State of California
AIR RESOURCES BOARD

PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO CERTIFICATION PROCEDURES FOR VAPOR RECOVERY SYSTEMS FOR ABOVEGROUND STORAGE TANKS AT GASOLINE DISPENSING FACILITIES

STAFF REPORT: INITIAL STATEMENT OF REASONS

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ACRONYMS

Air Districts	Air Pollution Control Districts and Air Quality Management Districts
AST	aboveground storage tank
BAU	business as usual scenario
Board	California Air Resources Board
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CP	certification procedure
EA	environmental analysis
EF	emission factor
EO	executive order
EVR	enhanced vapor recovery
FSOR	Final Statement of Reasons
GDF	gasoline dispensing facility
GHG	greenhouse gas
ISD	in-station diagnostic systems
ISOR	Initial Statement of Reasons (this report)
max	maximum
min	minimum
ppm	part per million
NAICS	North American Industry Classification System
ORVR	on board refueling vapor recovery
ROG	reactive organic gas
TPD	tons per day
TPY	tons per year
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank

EXECUTIVE SUMMARY

California Air Resources Board (CARB or Board) staff are proposing to amend Phase II Enhanced Vapor Recovery (EVR) requirements for existing aboveground storage tanks (AST) at gasoline dispensing facilities (GDF). The amendments would clarify definitions and improve cost effectiveness of the Phase II EVR requirements based on annual gasoline throughput at AST GDFs. These GDFs are split between government and non-government owned, and include military, state, school, private business, agriculture, and retail facilities.

Since 1975, CARB has had a program in place to regulate air pollutant emissions from GDFs. Gasoline vapors contain reactive organic gases that, in the presence of sunlight, can react with other air pollutants to form ozone, a criteria air pollutant, and lead to smog formation. Gasoline vapors also contain benzene, which is a toxic air contaminant, as defined by CARB under Title 17 section 93001. In March 2000, CARB approved EVR regulations for GDFs equipped with underground storage tanks (UST). In June 2007, CARB approved EVR regulations for GDFs equipped with ASTs. EVR regulations established new standards for gasoline vapor recovery systems to reduce gasoline vapor emissions during storage and transfer of gasoline from the cargo tanker to the AST (Phase I EVR) and from the AST to the vehicle (Phase II EVR), and to increase reliability of vapor recovery components.

EVR regulations apply to both new and existing GDFs. Phase-in of EVR standards for GDFs with USTs started in 2001 and completed in 2010. For GDFs equipped with ASTs, phase-in of EVR standards started in 2009 and will continue into 2019. EVR regulation updates completed between 2001 and 2015 improved test procedures for gasoline vapor recovery system certifications, modified applicability requirements for GDF, and modified performance standards and implementation dates to reflect evolving technology. CARB certified pre-EVR Phase II vapor recovery systems to be at least 90 percent efficient in controlling gasoline vapor emissions during transfers of gasoline from the ASTs into vehicles, while the EVR regulations require certification of a gasoline vapor emission control efficiency of at least 95 percent.

CARB staff is now proposing AST EVR regulation amendments that would allow more time for some AST GDFs to install Phase II EVR equipment. In April 2015, CARB approved amendments to GDF applicability requirements to improve cost-effectiveness for Phase I EVR for AST GDFs. The 2015 amendments allowed the continued use of existing pre-EVR Phase I equipment on some ASTs past the existing GDFs upgrade date. The proposed amendments would allow smaller AST GDFs—those with lower annual gasoline throughputs and therefore lower emissions—to maintain their current pre-EVR Phase II systems until the end of useful life, rather than be required to install upgrades by March 13, 2019, as required by existing regulations. The result would be improved cost effectiveness for Phase II EVR implementation while retaining emission reductions for ASTs with higher annual gasoline throughputs, which have higher emissions. The cost effectiveness, cost per pound of emissions reduced, of the

proposed amendments is $6.48 per pound in 2019 and increases each year to $26.52 in 2024, at which point it is the same as the existing regulations.

