California Environmental Protection Agency

Air Resources Board

HEARING NOTICE AND STAFF REPORT

INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING, PUBLIC HEARING TO CONSIDER THE PROPOSED ADOPTION OF AMENDMENTS TO VAPOR RECOVERY CERTIFICATION AND TEST PROCEDURES FOR UNDERGROUND AND ABOVEGROUND STORAGE TANKS USED AT GASOLINE DISPENSING FACILITIES INCLUDING GASOLINE DISPENSING FACILITY HOSE REGULATION

August 3, 2011

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

Table of Contents

I. EXECUTIVE SUMMARY AND STAFF RECOMMENDATIONS

A. Background

On March 23, 2000, the Air Resources Board (ARB or Board) approved Enhanced Vapor Recovery (EVR) regulations. The EVR regulations established new performance standards for vapor recovery systems to reduce evaporative emissions during storage and transfer of gasoline at gasoline dispensing facilities (GDF) or service stations with underground storage tanks and to increase the reliability of such systems. Control of air pollutants from GDFs is necessary to reduce hydrocarbons (gasoline vapor or reactive organic gases (ROG)) that are ozone precursors and to control benzene, a constituent of gasoline vapor that ARB has identified as a toxic air contaminant (TAC). Identification of a TAC requires the development and implementation of a control measure to manage the risk of human exposure. Vapor recovery controls are one important element in the risk management measure for benzene.

EVR standards apply to both new and existing facilities and were phased in from 2001 to 2010[*]. Some EVR performance standards, such as underground storage tank pressure limits, were technology forcing. EVR regulations were updated in 2001, 2002, 2004, and 2006. These updates added new test procedures or modified existing test procedures in response to new vapor recovery technologies. Staff is now proposing additional amendments to the regulations to clarify certification procedures and address administrative and technical issues that have arisen during the implementation of EVR regulations. This proposal would reduce approximately one ton per day (tpd) of reactive organic gas (ROG) evaporative emissions by requiring the use of low permeation fuel hoses at affected GDFs.

B. Staff Proposal

New Definition of Effective Date for Starting "The Four-Year Clock"

ARB staff worked with the California Independent Oil Marketers Association (CIOMA) and other industry representatives to develop the proposed revised language clarifying a statutory provision providing owners of existing GDFs four years to replace their current equipment when new or amended standards and specifications become effective. In the past, there was some confusion when no system was certified to meet a new performance standard by an actual calendar date specified in the regulations – the effective date. At the time of adoption of the regulations, that date represented the ARB staff's best available estimate for certification of the first system. In actuality, unexpected delays in the development and certification of compliant systems meant that affected GDFs could not meet the regulatory requirements by the effective date specified in the regulations. This forced repeated revision of the effective date, first through administrative actions by the Executive Officer and then by Board approval of the Executive Officer's action through a formal rulemaking process. To remedy this

[*] Existing facilities located in some counties were not required to comply with EVR requirements until 2011 due to changes in ozone attainment status made in 2007 or a statute enacted in 2008.

situation, staff is proposing to clarify that the "*effective date*" is the date when the first system meeting the applicable new performance standards is certified by ARB and this new effective date starts the "*four-year clock*" provision for affected GDFs. Additionally, staff is proposing to add a provision that allows the public to petition the Executive Officer to exempt certain subgroups of facilities deemed incompatible with the first certified system.

Amendments, Revisions, and Other General Editorial Improvements

Staff proposes reorganization of, and amendments to, the underground storage tank Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities (CP-201) and the Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks (CP-206) to improve clarity and readability, and amendments to the definitions in D-200 to clarify and add terms used in the vapor recovery certification and test procedures. Minor technical and editorial revisions are also proposed to some of the existing test procedures used by ARB staff to certify EVR equipment.

New Evaporative Emission Standard for Fuel Hoses

Staff also proposes a new certification performance standard for GDF hoses, limiting permeation to no more than 10.0 grams per square meter per day ($g/m^2/day$) as determined by UL 330 (Seventh Edition) - Underwriters Laboratories' Standard for Hose and Hose Assemblies for Dispensing Flammable Liquids (UL, 2009). This standard will apply to hoses which carry liquid gasoline against the outermost hose wall (see Section II.B. for a discussion of vapor recovery systems affected by this proposal).

The adoption of a new fuel hose permeation standard will affect about 70 percent of GDFs in California. The effective date provision for this new hose permeation standard and the "four year clock" for affected existing GDFs apply as described above. That is, the date for applicability of the new low permeation hose limit is four years from the "effective date," which is established when the first system is certified to meet the proposed new performance standard. Existing and affected GDFs will have up to four years from the effective date to comply. Exceptions to the "four year clock" provision are as follows. First, in the event that existing and affected GDFs undergo a major modification* after the effective date, the four year clock provision does not apply and the applicable new hose standards must be met upon completion of facility modifications. Second, in the event that an affected GDF has the need to replace a hose(s) after the effective date, the GDF is required to install a fuel hose meeting the new proposed low permeation emission standard. Third, all new and affected GDF installations that are permitted after the effective date are required to install fuel hoses meeting the new low permeation standard.

* Major modification of a Phase II system is defined as the addition, replacement, or removal of 50 percent or more of the buried vapor piping or the replacement of fuel dispensers. The replacement of a dispenser is not a major modification when done for reasons of vandalism or damages that are beyond the reasonable control of the GDF operators.

The proposed new GDF low permeation hose standard would reduce emissions about 96 percent from current uncontrolled levels and save California consumers approximately $396,000 per year from 112,000 gallons of avoided gasoline loss. The low permeation fuel hose standard is technology forcing since there currently are no requirements within the United States limiting permeation emissions from GDF hoses but such low emitting technology exists already in other sectors.

C. Staff Recommendations

Staff recommends that the Board adopt the following:

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

2. Amendments to the referenced vapor recovery certification and test procedures (Appendix 2).

Adoption of the above will accomplish the following:

1. Re-define the “effective date” in the regulation to be the date when the first system complying with applicable performance standards is certified by ARB.

2. Specify that the “four-year clock” provision of the statute begins on the new effective date.

3. Add a provision which allows the public to petition the Executive Officer to exempt certain subgroups of facilities that are found to be incompatible with the first certified system.

4. Clarify, update, and remove redundant provisions in the existing certification and test procedures which are incorporated by reference in the regulations.

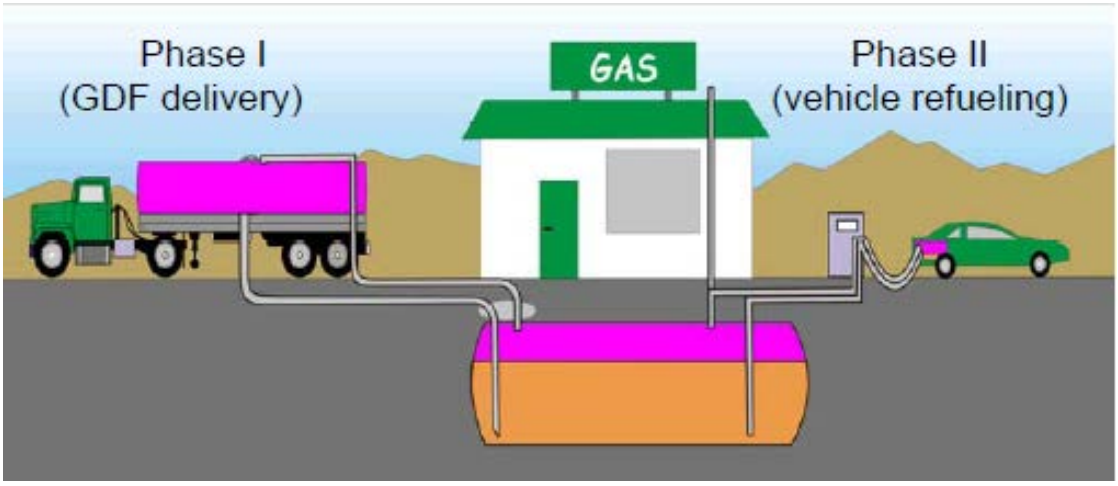
5. Establish a new low permeation emission standard for GDF hoses, resulting in approximately one tpd of ROG emission reductions at a net cost savings to California consumers.

II. BACKGROUND

A. California's Gasoline Vapor Recovery Program

Gasoline vapor emissions are controlled during two types of gasoline transfer operations at dispensing facilities (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 and controls those vapors during the storage of gasoline at the GDF. The vapor recovery collection efficiency during both of these transfers is determined through certification of vapor recovery systems.

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



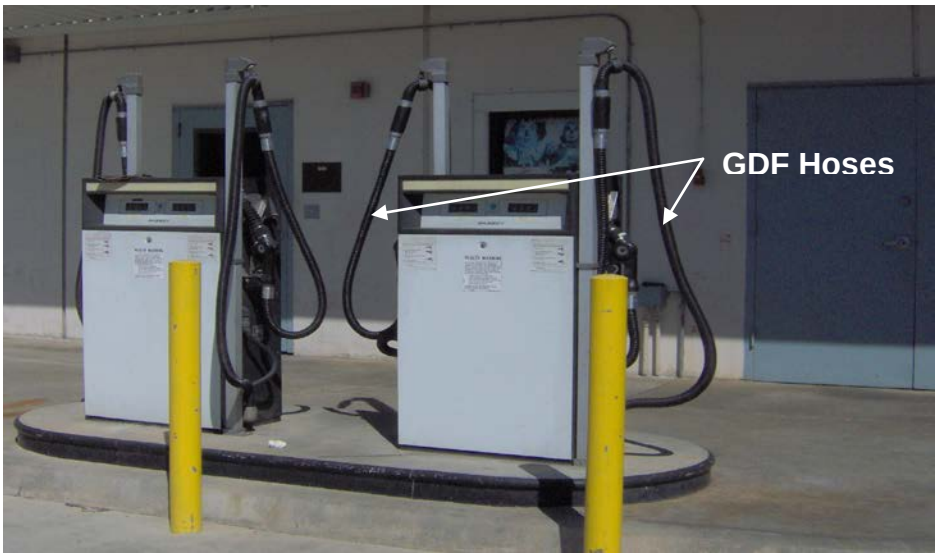
ARB and the air pollution control and management districts (districts) share responsibility in implementing the vapor recovery program. ARB establishes performance standards for vapor recovery systems and determines when they must be used by the affected GDFs. As part of this program, ARB staff certifies prototype Phase I and Phase II vapor recovery systems in accordance with procedures adopted by ARB. State law requires that only ARB certified systems are offered for sale, are sold, and are installed throughout California. District staff inspects and tests the vapor recovery system upon installation during the permitting process and conducts regular inspections to check function and operation of in-use systems.

The vapor recovery requirements applicable to fuel marketing in California reduce emissions, help with the fight for clean air, and affect a multitude of stakeholders. Those impacted include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems and districts who enforce vapor recovery rules. California's efforts on vapor recovery benefit others as California certified systems are required by several other U.S. states and many countries.

