statewide uniformity if some parties did not commit to the MOA.

2. Extension Hurts Manufacturers of ORVR Compatible Systems

Staff expects opposition to the ORVR compatibility extension from vapor recovery system manufacturers that currently market ORVR compatible systems. However, only one manufacturer of balance system components has commented thus far in opposition to the proposed amendments. Healy Systems opposed the extension in testimony at the July 22, 2004 board meeting; however, Healy retracted their statements in comments at the August 19, 2004 workshop. Healy stated that, after further investigation, they agree that the time remaining before April 2005 is insufficient to upgrade the large number of stations that are currently incompatible with fueling ORVR vehicles.

VII. ALTERNATIVES CONSIDERED

We have considered as an alternative the option of not adopting the proposed vapor recovery amendments. Keeping the current EVR schedule would be detrimental, as it is likely that some service station operators would not have enough time to comply. Also, small business owners have commented that they would be most likely to face delays as stations owned by major oil companies have an advantage in securing equipment orders and contractors. In addition, operators wishing to conduct only one equipment upgrade to meet full EVR requirements will not have that option without the proposed amendments.

VIII. REFERENCES

1. April 16, 2002 ARB Memorandum from Joe Guerrero to George Lew regarding Updated ORVR Penetration Calculations

2. 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

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

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

5. September 3, 2004 letter from Jay McKeeman of the California Independent Oil Marketers Association, Steve Arita of the Western States Petroleum Association, Will Woods of the Automotive Trade Organizations of California, Jim Lantry of the San Diego Service Station Coalition and Dennis DeCota of the California Service Station & Automotive Repair Association to Cindy Castronovo of the Air Resources Board regarding WSPA/CIOMA/AUTO-CA/SDSSC/CSSARA Comments on CARB ORVR Compatibility Extension Workshop held on August 19, 2004

6. 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

7. Executive Order G-70-203 dated March 11, 2004 entitled "Modification of Enhanced Vapor Recovery Operative and Effective Dates relating to the Finding that EVR Phase II Vapor Recovery Systems are not Commercially Available"

8. September 1, 2004 letter from William V. Loscutoff enclosing Executive Order G-70-205 dated August 30, 2004 entitled "Modification of Enhanced Vapor Recovery Operative and Effective Dates relating to the Finding that EVR Phase II Vapor Recovery Systems are not Commercially Available"

Appendix 1

Proposed Amendments to Title 17, California Code of Regulations

Appendix 2

Proposed Amendments to the EVR Effective and Operative Dates

California Environmental Protection Agency

Air Resources Board

Vapor Recovery Certification Procedure

CP - 201

Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities

Adopted: December 9, 1975
Amended: March 30, 1976
Amended: August 9, 1978
Amended: December 4, 1981
Amended: September 1, 1982
Amended: April 12, 1996
Amended: April 28, 2000
Amended: February 1, 2001
Amended: June 1, 2001
Amended: July 25, 2001
Amended: July 3, 2002
Amended: March 7, 2003
Amended: July 1, 2003
Amended: October 8, 2003
Amended: July 22, 2004
Amended: _____

Note: The only portion of this procedure being amended is Table 2-1, the balance of the text remains as amended on July 22, 2004. The text is shown in ~~strikeout~~ to indicate text that is proposed for deletion and <u>underline</u> to indicate text that is proposed for additions. [Bracketed text] is not part of the proposed amendments.

Table 2-1
Effective and Operative Dates for
Performance Standards and Specifications