The proposed amendments would provide financial benefits and no net increase in existing gasoline vapor emissions. The financial benefits consist of net cost-savings of about $1.3 million for businesses and government agencies that own GDFs equipped ASTs that are required to upgrade their equipment by state and local Air District Rules and have not yet done so. Further, the proposed amendments would allow more time for AST GDFs with smaller annual gasoline throughputs (480,000 gallons or less) and, by extension, fewer emissions as compared to AST GDFs with higher annual gasoline throughputs (over 480,000 gallons), to comply with Phase II EVR regulations, which will enable these smaller GDFs to better plan for the costs associated with the system upgrade. The proposed amendments would also have no significant effect on gasoline vapor emission reductions compared to existing regulations because the proposed amendments will not cause emissions to exceed the existing baseline of emissions from currently operating AST GDFs. Finally, the proposed amendments would improve regulatory consistency with the Phase I EVR regulations because GDFs will be allowed to continue the use of pre-EVR systems until the end of the systems' useful life if the GDFs fall below an annual gasoline throughput threshold.

Recommendation: Staff recommends that the Board adopt amendments to the California Code of Regulations (Appendix A) that incorporate by reference the proposed new and amended definitions and certification procedures (Appendices B and C).

I. INTRODUCTION AND BACKGROUND

This staff report provides the rationale for the proposed aboveground storage tank (AST) Phase II Enhanced Vapor Recovery (EVR) regulatory amendments for establishing an annual gasoline throughput threshold, summarizes the regulatory development process, and describes the air quality benefits along with the potential economic and environmental benefits and impacts of the proposed amendments and their alternatives.

A. California's Vapor Recovery Program

Approximately 15 billion gallons of gasoline are consumed annually in California. With each transfer of gasoline, there is a potential to emit gasoline vapors. The hydrocarbons contained in gasoline vapors contribute to air pollution. In the presence of sunlight, hydrocarbons combine with the oxides of nitrogen, another air pollutant that comes primarily from fuel combustion, to form ozone. Ozone is a strong irritant that damages human lung tissue and plant leaves, and is a criteria air pollutant that leads to smog formation. California law mandates California ambient air quality standards (AAQS), which are more stringent than the national AAQS, which define clean air and are established to protect the health of the most sensitive groups in our communities (CARB, 2019b). CARB and the U.S. Environmental Protection Agency (U.S. EPA) have established 8-hour ozone standards intended to prevent adverse human health effects due to exposure to ozone. In 2005, CARB approved an 8-hour standard for ozone of 0.070 parts per million (ppm) and retained the one-hour 0.09 ppm standard established in 1987. In 2015, the U.S. EPA lowered the national 8-hour standard from 0.075 ppm to 0.070 ppm (CARB, 2019b).

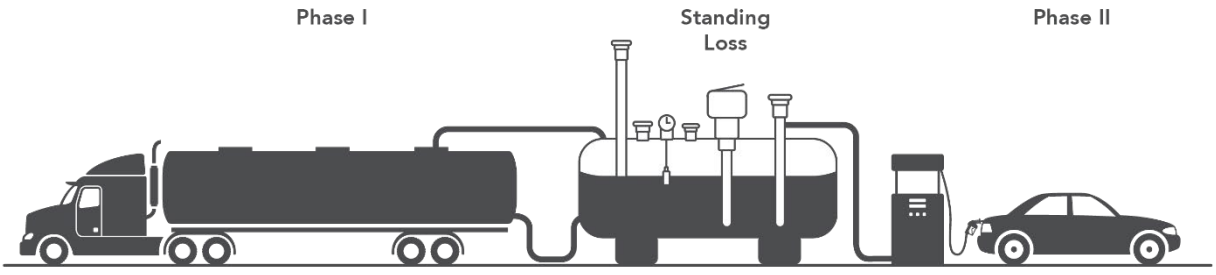
Additionally, CARB has established state air quality standards for other contributors to ozone formation, such as nitrogen oxides and reactive organic gases (ROG). The two most prevalent nitrogen oxides are NO_2 and nitric oxide (NO), and the combination is referred to as NO_X. NO_X emissions are produced with nitrogen (N_2) and oxygen (O_2) in the air react during the high-temperature combustion of fuels. Air quality regulators have selected NO_2 as the marker for controlling ambient levels of NO_X as much of the information on oxides of nitrogen is specifically for NO_2. In 2007, the California AAQS were lowered to 0.18 ppm for the 1-hour average and 0.030 ppm for the annual average. As with NO_X emissions, ROG emissions contribute to the formation of ozone and can also contain the toxic air contaminate, benzene. Reducing ROG emissions is an integral part of California's plan to attain and maintain federal and state ozone standards. (CARB, 2019b).