B. GDF Fuel Hose Permeation Emissions

GDF hoses and hose assemblies dispense gasoline to automobiles and equipment at GDFs (Figure II-2). Gasoline vapor emissions from GDF hoses are the result of permeation of gasoline's constituent molecules through thermoplastic or rubber materials. The rate of permeation emissions from GDF hoses is affected by a variety of factors including: temperature, concentration gradient across the hose wall, fuel type, hose material, and construction. There is currently no state or federal regulation restricting permeation emissions from GDF fuel hoses.

Figure II-2. GDF Fuel Hoses



Depending upon the facility design, GDF hoses can range in length from approximately 8 to 18 feet and vary in size with inner diameters ranging from approximately 0.75 to 1.5 inches. Hoses are generally made from rubber or thermoplastic materials and are commonly reinforced internally with metal braiding, which also provides electrical conductivity for safety.

Most GDF fuel hoses used in California are part of ARB certified vapor recovery systems. Vapor recovery hoses have two distinct fluid flow paths: one for fuel delivery and the other for return of hydrocarbon vapor from a vehicle's gasoline tank. There are two different types of vapor recovery hoses: vacuum assist and balance. Vacuum assist hoses are similar to non-vapor recovery (or conventional) GDF hoses in that the liquid fuel is carried against the inside of the outer hose wall. Balance hoses are different, carrying fuel vapor (rather than liquid fuel) against the outer hose wall (Figure II-3). This is a very important distinction and a determining factor for emissions because the rate of permeation is a function of hose type. The proposed regulatory language addresses these hose type distinctions. Specifically, this proposal would establish new low permeation limits only for hoses currently identified as "vacuum assist" and "conventional;" again these are hoses which carry liquid gasoline against the outer wall. Hoses currently identified as "balance" have negligible permeation by virtue

of the fact that the outer hose wall contains vapor and not liquid fuel. Thus, the staff's proposal exempts balance type hoses from the new permeation limit.

Figure II-3. Cutaways of Vapor Recovery GDF Hose Assemblies Showing Vapor and Liquid Paths

C. Brief History of Vapor Recovery Rulemaking

In 1975, ARB adopted the first vapor recovery regulations in response to a new state law, which directed ARB to implement a certification program for systems to control gasoline vapor emissions from gasoline marketing operations. These regulations established performance standards and specifications, which included procedures for certifying and testing vapor recovery systems installed at various gasoline marketing operations such as dispensing facilities, bulk plants, terminals, and cargo tanks. Since inception of the original vapor recovery regulations, ARB has routinely updated these regulations in response to the emergence of new vapor recovery technology.

On March 23, 2000, with the Board's approval of the EVR regulations, new and more stringent evaporative emission standards for vapor recovery systems were set to reduce emissions during the storage and transfer of gasoline at GDFs with underground storage tanks and to improve system reliability. In addition, the Board approved new performance standards for in-station diagnostics (ISD), which is similar to "the check engine light" or on-board diagnostics installed on all modern motor vehicles. ISD continuously monitors critical vapor recovery system components for proper performance and alerts the GDF operator of failures so that corrective actions can be taken promptly to prevent excess emissions.

On October 25, 2001, the Board approved the amendment of five certification and test procedures, and the addition of two new test procedures for vapor recovery equipment. These actions were part of the Board's ongoing effort to provide the most up-to-date

and accurate certification and test procedures. The amended procedures also supported emissions measurement and verification of proper operation of installed systems.

On December 12, 2002, the Board approved the amendment of ten certification and test procedures and adopted five new test procedures. In addition, the Board found that all performance standards and specifications, except for one approved in 2000, were feasible and modified the EVR compliance dates.

On July 22, 2004, the Board approved an amendment to section 4.11 of Certification Procedure 201 (CP-201) to allow modifying vapor piping in dispensers without triggering the "unihose dispenser" (same nozzle for all gasoline grade) requirement. One EVR requirement calls for all existing vapor recovery systems to be compatible with vehicles equipped with an on-board refueling vapor recovery (ORVR) system by 2005 (see section IV.A., Efficiency and Emission Factor Testing, of this report for a detailed discussion of ORVR). To comply with this requirement, most vacuum-assist GDF owner/operators chose to convert to a balance system, which is ORVR compatible. If the Board did not approve this amendment, vacuum-assist stations with multi-product dispensers or "six pack dispensers" (individual nozzles for each grade of gasoline) would have been required to install "unihose dispensers" at a considerable additional and unnecessary expense.

On November 18, 2004, the Board approved an amendment to the regulations to establish a phase-in ORVR compatibility deadline for existing GDF and extended the Phase II EVR and ISD compliance dates to be consistent with earlier actions by the Executive Officer.

On May 25, 2006, the Board approved additional amendments to the vapor recovery certification and test procedures. These amendments clarified certain procedural provisions and established new performance specifications. The Board again extended the compliance dates for the Phase II and ISD requirements to make them consistent with administrative actions taken by the Executive Officer.

On June 21, 2007, the Board approved new performance standards and specifications for aboveground storage tanks or AST. These standards and specifications generally mirrored the EVR regulations for underground storage tanks with a few exceptions.

D. EVR Implementation Schedule

The EVR standards are phased in over several years for both new and existing facilities. New facilities or existing facilities undergoing major modifications are required to meet EVR requirements in effect at the time of installation. State law allows existing facilities to use equipment installed prior to the effective date of an amended standard for a period of up to four years after the effective date (Health and Safety Code section 41956.1). This is commonly referred to as the "four-year clock."

Figure II-4 shows the EVR implementation timeline between 2001 and 2010 for GDFs with underground storage tanks (UST). Figure II-5 shows the current EVR implementation timeline for GDFs with aboveground storage tanks (AST). The beginning of each solid bar shows the date when new stations must comply. The final compliance date for all facilities to meet an applicable standard is the date at the end of the solid bar. For UST stations with multiple-product dispensers installed before April 1, 2003, there is no deadline to convert to "unihose" dispensers. This is designated by an arrow on Figure II-4. The same designation is also used in Figure II-5 for multi-product dispensers installed on AST before April 1, 2009.

The two EVR timelines reflect administrative changes made by the Executive Officer when a certified system is unavailable by the date specified in the regulation – the effective date. As shown in Figure II-4, the "four-year clock" for Phase II EVR and ISD started on April 1, 2005 and September 1, 2005, respectively. These dates reflect when the first Phase II EVR and ISD systems were certified, when they were first established administratively by the Executive Officer, and then when they were subsequently adopted by the Board on May 26, 2006.

E. Legal Authority

Section 41954 of the Health and Safety Code (Appendix 3) requires ARB to adopt procedures and performance standards for controlling gasoline vapor 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 and specifications. Section 39607(d) of the Health and Safety Code requires ARB to adopt test procedures to determine compliance with ARB's and districts' non-vehicular standards. State law (Health and Safety Code section 41954) requires districts to use ARB test procedures for determining compliance with performance standards and specifications established by ARB.

To comply with state law, the Board since 1975 has adopted the certification and test procedures for controlling gasoline vapor emissions. These certification and test procedures are incorporated by reference in title 17, California Code of Regulations (CCR), sections 94010 to 94016, 94148 to 94160, and 94162 to 94168, respectively. Test procedures used for certifying vapor recovery systems are also used by districts for compliance verification.

F. State Implementation Plan

All geographic areas in California that are designated non-attainment of the National Ambient Air Quality Standards (NAAQS) are required by the federal Clean Air Act to prepare a State Implementation Plan (SIP) containing strategies to improve air quality and achieve the NAAQS. In 2007, ARB adopted the California SIP for ozone (CARB, 2007b). The 2007 SIP includes State measures to control evaporative emissions from a wide variety of off-road sources. In particular, the 2007 SIP proposes the

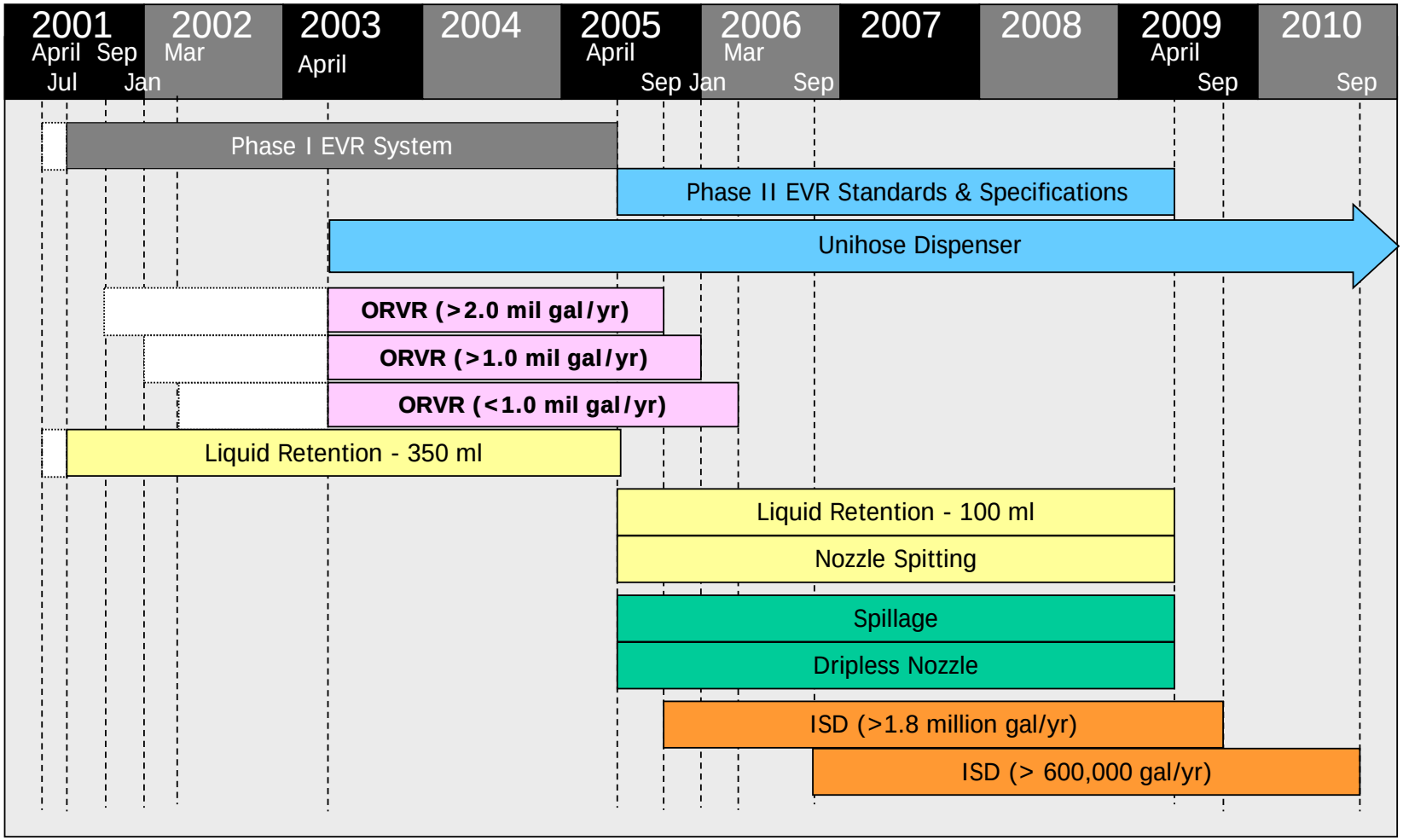
establishment of a permeation standard for GDF hoses to reduce ROG emissions by 70 to 98 percent, depending on technology use. The percent reduction range was based on previous standards for low permeation vehicle fuel hoses and initial ARB and industry testing results. The 2007 SIP did not quantify the emission reductions for this measure because the emissions inventory for this category was under evaluation at the time. The proposed hose standard meets this stated commitment in the 2007 Ozone SIP.