Performance Type	Requirement	Sec.	Effective Date	Operative Date
All Phase I Standards and Specifications	As specified in Table 3-1	3	April 1, 2001	July 1, 2001
ORVR Compatibility	Interaction When Refueling ORVR Vehicles Shall Meet the applicable Efficiency or Emission Standard, Including ORVR Penetrations to 80%	4.1, 4.4	April 1, 2002 ~~April 1, 2001~~	April 1, 2003
Nozzle Criteria	Post-Refueling Drips ≤ 3 drop/refueling	4.7	January 1, 2005[1] ~~April 1,2004~~	January 1, 2005[1] ~~April 1,2004~~
Liquid Retention	≤ 350 ml/1,000 gals.	4.8	April 1, 2001	July 1, 2001
Liquid Retention Nozzle Spitting	≤ 100 ml/1,000 gals. ≤ 1.0 ml /nozzle/fueling	4.8	January 1, 2005[1] ~~April 1,2004~~	January 1, 2005[1] ~~April 1,2004~~
Spillage (including drips from spout)	≤ 0.24 pounds/1,000 gallons	4.3	January 1, 2005[1] ~~April 1,2004~~	January 1, 2005[1] ~~April 1,2004~~
For GDF > 1.8 mil. gal/yr.	ISD Requirements	10	April 1, 2005[1] ~~April 1,2004~~	April 1, 2005[1] ~~April 1,2004~~
For GDF > 600,000 gal/yr.	ISD Requirements	10.1	April 1, 2006[1] ~~April 1,2004~~	April 1,2006[1] ~~April 1, 2004~~
Unihose	One Hose/Nozzle per Dispenser Side	4.11	Not applicable	April 1, 2003
All other Phase II Standards and Specifications	As specified in Tables 4-1 through 8-2.	4,5,6, 7,8	January 1, 2005[1] ~~April 1,2004~~	January 1, 2005[1] ~~April 1,2004~~

[1] These amendments formalize dates already extended by Executive Officer action in Executive Orders G-70-203 and G-70-205 pursuant to section 19.2.

Appendix 3

Vapor Recovery Health and Safety Code Statutes

Appendix 4

Cost Calculations

COST ASSUMPTIONS AND CALCULATIONS

I. Cost Assumptions for Table IV-3, Estimated Equipment and Installation Costs to Upgrade Gilbarco VaporVac Station with 12 Fueling Points (Unihose) to ORVR Compatibility and EVR in Two Steps

A. Healy ORVR Compatibility Conversion Costs (Source: Healy Systems):

Equipment Costs Per Dispenser		
2 ORVR nozzles @ $300 each	=	$600
1 vapor pump, etc. @ $1670 each	=	$1,670
1 dispenser-related equipment @ $200 each	=	$200
Total Equipment Costs/Dispenser	=	$2,470
Installation Cost Per Dispenser	=	$300
Total Healy ORVR Equipment and Installation Costs/Dispenser	=	$2,770
Total Cost for 12 Fueling Points (6 unihose dispensers)	**=**	**$16,620**

B. OPW Membrane ORVR Compatibility Conversion Costs (Source: OPW)

Equipment Cost per Facility	=	$18,800
Installation Cost per Facility	=	$ 4,000
Total OPW ORVR Equipment and Installation Cost/Facility	**=**	**$22,800**

C. Balance ORVR Compatibility Conversion Costs (Reference 6 and Healy):

Equipment Costs Per Dispenser		
2 balance nozzles @ $200 each	=	$400
2 sets hoses, etc. @ $230 each set	=	$460
1 balance retrofit kit @ $1400 each	=	$1400
Total Equipment Costs/Dispenser	=	$2,260
Installation Cost Per Dispenser	=	$400
Total balance ORVR Equipment and Installation Costs/Dispenser	=	$2,660
Total Cost for 12 Fueling Points (6 unihose dispensers)	**=**	**$15,960**

D. Healy EVR Conversion Costs (Healy):

Equipment Costs Per Dispenser
2 EVR nozzles @ $315 each = $630
Total Equipment Costs/Dispenser = $630

Installation Cost Per Dispenser = $50

Total Healy ORVR Equipment and Installation Costs/Dispenser = $680
Total Dispenser Cost for 12 Fueling Points (6 unihose) = $4,080

Equipment Cost for Clean Air Separator = $6900
Installation Cost for Clean Air Separator = $2000
Total Cost for Clean Air Separator per Facility = **$8,900**

E. OPW EVR Conversion Costs (ARB estimate):

Equipment Costs Per Dispenser
2 EVR nozzles @ $350 each = $700
2 sets hoses, etc. @ $260 each set = $520
Total Equipment Costs/Dispenser = $1220

Installation Cost Per Dispenser = $75

Total OPW EVR Equipment and Installation Costs/Dispenser = $1,295
Total Dispenser Cost for 12 Fueling Points (6 unihose) = $7,770