The Vapor Recovery Program was first developed for gasoline dispensing facilities (GDF) in the early 1970s to prevent the formation of ozone and was later expanded to control benzene; first applied to underground storage tanks (UST) and then, later, to ASTs. Benzene, a known human carcinogen, is a constituent of gasoline identified by

CARB in 1985 as a toxic air contaminant. In 1988, CARB adopted regulations that mandated air pollution control and air quality management districts (Air Districts) to determine acceptable risk for benzene and to adopt rules requiring the installation of vapor recovery systems for retail GDFs to minimize public exposure to benzene. Per State law (Health and Safety Code § 39666(d)), Air Districts are responsible for implementing and enforcing control measures on non-vehicular sources of toxic air contaminants. All Air Districts adopted such rules by the early 1990s. The Benzene Airborne Toxic Control Measure (ATCM) requires the use of best available control technology, the installation of CARB-certified Phase I and II vapor recovery control equipment at all retail GDF, in order to reduce benzene and total hydrocarbon emissions from uncontrolled stations affected by the measure by 95 percent (CARB, 2019a).

In California, gasoline vapor emissions are controlled during the transfer of gasoline from storage tanks at terminals, or bulk plants, to tanker trucks (cargo tanks) that deliver fuel to a GDF, from which gasoline is then transferred into vehicles. Cargo tanks are tested annually to ensure that they do not exceed an allowable leak rate. At a GDF, there are two types of gasoline transfers. Phase I vapor recovery collects vapors that are displaced during bulk fuel transfer, when a tanker truck fills a GDF's storage tank. The gasoline vapor displaced from filling the storage tank is captured and transferred to the tanker truck instead of being released to the atmosphere. The gasoline vapor inside the tanker truck is recovered at the terminal or bulk plant when a new load of gasoline fills the tanker. Phase II vapor recovery collects vapors produced during vehicle refueling by the gasoline consumer. The vapor recovery collection efficiency during both of these transfers is determined through certification of vapor recovery systems.

Figure 1: Phase I and Phase II Vapor Recovery Systems at AST GDFs



CARB and the Air Districts share implementation of the vapor recovery program. CARB certifies prototype Phase I and Phase II vapor recovery systems for installation at operating GDF test sites. State law (Health and Safety Code § 41950 et seq.) requires

that throughout California only CARB-certified systems be offered for sale, sold, and installed. Air District staff inspects and tests the vapor recovery system upon installation during the permit process and conducts regular inspections to check that systems are operating as certified.

The vapor recovery requirements affect a variety of stakeholders. These include the vapor recovery equipment manufacturers, GDF owners and gasoline marketers who purchase this equipment, contractors who install, maintain, and test vapor recovery systems, Air Districts that enforce vapor recovery rules, and the public at large who refuel vehicles or live near a GDF. California's vapor recovery and certification requirements also have implications for many other states and countries that have rules requiring or allowing the use of CARB certified systems at their GDFs.