G. 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 several states that mandate the installation of vapor recovery systems in gasoline dispensing facilities.

Figure II-4

UST EVR Timeline



Time between start of 4-year clock and operative date (see next item for definition of operative date)

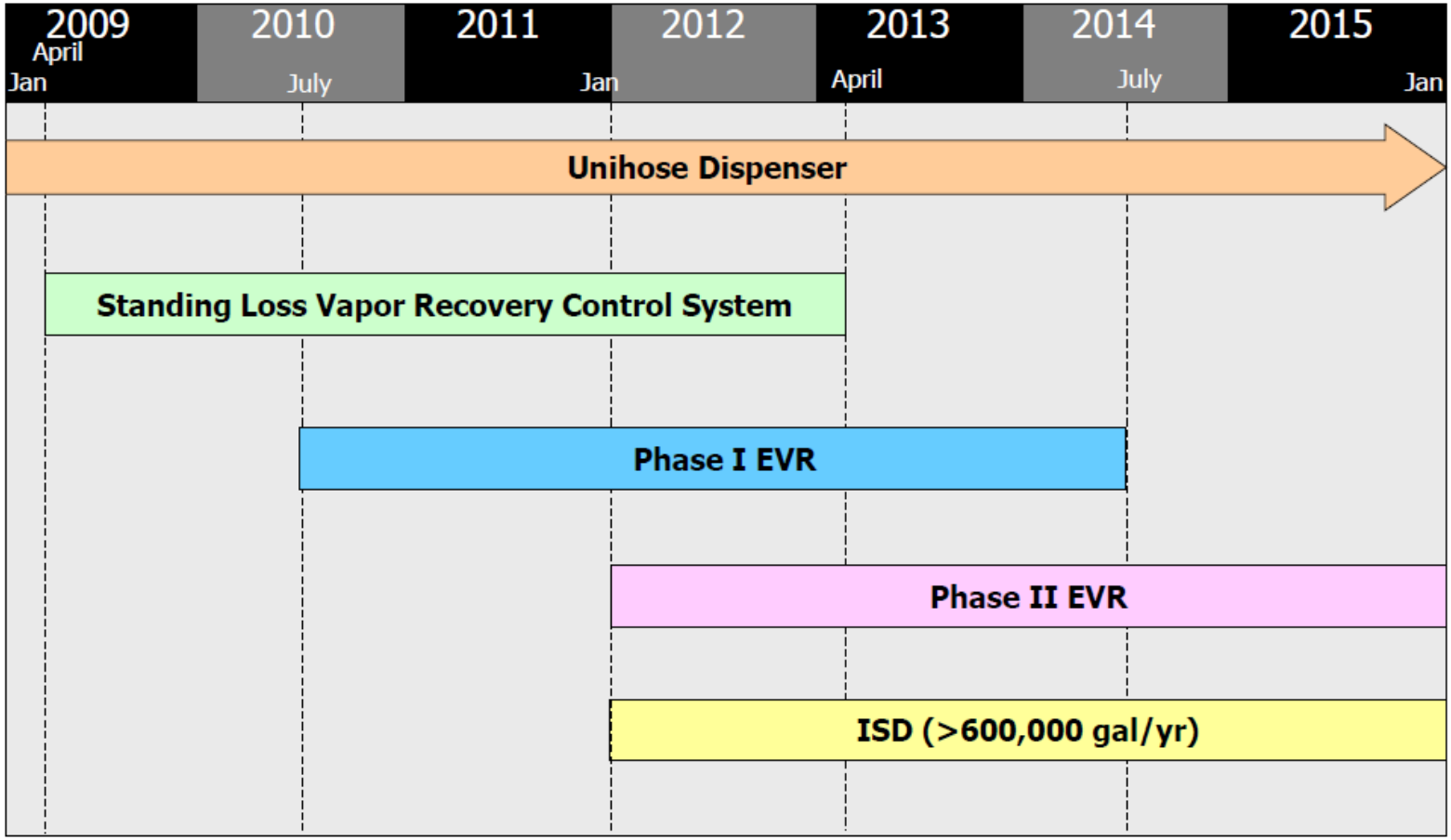
Start of solid bar: date required for new or modified facilities (operative date)

End of solid bar: date required for existing facilities (installed before start of bar)

Not required for dispensers installed before April 2003

Figure II-5

AST EVR Timeline



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 January 1, 2009

III. RULE DEVELOPMENT PROCESS AND PUBLIC OUTREACH EFFORTS

Public participation in rule development from vapor recovery stakeholders was sought through workshops, individual meetings, letters to equipment manufacturers, and announcements via ARB's vapor recovery web page (www.arb.ca.gov/vapor/vapor.htm), a vapor recovery list serve, and by postal mail.

A. Workshops

Staff conducted public workshops regarding the current proposal in Sacramento on March 2, 2010, and July 1, 2010. Furthermore, staff conducted three previous workshops, which specifically addressed the new low permeation hose standard included in this proposal. These workshops were held on November 13, 2003, September 28, 2006, and July 2, 2008. Attendees included representatives from petroleum marketers, gasoline dispensing facility service contractors, vapor recovery equipment manufacturers, and air pollution control agencies. The presentations made at these workshops were made available on the web in advance of the workshops and wider participation was facilitated via teleconference.

B. Meetings

Staff met with representatives from the Vapor Recovery Subcommittee of the California Air Pollution Control Officers Association (CAPCOA) on July 22, 2010, to discuss the proposed regulations presented at the public workshops in March and July, 2010.

ARB staff worked with stakeholders and Underwriters Laboratories (UL) toward the development of a permeation test procedure for GDF fuel hoses. The test procedure was completed and incorporated into the seventh addition of UL 330, UL's safety standard for Hose and Hose Assemblies for Dispensing Flammable Liquids. The Task Group responsible for the development of this procedure was a working body chaired by ARB staff. The Task Group participants included GDF hose manufacturers, material suppliers, UL, and the U.S. EPA. The use of UL 330 test procedure provides a standardized mechanism for certification of low permeation GDF fuel hoses by ARB and any other regulatory bodies. The Task Group conducted multiple tests of low permeation GDF fuel hoses toward the development of the final permeation test procedure. The Task Group began its work in April 2007 and since then has held more than 20 meetings. These Task Group meetings have offered participating stakeholders a regular forum to offer comments and ask questions regarding ARB staff's progress on the development of the proposed new hose emissions standard.

C. Internet and Mail

Stakeholders were notified of workshops by electronic mail (e-mail) notifications via ARB's vapor recovery list serve and by postal mail. The workshop notices, agendas,

and presentations were all available on the ARB vapor recovery webpage (www.arb.ca.gov/vapor/vapor.htm). Stakeholders were encouraged to submit comments to staff by letter or e-mail.

D. Potential Stakeholder Concerns and Responses

During ARB workshops, CAPCOA meetings, and UL Task Group meetings, details of the proposed regulation and emission test results were presented to the stakeholders for review and comment. Staff accepted comments and recommendations from various stakeholders, identified specific issues of concern and addressed those issues to the extent possible. In addition, ARB staff has attempted to address any foreseeable stakeholder concerns as well. A list of frequently asked questions and responses regarding the low hose permeation proposal is contained in Appendix 6.

IV. REASONS FOR, AND SUMMARY OF, PROPOSED AMENDMENTS TO THE CERTIFICATION AND TEST PROCEDURES

A. Proposed Amendments to CP-201 "Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities"

CP-201 defines standards and specification for Phase I and Phase II vapor recovery systems used at gasoline dispensing facilities (GDFs) with underground storage tanks. CP-201 also describes the procedure for evaluating and certifying the performance of equipment designed to meet those standards and specifications, including references to various test procedures (TP) used to determine compliance with the certification standards and specifications. Staff proposes changing the following subsections of CP-201.

Four-Year Clock Provision

Section 2.4.5 is added to specify that the effective date of new vapor recovery performance standards or specifications is the date when the system or component is certified. The "effective date" is very important to a regulated GDF because it determines the start of the "four-year clock." This is the four-year time period when all existing and affected GDFs must replace current equipment with equipment meeting the new standards and specifications. This four-year timeframe for replacing existing equipment is established in California Health and Safety Code, section 41956.1(a), which reads as follows:

> "Whenever the state board … revises performance or certification standards or revokes a certification, any systems or any system components certified under procedures in effect prior to the adoption of revised standards or the revocation of the certification and installed prior to the effective date of the revised standards or revocation may continue to be used in gasoline marketing operations for a period

of four years after the effective date of the revised standards or the revocation of the certification."

Statutory language and existing language within CP-201 are sufficiently clear on the "four-year clock" in cases where certified equipment is available to meet new standards and specifications prior to the effective date. Unfortunately, the existing language does not address what action is required by an affected GDF when there is no certified equipment. Effective dates established in CP-201 are actual calendar dates set by ARB in anticipation of certified systems being available by that stated date. In the past, there have been unexpected delays with development and certification of systems to meet new standards and specifications. This has forced ARB to delay effective dates, often repeatedly, first through administrative actions by the Executive Officer, and then later by Board approval of the Executive Officer's action through a formal rulemaking process. Although ARB has made efforts to promptly revise effective dates as appropriate, the process has led to lack of clear direction and some uncertainty on the part of the regulated community.

The addition of section 2.4.5 to CP-201 re-defining the "effective date" will provide needed clarity and improve the program by ensuring that, in all cases, facilities have adequate time to plan for required vapor recovery equipment upgrades. By clearly establishing that the effective date will be automatically triggered only when a new system is certified by ARB will provide certainty and clarity to the regulated community. The provisions also streamline the administrative actions by the Executive Officer.

Provisions in the current sections 2.4.5 through 2.4.7 are renumbered to accommodate the addition of the new section 2.4.5.