F. Balance EVR Conversion Costs (ARB estimate):

Equipment Costs Per Dispenser
2 EVR nozzles @ $350 each = $700
2 sets hoses, etc. @ $260 each set = $520
Total Equipment Costs/Dispenser = $1220

Installation Cost Per Dispenser = $75

Total Healy ORVR Equipment and Installation Costs/Dispenser = $1,295
Total Dispenser Cost for 12 Fueling Points (6 unihose) = $7,770

Equipment Cost for balance processor = $10,000
Installation Cost for balance processor = $2000
Total Cost for balance processor per Facility = **$12,000**

EVR Conversion Cost Summary

ORVR System	Equipment to Convert to EVR	Processor	ISD*	EVR Nozzles & Hoses	**TOTAL**
Healy	Add Healy processor, ISD & Healy EVR nozzles	$8,900	$15,000	$4,080	**$27,980**
OPW Membrane	Add ISD & EVR nozzles	NA	$15,000	$7,770	**$22,770**
balance	Add processor, ISD & EVR balance nozzles	$12,000	$15,000	$7,770	**$34,770**

*ISD costs for station with 6 dispensers from 2002 EVR Technology Review

II. Cost Assumptions for Table IV-3, Estimated Equipment and Installation Costs to Upgrade Gilbarco Assist Station with 12 Fueling Points (Unihose) to EVR Phase II Compliance in One Step

A. Healy EVR Conversion Costs (Source: Healy Systems):

Equipment Costs Per Dispenser
2 EVR nozzles @ $315 each = $630
1 vapor pump, etc. @ $1500 each = $1,670
1 dispenser-related equipment @ $200 each = $200
Total Equipment Costs/Dispenser = $2,500

Installation Cost Per Dispenser = $300

Total Healy ORVR Equipment and Installation Costs/Dispenser = $2,800
Total Cost for 12 Fueling Points (6 unihose dispensers) = $16,800

Equipment Cost for Clean Air Separator = $6900
Installation Cost for Clean Air Separator = $2000
Total Cost for Clean Air Separator per Facility = **$8,900**

EVR	Equipment to Convert to EVR	Dispenser Modifications	Clean Air Separator	ISD*	**TOTAL**

Healy	Dispenser modifications, processor, ISD & Healy EVR nozzles	$16,800	$8,900	$15,000	**$40,700**

Appendix 5

CAPCOA Proposed Implementation Schedule

ORVR Compliance Schedule as suggested in July 20, 2004, letter Signed by Larry Greene, CAPCOA President

Proposed Schedule for Modifying Assist Phase II Systems to be Compatible with Vehicles Equipped with On-board Refueling Vapor Recovery (ORVR)

1. By February 1, 2005, each gasoline dispensing facility (GDF) owner subject to the ORVR retrofit requirements must submit a complete application showing how compliance with the ORVR requirements will be met and permit fees to the district for each affected GDF.

   (a) A GDF owner of 10 or less affected GDFs within a district shall provide as part of each application a compliance plan showing that construction at the GDF will be completed and the GDF will have successfully passed all applicable performance tests by March 1, 2006. A construction schedule shall be submitted for each affected GDF.

   (b) A GDF owner of more than 10 affected GDFs within a district shall provide as part of the application a compliance plan showing the following:

      (i) Construction will be completed and the GDF will have successfully passed all applicable performance tests for 40% or more of the GDFs and the district notified in writing by no later than 120 days after the construction authorization is issued or August 1, 2005, whichever is later.

      Construction will be completed and the GDF will have successfully passed all applicable performance tests for an additional 30% or more of the GDFs and the district notified in writing by no later than 120 days after the construction authorization is issued or December 1, 2005, whichever is later.

      Construction will be completed and the GDF will have successfully passed all applicable performance tests for the remaining 30% of the GDFs and the district notified in writing by no later than 120 days after the construction authorization is issued or April 1, 2006, whichever is later.

   A compliance plan shall be submitted for each affected GDF.

2. Not more than 30 days after the district issues the construction authorization, the GDF owner shall sign a contract with the contractor who will install the ORVR compatible system in accordance with the compliance plan.

3. The GDF shall comply with the compliance plan submitted to the district.