B. Enhanced Vapor Recovery

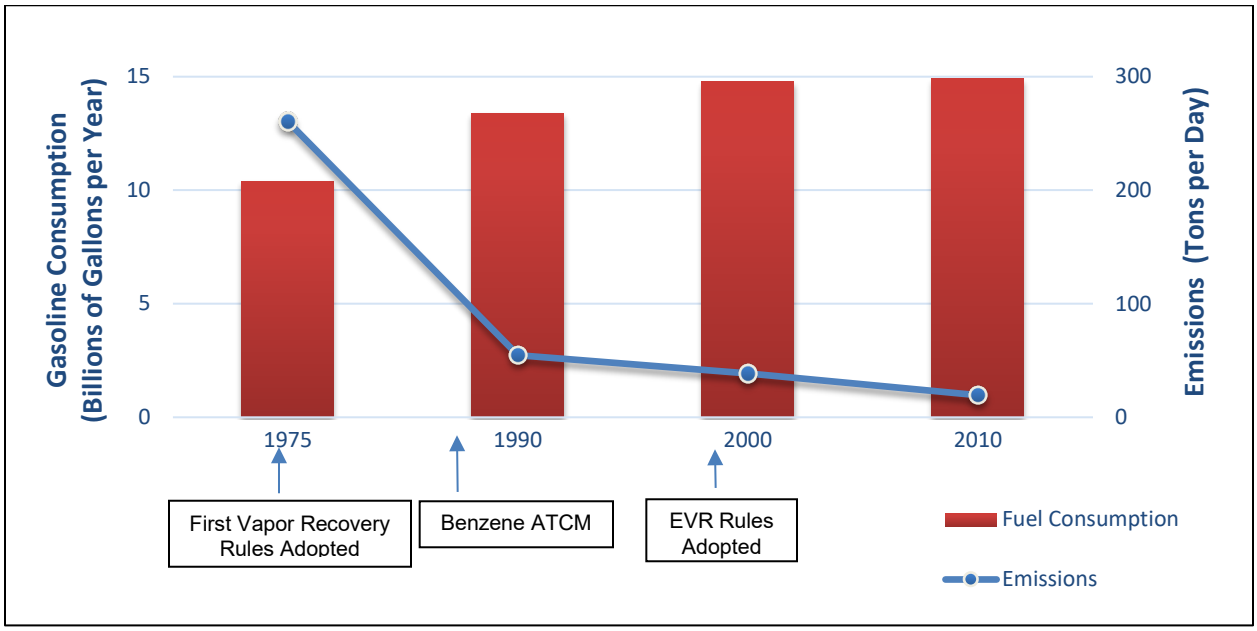
To achieve additional vapor emission reductions and increase the reliability and durability of gasoline vapor recovery systems, the Board adopted Enhanced Vapor Recovery (EVR) regulations for ASTs in 2007. The regulations included changes to the certification procedures by including more extensive testing requirements and more stringent controls for Phase II systems such as:

- Requiring compatibility of the Phase II EVR system with onboard refueling vapor recovery (ORVR) vehicles; including compatibility and pressure management to control emissions lost from storage tank headspace through vent lines, vapor processor exhaust, and fugitive leak sources;
- Establishing new standards to control gasoline evaporation during the summer months; and
- Establishing standards designed to control the release of liquid gasoline at the nozzle, such as liquid retention, post fueling drips, and spillage.

The adoption of the first vapor recovery rules in 1975 and the Benzene Airborne Toxic Control Measure (ATCM)[1] in 1988, along with the beginning of EVR standards implementation in 2000, reduced emissions by more than 90 percent even as gasoline consumption was increasing. The implementation of EVR requirements for USTs reduced emissions from approximately 260.4 TPD in 1975, to 19.5 TPD in 2010, as illustrated in Figure 2 below (CARB, 2016). AST EVR requirements were approved in 2008 and the first control measure certified in in 2009.

[1] The Benzene ATCM, adopted by CARB on May 13, 1988, is a non-vehicular ATCM implemented by adoption of regulations by local air pollution control and air quality management districts, requiring the use of vapor recovery systems at retail service stations.