Section 2.4.9 is also added to provide a clear process for addressing situations where the first system certified to meet a new standard or specification cannot be used for technical reasons on certain types of existing gasoline dispensing facilities. As discussed below, in the past there were cases where an approved EVR system could not be installed on certain types of GDF. Thus, in such cases, it is impractical to require those GDF owners to install this equipment. Section 2.4.9 provides a formal mechanism for owners to request a technical review of incompatibility between their GDF type and the certified system. If the Executive Officer determines that such incompatibility exists, the incompatible GDF type will not be subject to the effective date until a system is certified that is fully compatible. As provided by proposed section 2.4.5, the incompatible GDF type would have four years from the date when a compatible system is certified to comply.

A recent example of GDF incompatibility with certified EVR systems involves GDFs that serve the dual role of fueling vehicles and also filling bulk tanker trucks. Because those GDFs fuel vehicles, they may be required to comply with Phase II EVR requirements. However, there is no system that has been certified to meet Phase II EVR standards

and specifications when the GDF system also serves to load bulk tanker trucks. Lack of a certified system means that existing GDFs that fuel both vehicles and bulk tanker trucks are in a situation where they cannot comply with Phase II EVR. In 2008, the Executive Officer postponed the effective date for GDFs serving dual roles for three years. In 2011, the Executive Officer further postponed the effective date for such facilities for another four years. Even with the issuance of those Executive Orders, industry is uncertain whether further extensions will be needed if no equipment is available or that these facilities will be provided four years to comply. Adding section 2.4.9 will provide a formal mechanism for requesting further extension, and will ensure a full four years for existing GDFs to replace their existing equipment once a system is certified. This is helpful for planning on the part of GDF owners and is consistent with the intent of the "four-year clock" for equipment replacement established in California Health and Safety Code, section 41956.1(a).

Subsections 2.4.9(a)-(f) outline the information that a petitioner must submit when requesting the Executive Officer to review whether a certified system is incompatible with a specific type of GDF. It is impossible to predict what standards and specification may be adopted in the future, what equipment may be developed to satisfy those future standards and specifications, and what type of GDFs may exist in the future. It is therefore impossible to predict the specific ways that future vapor recovery systems may potentially be incompatible with GDF types, so it would be impractical to outline within CP-201 exactly how the Executive Officer's review of the request will be conducted. However, including this list of minimum required information will serve as a general guideline of the type of information the Executive Officer will consider when making a determination.

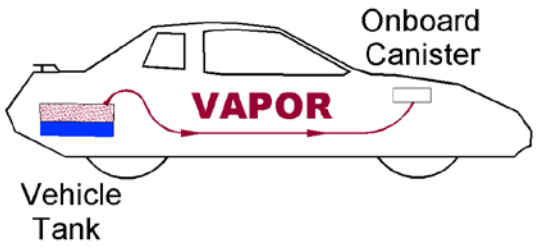
<u>Collection Efficiency and Emission Factor Determined by Certification Testing</u>

Section 4.1.1 has been amended to specify that Phase II EVR system emission factor and collection efficiency shall be determined by testing the refueling process of 100 vehicles not equipped with On-board Refueling Vapor Recovery (ORVR) rather than a mix of 200 vehicles with and without ORVR. This change is necessary for the following reasons:

1. ORVR vehicles use on-board canisters to process hydrocarbon vapors that previously were collected by the Phase II vapor recovery system during refueling (Figure IV-1). For ORVR vehicles, hydrocarbon concentrations in the vapor return path of the vapor recovery system are extremely low.
2. Because ORVR vehicles process gasoline vapors on board, measurements of vapor collection efficiency are only meaningful when fueling conventional (non-ORVR) vehicles.
3. Including ORVR vehicles in the test will introduce a low bias in the collection efficiency measurements for subsequent conventional vehicles, an issue that is growing as ORVR vehicles make up a larger percentage of California's vehicle

population.

Figure IV-1. ORVR Diagram



The first ORVR vehicles were sold beginning with the 1998 model year. Presently, both ARB and U.S. EPA require that vehicles with a gross vehicle weight rating of less than 10,000 pounds be equipped with ORVR. As the population of ORVR vehicle increases, the amount of gasoline dispensed into ORVR vehicles will increase proportionally* (Figure IV-2). Fueling a mixed population of ORVR-equipped and conventional (non-ORVR) vehicles alters vapor collection efficiency measurements. An artifact of the test procedure can result in under reporting for a conventional vehicle and produce unrepresentative results. Test results obtained by ARB staff indicate that the vapor recovery system collection efficiency during refueling for a conventional vehicle can be under reported by nearly 30 percent if this vehicle was preceded by refueling of an ORVR vehicle (CARB, 2008). Therefore, to avoid this confounding effect identified for tests that include a mix fleet of vehicles staff is proposing, through amendments of Section 4.1.1, that certification testing to determine Phase II EVR collection efficiency and emission factor be based on conventional vehicles only. The amendments provide the additional benefit of halving the total number of test vehicles required, which may result in shorter test duration.

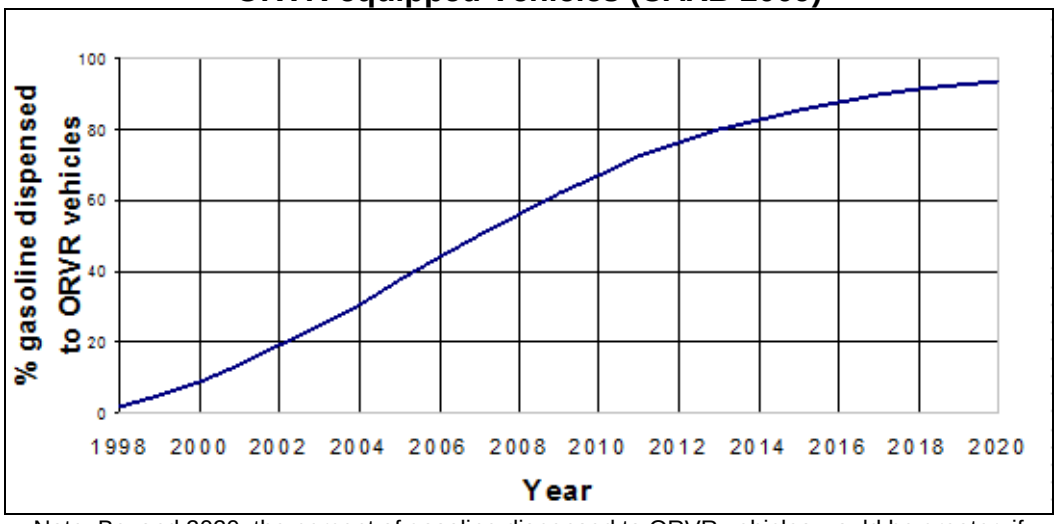
Section 4.4 is amended to omit the requirement for testing of ORVR vehicles to be consistent with the proposal that only non-ORVR vehicles be tested. To determine ORVR compatibility it was necessary to simulate an ORVR vehicle population of 80 percent, which was necessary in the early 2000's when the ORVR vehicle population was small. Currently, testing to determine compatibility is not necessary since recent Phase II systems proposed for certification are inherently ORVR compatible. Therefore, staff is proposing to require the applicant to develop a test protocol to demonstrate ORVR compatibility only when requested by the Executive Officer. The request would be made only in the instance where existing data are not available to demonstrate ORVR compatibility.

* The projection of gasoline dispensed to ORVR vehicles would increase further if ARB later this adopts regulations requiring ORVR on vehicles with a gross vehicles weight rating of 10,000 pounds or greater.

Other Amendments to CP-201

Section 11.9 is amended to address the fact that most certified EVR systems are comprised of components from multiple manufacturers. Although a single manufacturer may serve as the primary applicant and ARB contact for a given EVR system, each manufacturer whose components are part of the system has a vested interest in any subsequent additions or changes to the Executive Order for that system. The proposal would require the applicant requesting subsequent additions or changes to notify all manufacturers of components of the system when changes are made.

Figure IV-2. Projected Gasoline Dispensed to ORVR-equipped Vehicles (CARB 2009)



Note: Beyond 2020, the percent of gasoline dispensed to ORVR vehicles would be greater, if the Board adopts regulations in late 2011 requiring ORVR for heavy-duty gasoline engines.

Sections 13.5.1 and 13.5.2 are deleted because they are redundant to the pressure integrity testing requirements that are clearly spelled out in TP 201.1 and TP 201.2 for Phase I and Phase II systems, respectively.

Sections 13.6, 13.6.5, and 13.6.6. are amended, and section 13.6.2 is deleted to reflect the amendment to section 4.1, which has been changed to specify that the vehicle matrix described in TP-201.2A consist of 100 vehicles without ORVR rather than a mix of 200 vehicles with and without ORVR. The rationale for changing from 200 vehicles with and without ORVR to 100 non-ORVR vehicles is discussed above in section IV.

Addition of Low Permeation Hose Requirements

Table 2-1 of Section 2.4.1 is modified to establish a new low permeation emission hose performance standard of 10 grams per square meter per day ($g/m^2/day$) as determined by UL 330. This standard will apply to hoses for vacuum-assist systems and

conventional systems (where gasoline is carried against hose outer wall). The date for applicability of this new low permeation hose limit for existing and affected GDFs is four years from the "effective date," which is established when the first system for each type is certified to meet the proposed new performance standard. Exceptions to the "four year clock" provision are as follows. First, in the event that existing and affected GDFs undergo a major modification* after the effective date, the four year clock provision does not apply and the applicable new hose standards must be met upon completion of facility modifications. Second, in the event that an affected GDF has the need to replace a hose(s) after the effective date, it is then required to install only a fuel hose meeting the new proposed low permeation emission standard. Third, all new and affected GDF installations that are permitted after the effective date are required to install only fuel hoses meeting the new low permeation standard.

For vacuum-assist and conventional hoses, gasoline vapor emissions are the result of permeation of gasoline through thermoplastic or rubber materials used for construction. The rate of permeation emissions is affected by a variety of factors including: temperature, concentration gradient across the hose wall, fuel type and hose material, and construction. The proposal will reduce the emissions from affected hoses by 96 percent from uncontrolled emissions. Staff estimates that current vacuum-assist and conventional hoses permeate at an average rate of 74.8 g/m^2/day at 71.0°F. For a typical vacuum-assist GDF, this means that every 17 days one gallon of gasoline permeates unchecked into the environment (based on the assumption of twelve hoses per GDF and the hose length is ten feet). There is no regulation restricting permeation emissions from GDF hoses at these levels. A permeation standard will dramatically reduce this source of emissions. Furthermore, this regulation will result in cost savings due to fuel saved in preventing emissions. For more information on the emissions reductions and fuel savings associated with this regulation, see Section V., Environmental and Economic Impacts.

Section 20 has been added to describe the certification requirements for hoses at applicable GDFs. Section 20 specifies that the required permeation rate is only applicable to vacuum-assist and conventional hoses. Balance hoses are exempt from this new limit. The reason for this requirement is that staff expects that increasing ORVR vehicle populations will dilute the concentration of vapors returned to the GDF via the hose during fueling (CARB, 2011a). Hoses carrying this vapor against the outermost was will experience a lowering of the concentration gradient across the hose wall, thereby reducing permeation rates. As ORVR vehicles continue to become a greater percent of the overall California vehicle fleet, permeation from these types of hoses will be reduced. Additional discussion is found in section VI., Alternatives Considered.

* Major modification of a Phase II system is defined as the addition, replacement, or removal of 50 percent or more of the buried vapor piping or the replacement of fuel dispensers. The replacement of a dispenser is not a major modification when done for reasons of vandalism or damages that are beyond the reasonable control of the GDF operators.

Section 20 also specifies that the permeation rate shall be determined by UL 330, the only current permeation test standard specifically designed for GDF hoses. This standard and the associated test procedure were developed by a UL task group that was chaired by ARB staff. The task group included experts from UL, the U.S.EPA, and leading hose and materials manufacturers. The procedure was introduced into the UL 330 hose standard through a consensus process which involved approval by a standards technical panel that included both ARB and U.S. EPA representation.

Section 20.1 is added to describe the information an applicant must submit when requesting ARB certification for a low permeation GDF hose. It specifies that ARB must be made a beneficiary of UL test data. Access to UL test data satisfies the statutory requirement* that ARB must directly test or contract for testing of vapor recovery components.

Sections 20.1.2 through 20.1.8 are added so that the application requirements for ARB certification of low permeation GDF hoses are consistent with the existing application requirements for other vapor recovery system components, found in sections 11 through 11.7.

B. Proposed Amendments to CP-206 "Certification Procedure for Vapor Recovery Systems at Aboveground Storage Tank Facilities"

CP-206 defines standards and specification for Standing Loss Control, Phase I and Phase II vapor recovery systems used at GDF with aboveground storage tanks. Standing Loss Control is the control of vapor from the fuel during storage. CP-206 also describes the procedure for evaluating and certifying the performance of equipment designed to meet those standards and specifications, including references to various test procedures (TP) used to determine compliance with the certification standards and specifications. Staff proposes amendments to CP-206 that closely mirror the amendments proposed to CP-201. The proposed amendments are described in the following sections.

Four-Year Clock Provision

Section 2.4.5 of CP-206 is added in an identical manner as section 2.4.5 of CP-201. Refer to the Four-Year Clock Provision of section IV. A. for a full explanation.

Section 2.4.9 of CP-206 is added in an identical manner as section 2.4.9 of CP-201. Refer to the Four-Year Clock Provision of section IV. B. for a full explanation.

It should be noted that, while EVR has already been fully implemented for GDFs with

* California Health and Safety Code, Division 26, Part 41`, Chapter 2, section 41954(d)

underground storage tanks, there are several new standards and specifications for aboveground storage tank systems that have yet to go into effect. There are currently several aboveground storage tank EVR performance standards and specifications for which no certified system exists. Therefore, the four-year clock provision added to sections 2.4.5 and 2.4.9 of CP-206 will provide much needed clarity and relief.

Provisions in the current sections 2.4.5 through 2.4.7 are renumbered to accommodate the addition of the new section 2.4.5.

Staff is proposing to change the dates in Table 2-1 (section 2 of CP-206) to be consistent with the Executive Officer's administrative actions which established April 1, 2009 and July 1, 2010, as the effective date for Standing Loss Control and Phase I, respectively. This means the "four year clock" has started for Standing Loss Control and Phase I for AST. Since the effective date for Phase II AST has not started, ARB staff proposed to change the effective date in Table 2-1 to be the date when the first system is certified to be consistent with the "four year clock" proposal.

Collection Efficiency and Emission Factor Determined by Certification Testing

Section 5.1.1 has been amended to specify that Phase II EVR system emission factor and collection efficiency shall be determined by testing of 30 vehicles without ORVR rather than a mix of 20 vehicles with and without ORVR. The reason has been given in section IV. A., Collection Efficiency and Emission Factor Determined by Certification Testing for a full explanation.

Section 5.4 is amended for the same reason as Section 4.4 of CP-201 is amended. The reason for the change is discussed in section IV. A., Collection Efficiency and Emission Factor Determined by Certification Testing for a full explanation.

Other Amendments to CP-206

Section 4.8 currently requires that all ASTs include a dedicated gauging port with drop tube so that the quantity of gasoline in the tank can be determined manually with a gauging stick. For many existing ASTs, the gasoline quantity is determined either by a mechanical or an electronic gauging system, which performs the same function as the gauging stick. For these ASTs, the number of ports is limited and often does not have two ports, one for manual determination and the other for either mechanical or electronic determination. Therefore, staff is proposing to amend section 4.8 to allow for the use of manual, mechanical, or electronic gauging. The proposal would eliminate the need to install duplicative equipment and would reduce the cost of compliance.

Section 12.9 is amended to address the same notification issue as section 11.9 of CP-201. Refer to section IV. A., "Other Amendments to CP-201" for a full explanation.

Section 14.3.1 is amended to clarify that a minimum of 9,000 gallons must be dispensed from the GDF system over the course of the operation test period of at least 180 days. Section 14.1.1 already specifies that an acceptable test facility must have a minimum throughput of 1,500 gallons per month. By combining the minimum test period and throughput, it follows that there should be a minimum of 9,000 gallons of throughput over the course of the 180-day evaluation. (1,500 gallons per month x 6 months = 9,000 gallons) The amendment to section 14.3.1 is intended to address the unlikely situation where a test facility whose throughput is typically greater than 1,500 gallons per month prior to certification testing but for some reason experience lower throughput during the certification test. This amendment allows for the test period to be extended beyond 180 days until the required 9,000 gallon throughput is met and is consistent with similar provisions in CP-201.

Sections 14.6, 14.6.5, and 14.6.6 are amended, and section 14.6.2 is deleted to reflect the amendment to CP-206, section 5.1, which has been changed to specify that the vehicle matrix described in TP-201.2A consist of only vehicles without ORVR rather than a mix of vehicles with and without ORVR. The rationale for changing from a mix of vehicles with and without ORVR to a test of only vehicles without ORVR was given in section IV. B., Collection Efficiency and Emission Factor Determined by Certification Testing.

Addition of Low Permeation Hose Requirements

Table 2-1 of Section 2 was added to specify the performance standard for low permeation hoses and to establish the “effective date” similarly as described previously in Section IV.A as the date when the first hose of each system type is certified.

Section 21 has been added to specify low permeation requirements for GDF hoses. The reasons for these amendments are given in sections 2.4.1. and 20 of CP-201. The reader is referred to the portion of section IV. A. pertaining to the new low permeation hose requirements.

C. Proposed Amendments to Definitions for Vapor Recovery Systems (D-200)

D-200 provides definitions and acronyms for terms used throughout the vapor recovery certification and test procedures. The following minor amendments to D-200 are proposed in order to improve clarity.

The definition of “Fugitive Emissions” is deleted. This definition is redundant since there is also a definition of the term “pressure related fugitive emissions” within D-200.

The definition of “Liquid Retain” is amended. The term “Liquid Retention” is used rather than “Liquid Retain” throughout certification and test procedures, so the term was changed to “Liquid Retention” within D-200. The definition was amended to include

liquid contained within the nozzle liquid path because the test procedure used to determine the volume of liquid retention within a nozzle (TP-201.2E) includes liquid retained in both the vapor path and the liquid path on the atmospheric side of the product valve.

The definition of "pressure-related fugitive emissions" is amended to refer to the fugitive emission value calculated as described in TP-201.2F – "Pressure-Related Fugitive Emissions." The term "pressure-related fugitive emissions" is commonly used within the community of regulators, manufacturers, and technical personnel working with gasoline vapor recovery equipment. Although the term is commonly used, there is not always agreement on what specific emission points are included in the term. By referring directly to TP-201.2F in the D-200 definition of this term, this clarifies what emission points are included in, and excluded from, the term.

A new definition of "Low Permeation Hose" is added to mean hoses to dispense gasoline and complies with low permeation standard as determined by UL 330 (seventh edition).

D. Proposed Amendments to Test Procedures

ARB staff uses various test procedures when evaluating new and modified vapor recovery equipment for certification. The following amendments are proposed to the current test procedures:

1. TP-201.1 - "Volumetric Efficiency for Phase I Vapor Recovery Systems"
   Section 8.6 is added to the test procedure to require a static pressure integrity test (i.e., leak test) after conclusion of the bulk delivery of fuel to the GDF. The method of determining Phase I volumetric efficiency described in TP-201.1 is based on the assumption that the GDF system is free from leaks. Section 6.2 currently requires a leak test to be conducted prior to the bulk drop to establish that the system is free from leaks. Since the inception of the EVR program, ARB staff has also run a leak test after the bulk drop in order to further validate that the system was free from leaks during the bulk drop. Adding the section 8.6 requirement for a leak test after the bulk drop simply formalizes the testing that staff was already doing, and validates the quality of the volumetric efficiency calculations of TP 201.1.

2. TP-201.2 – "Efficiency and Emission Factor for Phase II Systems"
   Several amendments are proposed for TP 201.2 to allow for alternative equipment and procedures. These alternatives to equipment and procedures have been determined by the ARB Chief of the Monitoring and Laboratory Division, under authority delegated by the Executive Officer, to be equivalent to the current requirements of TP-201.2 (CARB, 2007a).

   The Chief of the Monitoring and Laboratory Division is delegated by the ARB

Executive Officer, under authority granted in ARB Executive Order P-07-001, to approve use of alternative or modified vapor recovery test procedures listed in section 94011 et. seq., Title 17, CCR. Under this authority, ARB staff has performed testing in accordance with the procedures described in the August 28, 2007 memo for four years. The amendments proposed will merely incorporate those alternative procedures into TP-201.2. The following is a brief explanation of each proposed amendment.

- Proposed changes to section 5.1.2 would allow the use of non-dispersive infrared (NDIR) detectors in addition to flame ionization detectors (FID). Engineering evaluation and experience gained from field application of this test procedure have shown NDIR detectors to be equivalent to FID for the purposes of TP-201.2.

- Proposed changes to section 5.6.1 would address the problems that arise when field conditions preclude installation of a liquid trap in the vapor line. In this situation, the use of transparent tubing allows test staff to visually determine when liquid has accumulated in the vapor return line. While use of a liquid trap is still preferred, visual monitoring of clear tubing by staff can effectively prevent excessive liquid from collecting in the line and inhibiting vapor flow to the point that it adversely affects test results.

- Proposed changes to section 5.6.3 would make the installation of isolation valves optional. Isolation valves are installed by staff performing certification tests to isolate the underground storage tank from the atmosphere in the event sampling equipment is removed for maintenance or replaced. However, it is extremely rare that sampling equipment is replaced at this location, making use of these valves unnecessary. Space constraints are also a consideration, as the valves compete with equipment necessary to perform efficiency testing for the limited space within the dispenser housing.