Figure 2: Reducing Gasoline Emissions with Vapor Recovery Controls



Currently, there is one Phase II EVR system certified for ASTs and available in California. The system features a thermal oxidizer as a processor, EVR nozzles and hanging hardware, and a liquid condensate trap, and is approved for installation only on GDFs with protected ASTs with remote dispensing systems.[2] The compliance deadline for phase-in of Phase II EVR standards for GDFs equipped with ASTs is March 13, 2019. This deadline is the "effective date"[3] of the standards. State law (Health and Safety Code § 41956.1) and CARB certification procedure CP-206 currently specify that vapor recovery systems installed before the effective date of additional or amended standards may remain in use for the remainder of their useful life or for up to four years after the effective date of the new standard, whichever is shorter, provided the non-renewed systems meet the requirements in CP-206, section 20.

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[2] The CARB-certified system, originally certified March 13, 2015, is only compatible with protected ASTs with remote dispensing, and that have Phase I EVR installed. Protected ASTs are typically constructed with a primary and secondary wall for containment with an insulating material between the walls, compared to single wall ASTs, which are constructed with only a primary (single) steel wall. ASTs with remote dispensing have dispensers and coaxial hose adaptors located in such a way as to prevent the liquid condensate in the vapor return line from draining directly back into the headspace of the AST. These ASTs would generally require a liquid condensate trap and plumbing along the below-grade vapor return line to return liquid condensate to the AST.

[3] CARB certification procedure CP-206 specifies the effective date of Phase II EVR standards and specifications for ASTs as the date when the first Phase II system is certified by CARB for use in California. The effective date "starts the clock" for the period of continuing use of installed vapor recovery systems/equipment.

C. EVR Rulemaking History

CARB first adopted vapor recovery regulations for USTs on December 9, 1975. The EVR regulations for USTs were approved in March 2000, and for ASTs in June 2007. Since their approval, EVR regulations for both USTs and ASTs have been amended several times.

1. Underground Storage Tanks

In March 2000, with the Board's approval of the EVR regulations, new, more effective standards for vapor recovery systems were set to reduce gasoline vapor emissions during the storage and transfer of gasoline at GDFs.

On October 25, 2001, the Board approved amendments to five existing certification and test procedures, and the addition of two new certification and test procedures, for gasoline vapor recovery equipment. The revised and new certification and test procedures were part of the Board's ongoing effort to provide the most up-to-date and accurate procedures for certifying systems to control gasoline vapor emissions and measuring the associated release of air pollutants. In addition to supporting certification of vapor recovery systems and equipment, the amended procedures support emissions measurement and verification of proper operation of installed systems.

On December 12, 2002, the Board approved amendments to ten existing certification and test procedures and the adoption of five new test procedures. This regulatory action was called Enhanced Vapor Recovery (EVR) Technology Review and was, again, part of the Board's ongoing effort to improve the EVR program by confirming that all but one of the EVR standards approved in 2000 were technically feasible.

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 requirement.

On November 18, 2004, the Board approved an amendment to the regulations to extend the ORVR compatibility deadline for existing GDFs and to amend other EVR regulation compliance dates to be consistent with the extensions allowed under the regulations (as authorized in Executive Orders G-70-203 and G-70-205). The effective date for ISD at GDFs with gasoline throughputs between 600,000 and 1,800,000 gallons per year was also revised to April 1, 2006, to maintain the ISD phase-in schedule.

On May 25, 2006, the Board approved amendments to a variety of EVR test procedures, including revisions to leak rate and cracking pressure standards for EVR pressure/vacuum (P/V) vent valves.

2. Aboveground Storage Tanks

On June 21, 2007, the Board approved new certification and test procedures that would require EVR for ASTs. These procedures were formally approved by the Office of Administrative Law in May 2008, and so this staff report refers to them as the AST requirements adopted in 2008. EVR requirements for ASTs would become effective in three stages, over several years. Originally, the certification procedure listed the operative dates for Standing Loss Control (SLC), Phase I EVR, and Phase II EVR as January 1, 2009. Due to certified systems not being commercially available, the Executive Officer extended the operative and effective dates until the first system was certified. SLC would be required for existing ASTs as of April 1, 2013, followed by Phase I EVR by July 1, 2014. On September 22, 2011, the Board approved amendments that made the effective and operative dates of the requirements the date the first system is certified. Phase II EVR for existing ASTs was required by March 13, 2019.

3. Underground and Aboveground Storage Tanks

On September 22, 2011, the Board approved amendments to EVR regulations adopting a permeation standard for GDF hoses, and a clarification of the statutory requirement allowing existing GDFs four years to upgrade their current equipment to meet applicable EVR standards. The first low permeation hoses meeting this standard that are compatible with a specific Phase II EVR system were certified by CARB on September 24, 2014. Existing GDF owners throughout California who have that specific Phase II EVR system had until September 24, 2018, to install low permeation hoses unless they need to be replaced prior to that date.

On July 25, 2013, the Board approved a new test procedure to measure volumetric efficiency of Phase I EVR systems used on AST. The Board also approved amendments to clarify the certification requirements for cargo tanks, and to better harmonize those requirements with comparable federal requirements.

On April 23, 2015, the Board approved an amendment to allow certain existing ASTs to keep their pre-EVR Phase I systems. The Board approved amendments to clarify existing requirements for manufacturers of vapor recovery equipment used on USTs, ASTs, and ORVR fleet fueling facilities. Finally, the Board adopted new performance standards and specifications for enhanced conventional (ECO) nozzles and low permeation conventional hoses for use at GDFs where Phase II vapor recovery systems are not required by CARB or Air District regulations and that fuel vehicles equipped with ORVR systems.

On October 25, 2018, the Board approved amendments to standardize EVR nozzle spout and bellows dimensions to improve compatibility with newer motor vehicle fill pipes. This compatibility is necessary to reduce air ingestion at the nozzle, which would help reduce pressure driven emissions caused by evaporation of gasoline within the

GDF storage tank headspace. These amendments have not yet been submitted to and approved by the Office of Administrative Law.[4] The amendments include a clarifying expansion to the definition of "useful life" that is relevant for this rulemaking, shown here in underlined text:

> "the period of time during which a vapor recovery system or component can be used as intended, conforms to manufacturer's specifications, and complies with all applicable CARB regulations, standards, and specifications. The end of useful life occurs when the vapor recovery system or component can no longer be maintained or operated per manufacturer's specifications and as certified by CARB regulations, standards, and specifications."

D. Legal Authority

1. State Law

The proposed amendments are a revision of CARB's EVR regulations to obtain cost effective emission reductions at GDFs equipped with ASTs. The benefits of the proposed amendments are the result of air quality goals developed by CARB based on explicit statutory authority in the Health and Safety Code § 41954 (Appendix D) and following, as well as CARB's general authority to carry out its air quality mandates. State law directs CARB 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 CARB, in cooperation with Air Districts, to certify gasoline vapor recovery systems that meet the performance standards and specifications. Health and Safety Code § 39607(d) requires CARB to adopt test procedures to determine compliance with CARB's and Air Districts' non-vehicular standards. Health and Safety Code § 41954 also requires Air Districts to use CARB test procedures for determining compliance with performance standards and specifications established by CARB.

To comply with State law, the Board adopted the certification and test procedures for GDFs with USTs and ASTs, bulk plants, terminals, and cargo tanks found in California Code of Regulations, §§ 94010 to 94017. The regulations reference procedures for certifying gasoline vapor recovery systems and test procedures for verifying compliance with performance standards and specifications. These certification and test procedures serve to control gasoline vapor emissions from gasoline marketing operations, including transport and storage.

2. Federal Requirements

There are no federal regulations requiring the use of Phase II EVR systems on ASTs. However, the U.S. EPA has promulgated federal regulations to control the release of gasoline vapors at certain GDFs in certain areas outside of California. Accordingly,

[4] These amendments are expected to be finalized in 2019.

some GDFs are required to install and maintain Phase II vapor recovery systems. The intent of the federal regulations is to reduce emissions associated with the storage and transfer of gasoline during marketing operations, which is consistent with the intent of California's EVR program. Although not explicitly required by federal regulations, some other states and countries require the installation of vapor recovery systems that are certified by CARB. Thus, changes to CARB EVR certification requirements may have a national and international effect on the reduction of gasoline vapors.