- Proposed changes to section 5.7.1 would require a minimum sample sweep rate of 1 cubic foot per minute (cfm) instead of the presently specified sample sweep rate of 20 cfm. A sampling rate of 20 cfm is not practical with pumps currently employed for vapor recovery testing. With Phase II EVR systems, the lower operating pressures means the hydrocarbon concentrations released at the pressure/vacuum (P/V) valve are also reduced. The sample sweep rate of 1 to 2 cfm allows the sampling equipment to capture hydrocarbon vapor emitted from the P/V valve without diluting the sample to below the hydrocarbon analyzer's limit of detection.

- Proposed changes to sections 5.8.1 and 7.4.5.1 would clarify that measuring vapor processor inlet volume and concentration is only required when the processor employs a destructive principle. For non-destructive processors all

of the data needed to accurately calculate emissions can be obtained from monitoring the processor outlet directly, so processor inlet monitoring is not required.

- Proposed changes to section 7.3 would remove the partial instructions on how to conduct a pressure integrity test in accordance with TP-201.3. All necessary instruction for the pressure integrity test is contained in TP-201.3, so including partial instructions within this section is redundant and unnecessary.

- Proposed changes to sections 7.6 and 11.1 would include directions on when to conduct a leak integrity test of the facility before and after running TP-201.2. TP-201.2 procedures for determining vapor recovery system emission factor and efficiency are premised on the assumption that the facility being tested is free of leaks as determined by successfully passing a leak integrity test per TP-201.3. Since the inception of the EVR program, ARB staff has run the leak integrity test as close as practical to the beginning of data collection for TP-201.2. However, staff availability and facility operational concerns must be taken into consideration when scheduling a leak integrity test. The amendment to section 7.6 provides test staff with some flexibility while still adequately ensuring that the system is free of leaks when data collection for TP 201.2 begins.

- Proposed changes to section 8.2.3 would specify that a calibration gas standard is used for documenting nozzle sleeve response time. This provides greater precision and repeatability of the nozzle response time determination, and verifies that the hydrocarbon sampling equipment is not contaminated with excessively rich vapor or liquid.

- Section 8.3, which requires performing a sampling system bias check prior to each day of vapor recovery system efficiency testing, has been relocated to section 7.9 as a pre-test requirement to be performed prior to initiating the efficiency test. System bias checks are intended to evaluate the effects water vapor and sample conditioning have on water soluble compounds in a combustion gas matrix. ARB staff believes daily bias checks do not affect the confidence level of the test results, based on the relative absence of water vapor in the sample matrix and that sample system components are leak checked and constructed from materials that do not provide a source or sink for hydrocarbon vapors, as specified in TP-201.2. ARB staff believes this modification maintains data quality while improving the efficiency of the process by increasing the fraction of each test day that can be dedicated to measuring vapor recovery system performance.

- Proposed changes to section 9.4.3 would reduce the possibility of under

reporting emissions occurring at nozzle shut off. The current procedure may result in a loss of this emission data, which could introduce high bias to system efficiency and low bias to system emission factor. Section 9.4.3 is further amended to require the nozzle sleeve to be removed from the nozzle before replacing the nozzle in the dispenser. This change will extend the service life of the nozzle sleeve and reduce the potential for bias from spillage during replacement.

- Section 10.1, which requires performing a sampling system bias check at the conclusion of each day of efficiency testing, has been relocated to section 11.1 as a post-test requirement to be performed at the conclusion of the efficiency test. The basis for this amendment is identical to that described for the relocation of section 8.3 to section 7.9.

- Sections 11.1 through 11.4 are renumbered to accommodate the relocation of section 10.1 to section 11.1.

- Proposed changes to section 12.1 would remove vehicles with ORVR from the emission factor calculation, in order to be consistent with proposed changes to CP-201 and CP-206. The rationale for changing this test to include only vehicles without ORVR is covered in section IV.A., Efficiency and Emission Factor Testing.

3. TP-201.2A – "Determination of the Vehicle Matrix for Phase II Systems"
Proposed changes to this test procedure would implement the proposed amendment to CP-201, section 4.1, which would specify that the vehicle matrix described in TP-201.2A consist of 100 vehicles without ORVR rather than a mix of 200 vehicles with and without ORVR. The rationale for changing from 200 vehicles with and without ORVR to 100 vehicles without ORVR is covered in section IV.A., Collection Efficiency and Emission Factor Determined by Certification Testing.

   Although there are many changes to the specific text of TP-201.2A, the basic procedure for establishing a vehicle matrix representative of California's vehicle fleet remains the same. There are no changes to the source of data for California's vehicle population by year, make, and model, or to the source of estimates for California's vehicle miles traveled. Furthermore, the methods for converting that source data into a vehicle matrix are fundamentally unchanged apart from the exclusion of ORVR vehicles.

4. TP-201.2I "Test Procedure for In-Station Diagnostic Systems"
Sections 8.6 and 8.7 are amended to correct several errors where the test criteria did not match with a corresponding ISD monitoring or alarm specification.

   The UST Ullage Pressure Degradation action criteria and borderline values, found in

sections 8.6 and 8.7 respectively, have been changed to be consistent with the requirements found in section 9.2.4(c) of CP-201, which specify 25 percent of time above 0.5 inches WC rather than the five percent of time currently shown in the Test Procedure. The phrase "assuming no deliveries or other events require exclusion of data…" has been deleted from the UST Ullage Pressure Degradation portion of section 8.7 since there is no provision in CP-201 or section 8.6 of TP-201.2I that allows excluding delivery data from the borderline calculation for this test.

Sections 8.6 and 8.7 have been amended to remove the UST Ullage Pressure Phase I Overpressure test criterion and borderline values. There is currently no corresponding Phase I Overpressure ISD alarm or monitoring requirement in CP-201. The requirement for Phase I Overpressure monitoring previously existed, but was removed from CP-201 via rulemaking on October 8, 2003.

Section 8.7 has been amended to correct a typographical error in the UST Ullage Pressure - Pressure Integrity Failure (Leakage) language.

5. TP-201.2J – "Pressure Drop Bench Testing of Vapor Recovery Components"
   Proposed changes to section 5.1 would require that all components be tested individually, eliminating the option of testing multiple components as an assembly. Since the inception of the EVR program, ARB staff has never tested or been asked to test multiple components as an assembly. Testing components individually provides a more accurate and reliable measurement of pressure drop. Furthermore, there have been cases where manufacturers have requested that their components be certified as interchangeable with other manufacturers' components. In order for ARB staff to assess compatibility of various manufacturers' components, it is necessary to establish a pressure drop value for each individual component rather than an assembly.

   Proposed changes to section 5.5 would allow for the use of any rigid piping material with a smooth bore, rather than specifying PVC piping. This change does not alter the performance of the test equipment in any way, but allows greater flexibility in selecting materials when constructing the test apparatus.

6. TP-201.3 –Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities
   Proposed change to section 9.3 would correct a conversion factor to calculate the minimum time required to pressurize the vapor space in the tank from zero to two inches water column (WC) gauge pressure. The current test procedure uses a conversion factor of 1980, which incorrectly overestimates the required pressurization time. The correct conversion factor is 1522. This calculation provides an estimate on the amount of nitrogen needed and is not used as criteria to determine whether the GDF will pass or fail the test. Therefore, the proposed amendment does not alter pass/fail criteria or call into question any test results

conducted using the previous conversion factor.

7. TP-206.3 – Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks
   Proposed change to section 7.3 would delete the sentence, "…If leaks are noted, components shall be replaced prior to continuing with this test procedure." Test procedures should not require replacement components.

E. Changes without Regulatory Effect

In addition to the proposed changes previously discussed in this Staff Report, minor editorial corrections are proposed to revise dates, grammar, and terminology throughout the certification and test procedures. These editorial corrections do not have any substantive effect on certification and test procedures.

V. ENVIRONMENTAL AND ECONOMIC IMPACTS

The environmental and economic impacts from this regulation stem from the proposed new requirement of the use of low permeation hoses. All other amendments being put forth within this proposal are administrative in nature, as described in section IV, and therefore, would not result in any significant adverse environmental impacts. They also should not impose any new costs to the existing program. The low permeation hose proposal will have no adverse environmental impact. Rather, the new permeation standard will have air quality and cost benefits associated with avoiding unnecessary fuel losses and the reduction of ROG emissions from GDFs. The Environmental Impact and Economic Impact of low permeation hoses are discussed in the next two sections.

Since the "effective date" for this new proposed standard is defined as the date when the first hose of each type is certified, the calculations in the following sections will assume full compliance by 2017 for the purpose of determine the environmental and economic impacts of the proposal. This date is consistent with the statute that allows a four-year compliance window as discussed in the Four-Year Clock portion of this regulatory proposal. A detailed description of the calculations and assumptions used in determining the economic and fiscal impacts discussed in this section can be found in Appendix 5.

A. Environmental Impacts

The California Environmental Quality Act (CEQA) and ARB regulations require an analysis to determine the potential environmental impacts of proposed regulations. Because ARB's program involving the adoption of regulations has been certified by the Secretary of Resources pursuant to Public Resources Code (PRC) section 21080.5, the CEQA environmental analysis requirements may be included in the Initial Statement of Reasons (ISOR) for this rulemaking. In the ISOR, ARB staff prepared a "functionally

equivalent" analysis for this rulemaking, rather than adhering to the format described in CEQA of an Initial Study, a Negative Declaration, and an Environmental Impact Report. Staff will respond to all significant environmental issues raised by the public during the public review period or at the Board public hearing in the Final Statement of Reasons for the proposed amendments.

PRC section 21159 requires that the environmental impact analysis conducted by ARB include the following:

- an analysis of reasonably foreseeable environmental impacts of the methods of compliance;
- an analysis of reasonably foreseeable feasible mitigation measures; and
- an analysis of reasonably foreseeable alternative means of compliance with the control measure.

Reasonably Foreseeable Methods of Compliance and Impacts

The goal of the proposed regulation is to require the use of ARB certified low permeation hoses on GDFs with vacuum-assist vapor recovery systems and conventional systems. The requirement of this regulation as it affects existing and new applicable GDF is discussed in section IV.A., Addition of Low Permeation Hose section.

As mentioned in Appendix 5, a vapor recovery hose has typical life of two years. Thus, it is expected that most existing affected GDFs will be using low permeation hoses well in advance of the compliance date (four years from the date when the first low permeation hose is certified by ARB).

The potential environment impacts associated with the reasonably foreseeable methods of compliance is determined by considering the GDF hose population and air quality benefits associated with use of low permeation hoses. In addition, discussions of environmental justice and climate change issues are included.

GDF Hose Population

In October 2010, ARB staff conducted an analysis of GDF population data gathered from districts to determine and characterize the population of fueling points at permitted GDFs (CARB, 2011b). This analysis suggests that there are approximately 95,000 fueling points using vapor recovery hoses at permitted GDFs in California. Approximately 65,000 of these hoses are vacuum-assist type hoses and the remaining approximately 30,000 are balance-type hoses. Additionally, staff estimates that there are approximately 1,000 fueling points using conventional hoses at facilities exempted from Phase II vapor recovery requirements due to servicing fleets which consist of predominately ORVR-equipped vehicles. The stations exempt from Phase II would be subject to the low permeation hose requirement.

Baseline Emissions

Staff estimates that uncontrolled emissions from vacuum-assist and conventional hoses affected by this regulation in 2017 will be about 1.0 tpd of ROG statewide. In contrast, 2017 uncontrolled emissions from balance hoses, which are not subject to this proposed regulation, will be about 0.15 tpd of ROG. A detailed description of the calculations that staff used to determine baseline emissions can be found in Appendix 4.

Emission Reductions

The staff proposed permeation limit will reduce ROG emissions from vacuum assist and conventional GDF hoses by 0.96 tpd in 2017, a reduction of about 96 percent. Staff is not proposing to establish a permeation standard for balance hoses at this time for reasons discussed in the Section VI., Alternatives Considered. A detailed description of the calculations that staff used to determine baseline emissions can be found in Appendix 4. Air quality is expected to improve as a result of the installation and use of low permeation hoses, thus ARB staff finds that the proposed regulations would not result in adverse impacts to this source area.

Other Potential Impacts Considered and Found to have No Potential Adverse Impact

Since compliance with the proposed regulation will be accomplished by installing low permeation hoses that are manufactured outside of California, no new facilities, expansion of existing facilities, or changes in operations from the status quo are likely to occur due to the proposed regulation. Therefore, ARB staff finds that it is not reasonably foreseeable that there will be any adverse impacts on aesthetics, land-use/planning, population and housing, transportation, agricultural and forestry resources, cultural resources, hazards and hazardous materials, mineral resources, public services, utility and service systems, geology and soils, hydrology and water quality, or recreation.

Because there are no significant adverse environmental impacts identified with the proposed regulation, no mitigation measures need to be identified nor is an analysis of feasible alternatives to the proposed regulation required under CEQA (CCR section 60006).

Environmental Justice

State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, rules, and policies (Senate Bill 115, Solis; Stats 1999, Ch. 690; Government Code § 65040.12(e)). The Board has established a

framework for incorporating environmental justice into ARB programs consistent with the directives of State law.

The policies developed apply to all communities in California, but recognize that environmental justice issues have been raised more often in the context of low income and minority communities, which sometimes experience higher exposures to some pollutants. Higher exposures result from cumulative impacts of air pollution from mobile, commercial, industrial, area wide, and other sources. Over the past twenty years, local, state, and federal air pollution control programs have made substantial progress towards improving air quality in California. Despite this progress, some communities continue to experience disproportionately higher exposures than others. Since the same ambient air quality standards apply to all regions of the State, all communities, including environmental justice communities, will benefit from the air quality benefits associated with this proposal. Alternatives to the proposed recommendations, such as not implementing the proposal, would affect all communities throughout the State.

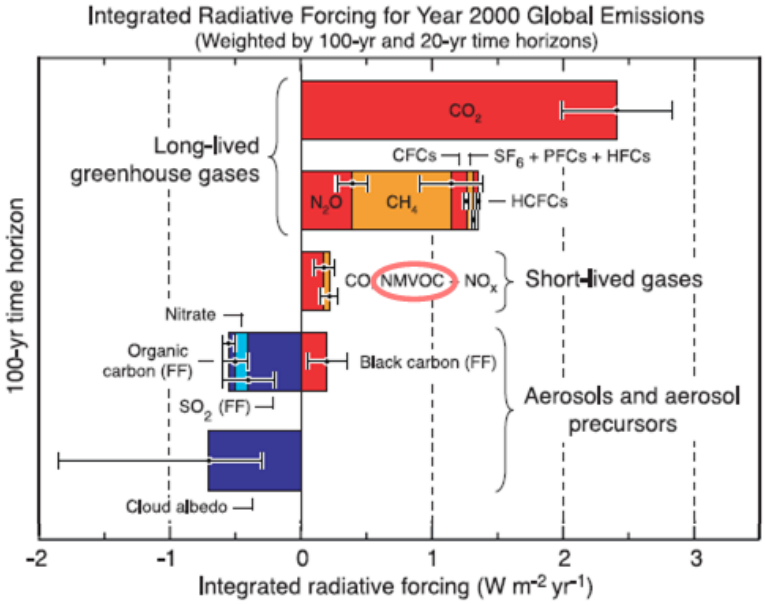
Climate Change Considerations

Staff evaluated the climate change impact of the proposed regulation. ROGs can absorb infrared radiation contributing to global warming (Collins, Derwent, Johnson, and Stevenson, 2002). ROGs are generally regarded as net climate warmers as indicated in Figure V-1. However, ROGs are not a single species. Rather, they are many different types of compounds with different behaviors in the atmosphere, making quantifying their warming impact difficult. ROGs influence climate through indirect effects via their production of secondary organic aerosols and their involvement in photochemistry (i.e., production of ozone, and in the prolonging the life of methane in the atmosphere, although the effect varies depending on local air quality). Typically, the indirect effect is the dominant path by which ROGs contribute to global warming. Overall, strategies for reducing ROG emissions are beneficial for climate change. The Intergovernmental Panel on Climate Change (IPCC, 2007) has reported global warming potentials for a relative small set of ROG species, so it is not possible to quantify the exact climate change benefit of this regulation. However, qualitatively reducing ROG emissions, as this proposal will do, will help alleviate climate change related warming.

B. Economic Impact

This section discusses the economic impact of the proposed action, which includes cost savings from preventing fuel losses due to hose permeation, costs of complying with the proposed performance standard, cost effectiveness, and fiscal impacts to the State. To be consistent with economic impacts of other ARB regulations, the economic impact, cost effectiveness costs and benefits of the regulation are calculated over a five year period (levelized cost). The details of this analysis can be found in Appendix 5.

Figure V-1. Chart showing NMVOCs (similar to ROG) as net warmers (IPCC, 2007)



Impacts on California Businesses

Section 11346.3 of the Government Code requires State agencies to assess the potential for adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulations. The assessment shall include consideration of the impact of the proposed regulation on California jobs, business expansion, elimination or creation, and the ability of California business to compete.

Staff has determined the proposed regulation will not impose a significant cost burden on retail businesses located in California. Manufacturers are located outside California and are currently providing low permeation hoses for other applications that are subject to similar performance standards. The following sections discuss the projected impact on California businesses.

Compliance Costs

Staff has determined that annual compliance costs will average $11 per affected GDF for small businesses and about $54 per affected GDF for large businesses. The levelized annual compliance cost spread across all affected GDFs is approximately $334,000. It is anticipated that there will be no additional compliance or permitting costs to districts with respect to the proposed regulation. Districts are already verifying, during periodic inspections conducted under existing programs, that the GDF hoses have been certified by ARB. A detailed description of the calculations that staff used to

determine compliance costs can be found in Appendix 5.

Cost Savings from Preventing Fuel Losses

Staff estimates the annual gasoline loss due to permeation from a vacuum-assist or conventional GDF hose to be 1.76 gallons. This results an annual statewide fuel loss of approximately 117,000 gallons per year. Reducing these emissions by 96 percent or about 1.68 gallons per fueling point will result in an annual statewide fuel savings of 112,000 gallons. At an estimated 2017 gasoline price of $3.80 per gallon, the annual gross cost savings associated with the fuel saved is about $6.38 per fueling point and $424,000 statewide. Applying the savings over a five year period, staff determined the levelized annual value of gasoline saved for the regulation to be $396,000. Because fuel savings occur at the hose, after it has passed the meter at the dispenser, these cost savings will occur to the consumer of the fuel. In the case where the fleet being fueled is owned by the operator of the GDF, as with some rental car or government fleets, these cost savings will directly offset the estimated annual compliance costs of approximately $5.38 resulting in a net savings of $1.00 per fueling point. The methodology used to estimate the cost savings associated with these recovered losses is detailed in Appendix 5.

Cost Effectiveness

The statewide levelized annual compliance cost from the proposed regulation is estimated to be $334,000. ARB staff estimates over a five year period that the proposed regulation will result in a reduction of approximately 699,000 pounds of ROG per year. Therefore, the cost effectiveness of this proposal will be about $0.48 per pound of ROG reduced. The proposal is also expected to save about 112,000 gallons of gasoline annually valued at $396,000. Thus, when including the full savings the proposal will result in a cost savings of about $0.09 per pound of ROG reduced. A detailed description of the calculations that staff used to determine cost effectiveness can be found in Appendix 5 and is summarized in Table V-1.

Table V-1. Cost Effectiveness of Proposed Regulation

Yearly Cost and Cost-Savings of Low Permeation GDF Hoses					
Compliance Cost	Cost Savings ($3.80/gal)	Net Cost ($)	Statewide Annual ROG Reduced (lbs)	Cost Effectiveness ($/lb ROG)	
				Without Factoring the Cost of Gasoline Saved	Factoring the Cost of Gasoline Saved
$334,000	$396,000	-$62,000	699,000	$0.48	-$0.09

Economic Impacts of Alternatives

Health and Safety Code section 57005 requires the ARB to perform an economic

impact analysis of submitted alternatives to a proposed regulation before adopting any major rule. A major rule is defined as a rule that will have a potential cost to California business enterprises in an amount exceeding ten million dollars in any single year. The proposed regulation does not exceed this threshold.

Staff investigated the economic impact for the alternatives including not requiring low permeation hoses and requiring low permeation balance hoses in addition to low permeation vacuum-assist and conventional hoses. Staff rejected these alternatives for reasons discussed in Section VI., Alternatives Considered. A detailed description of the calculations that staff used to determine these potential economic impacts can be found in Appendix 5.

Were ARB not to require low permeation hoses, a technology widely available and in use in other applications, California motorist would continue to needlessly waste approximately 112,000 gallons of fuel with a levelized annual value of $396,000 while not improving air quality.

Fiscal Impacts – Costs to State and Local Agencies

Section 11346.5 of the Government Code requires State agencies to estimate the cost or savings to any State agency, local agency, or school district in accordance with instructions adopted by the Department of Finance. The estimate shall include any non-discretionary cost or savings to local agencies and the cost or savings in federal funding to the State.

Staff does not expect the proposed regulation to impose any significant cost on affected GDFs operated by state or local government. As described above, staff estimates that affected government operated GDFs will experience an annual cost savings of approximately $1.00 per fueling point. A detailed description of the calculations that staff used to determine fiscal impacts can be found in Appendix 5.

VI. ALTERNATIVES CONSIDERED

In accordance with Government Code section 11346.5, subdivision (a)(13), ARB must determine that no reasonable alternative it considered or that has otherwise been identified and brought to ARB's attention would be more effective in carrying out the purpose of the proposed regulation or would be as effective and less burdensome to affected private persons than the proposed regulation. This section of the staff report discusses alternatives to the proposed regulation.

A. Four-Year Clock Provision

Staff has considered the following alternatives to the "four-year clock" amendments found in sections 2.4.5 and 2.4.9 of both CP-201 and CP-206.

Option 1: No change to current provision is implemented

ARB declines to make any changes to the current certification procedures (CP-201 and CP-206) regarding effective dates. The Executive Officer continues to use administrative authority to extend the effective date as appropriate in the cases when equipment is not certified by the effective date.

Pro:

- No action needed on the part of ARB.

Con:

- Confusion persists and the uncertainty about the "effective date" and the "four-year clock" would remain, requiring regulatory revisions when the certification of the first system occurs later than expected.
- ARB becomes unresponsive to industry concerns and repeated requests for changes concerning the "effective date" and the "four-year clock."
- Unnecessary administrative burden for ARB and local district staff continues.
- Opportunity to streamline and improve the program is missed.

Option 2: Continue current program based on adoption of an actual calendar date as the "effective date," but add a new provision that allows this effective date to be reset in the event that no system becomes certified by this effective date

This option would continue the current practice of establishing an actual calendar date by regulation and the proposal as the "effective date." However, in the event that the first system is not certified by the effective date, the effective date will default to the date when the first system is certified to meet a given standard or specification. In all cases the "four-year clock" provision applies, giving existing GDFs four years from the effective date to comply.

Pro:

- Would eliminate the need to change the current practice of updating the "effective date" administratively and then later by regulation in the event there no certified system by the effective date.
- Preserves current practice of relying on an actual calendar date as the compliance date.
- Allows for a streamlined, less administratively burdensome mechanism for updating the effective date if necessary.

Con:

- Continued reliance on a pre-determined, fixed calendar date by regulation as the effective date will cause confusion and uncertainty in the event a system is not certified by this date.
- Forces the program to continue to rely on anticipated dates for first-system certification, dates which history shows can be very uncertain.
- Fixing the effective date is not meaningful since delays are caused by factors that are unanticipated at the time of rule adoption.
- Results in additional potentially confusing scenarios where effective dates for systems could include firm calendar dates as well as dates to be determined by future first-system certification.

Option 3: Staff proposal

Staff believes that its proposal that redefines the "effective date" in the regulation as the date when the first system meeting the new performance standard is certified and adds new language which clearly states that the "four-year clock" begins on this redefined "effective date" best addresses all concerns expressed by industry and other stakeholders and preserves the Board's air quality goals for the vapor recovery program.

Pro:

- Improves program implementation by ARB and program enforcement by local districts.
- Provide clarity as to when the "four-year clock" starts for an affected GDF.
- Fully resolves the issues and burden associated with the actions needed to change the effective date administratively and then later by regulation in the event the effective date is not met.
- Fully addresses industry's repeated concerns about the confusion resulting from lack of clarify of effective dates.

Con:

- None.

<u>B. Low Permeation GDF Hose Requirement</u>

Staff has considered several alternatives to the low permeation GDF hose proposal found in section 20 of CP-201 and section 21 of CP-206. The alternative approaches to the current proposal which staff considered include: no action by ARB, requiring balance EVR hoses to incorporate low permeation technology in addition to the other hoses covered in the current proposal, and requiring a different permeation limit than

that required in the current proposal.

Option 1: Take no action

There currently exists no state or federal regulation designed to reduce emissions from GDF hoses. Yet, improved hoses exist and are used in other applications.

Pro:

- No action needed on the part of ARB.
- No additional requirement imposed on the affected industry.
- No additional costs of compliance.

Con:

- Unnecessary waste of gasoline fuel by GDF activity in California goes unabated.
- Savings from fuel saved, offsetting compliance costs, are unrealized.
- An opportunity to reduce smog-forming emissions cost-effectively is missed.
- California does not meet its stated commitment for emission reductions specified in the 2007 Ozone SIP.
- Air quality suffers unnecessarily by not taking an action that reduces emissions and saves California motorists money.

Option 2: Implement low permeation standards for all GDF hoses (including balance-type hoses)

Staff considered requiring balance-type EVR hoses to incorporate the same low permeation technology as the vacuum-assist and conventional hoses covered in the current staff proposal. This option was rejected because permeation emissions from balance hoses are much lower than from other types of hoses, and will continue to decrease as the number of ORVR equipped vehicles increases. Therefore, this regulatory action for balance hoses is not justified.

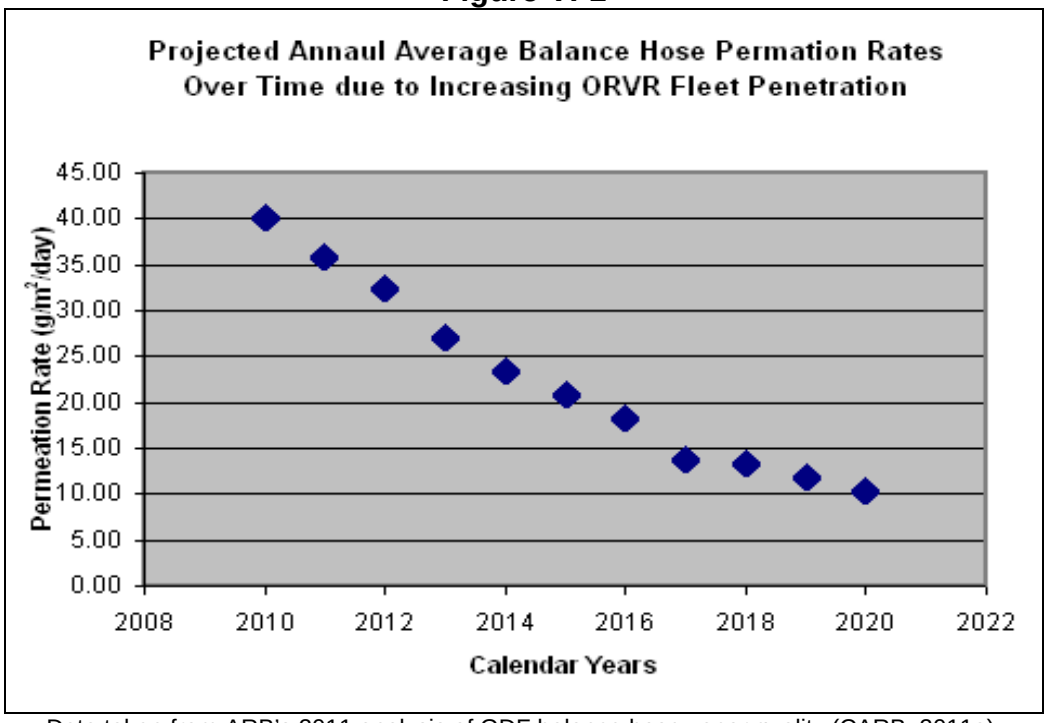
Pro:

- Provides additional emission reduction.
- Simplifies program implementation and enforcement.

Con:

- Diminishing potential for emission reductions in the future since the rate of permeation for balance hoses will decrease due to increasing ORVR-equipped vehicle penetration (Figure VI-1).
- Permeation control technology for balance hoses is unproven at present time.

Figure VI-1



Data taken from ARB's 2011 analysis of GDF balance hose vapor quality (CARB, 2011a).

Option 3: Require a more aggressive permeation limit than the 10 g/m^2/day proposed limit

Staff initially considered adoption of a lower permeation limit than the current proposal of 10 g/m^2/day at 100 °F (38 °C) as tested in accordance with UL 330. This option was rejected for the reasons stated below.

Pro:

- Provides for additional emission reduction.
- Forces hose technology towards greater improvement.

Con:

- A lower permeation limit would provide little additional emission reduction.
- Added technology challenge.
- Lacks the merits of a consensus standard developed by hose manufacturers, material manufacturers, Underwriter's Laboratories, ARB, and the U.S. EPA.

Option 4: Staff Proposal

Staff has determined that adopting the proposed permeation limit of 10 g/m^2/day for GDF hoses that carry liquid fuel against the outer hose wall achieves significant savings to the consumer while at the same time reducing emissions by 96 percent.

Pro:

- Air quality benefits from reduction of smog-forming emissions.
- Prevents unnecessary waste of gasoline fuel.
- Offers savings to California motorists by avoiding paying for fuel that was wasted.
- Consensus standard agreed upon by hose manufacturers, material manufacturers, Underwriters Laboratories, U.S. EPA, and ARB staff.
- Savings fully offset increased costs of compliance.

Con:

- Increase cost of compliance.

VII. CONCLUSION

The proposed amendments will serve to improve the existing EVR program by addressing confusion about the “four-year clock” provision in the regulation and by incorporating necessary but minor improvements and clarifications to certification and test procedures. The amendments will also establish a new permeation limit for GDF hoses, resulting in approximately one tpd of ROG emission reductions and savings to California consumers.

Staff recommends that the Board adopt the following which incorporate the proposal:

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

2. Amendments to the referenced vapor recovery certification and test procedures (Appendix 2).

IX. REFERENCES

CARB. (2007a). MEMO: MODIFICATION OF VAPOR RECOVERY TEST PROCEDURE TP-201.2 "EFFICIENCY AND EMISSION FACTOR FOR PHASE II SYSTEMS". Sacramento: California Air Resources Board. <http://www.arb.ca.gov/vapor/NDIR-approval-memo.pdf>

CARB. (2007b). Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan (SIP). Sacramento: California Air Resources Board. <http://arb.ca.gov/planning/sip/2007sip/apr07draft/sipback.pdf>

CARB (2008) Emco Wheaton 2008 Vehicle Efficiency Test, November 2008.

CARB (2009), California Air Resources Board, MEMO: Percent of Gasoline Dispensed to Vehicles with ORVR. Sacramento: California Air Resources Board. <http://www.arb.ca.gov/vapor/archive/2009/orvr-pen09.pdf>

CARB. (2011a). Gasoline Dispensing Facility (GDF) Balance Hose Vapor Quality and Permeation Analysis. Sacramento: California Air Resources Board. <http://www.arb.ca.gov/vapor/gdfhe/hose_quality_and_perm_2011.pdf>

CARB. (2011b). Gasoline Dispensing Facility (GDF) Fueling Point Population Report. Sacramento: California Air Resources Board. <http://www.arb.ca.gov/vapor/gdfhe/gdf_fueling_point_population_report.pdf>

Collins, W. J., R. G. Derwent, C. E. Johnson, and D. S. Stevenson. (2002). The oxidation of organic compounds in the troposphere and their global warming potentials. Climatic Change, p. 52(4), pp. 453–479. 2002.

IPCC. (2007). Intergovernmental Panel on Climate Change (IPCC), Chapter 2, Changes in Atmospheric Constituents and in Radiative Forcing. Climate Change 2007: The Physical Sciences Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 2007. Cambridge: Cambridge University Press. <http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2.html>

UL (2009), UL330 Seventh Edition: Standard for Safety for Hose and Hose Assemblies for Dispensing Flammable Liquids. December 16, 2009. Underwriters Laboratories.