E. Applicability of Proposed Regulatory Amendments

The proposed regulatory amendments consist of amendments to vapor recovery definitions and certification procedures applicable to vapor recovery equipment used at GDFs with ASTs in the State of California. California's gasoline vapor recovery program is of interest to a variety of stakeholders including gas station owners, vapor recovery equipment manufacturers, installers, testers, maintenance contractors, Air Districts, and entities generally concerned with air quality and its impact on public health. However, only a limited group of these stakeholders may be interested in the proposed regulatory amendments because they will not have an effect on retail fueling facilities with a UST, which account for the vast majority of the gasoline dispensed statewide.

The proposal consists of amendments to California Code of Regulations, Title 17 §§ 94010 and 94016. These amendments would be incorporated in the following documents, which are referenced in aforementioned Title 17 sections, respectively:

- CARB D-200, Definitions for Vapor Recovery Procedures (D-200)
- CARB Certification Procedure 206, Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities using Aboveground Storage Tanks (CP-206).

1. New and Revised Definitions for Vapor Recovery

The proposed amendments add new D-200 definitions related to vapor recovery in general and ASTs specifically. In addition, the proposed amendments to D-200 incorporate by reference the following document:

> Underwriters Laboratories (UL). UL-2085 Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids. Edition 2, Revision 3; September 29, 2010.

2. Revisions to AST Certification Procedure

The proposed amendments revise CP-206 to allow for the continued use of existing pre-EVR Phase II systems on certain existing ASTs until the end of their useful life.

II. THE PROBLEM THAT THE PROPOSAL IS INTENDED TO ADDRESS

As technology-forcing regulations, EVR standards were designed to drive the development of emission control technologies that meet regulatory requirements. However, industry has developed only one Phase II EVR system that has been CARB-certified for use at GDFs equipped with ASTs, and that system is only compatible with a small subset of the total AST GDF population with a wide range of annual gasoline throughputs. Reactive organic gases (ROG) and benzene emissions produced at AST GDFs are directly proportional to the amount of fuel the GDFs dispense. In addition, the estimated cost to upgrade from pre-EVR Phase II to Phase II EVR is much higher than was estimated at the time of the EVR regulation adoption. Therefore, compliance with the Phase II EVR standards may place a disproportionate burden on AST GDF owners due to varying annual gasoline throughputs and high equipment replacement costs. This chapter provides background information as well as a description of how the proposed amendments resolve the problem. Appendices A through C provide the full text of the proposed regulatory amendments and Chapter III provides detailed descriptions of the underlying purpose and rationale for each proposed amendment.

A. The Problem: Cost-Effectiveness of EVR System Upgrades for Certain ASTs

In late 2013, representatives from several Air Districts approached CARB staff with concerns regarding the cost and benefits of Phase I EVR for AST. These district representatives indicated that the costs of Phase I EVR were higher than CARB staff had anticipated when the EVR regulations were adopted in 2008. Further, they suggested that the emission reductions achieved by installing Phase I EVR systems would be small and unnecessary for a number of districts. In response to the concerns voiced by district representatives, CARB staff conducted an analysis of the cost effectiveness of implementing Phase I EVR for ASTs and concluded that many of the claims made by district representatives had merit. Staff determined that, in some situations, the costs associated with implementation of Phase I requirements were higher than originally anticipated.

On April 23, 2015, the Board approved regulatory changes that allowed the continued use of pre-EVR Phase I systems based upon federal ozone attainment status,[5] population density, and annual gasoline throughput, to allow for more cost-effective implementation of the AST EVR regulations. For existing AST, the 2015 regulatory amendments allows pre-EVR Phase I systems in federal ozone attainment areas to continue to operate unless they are replaced with a Phase I EVR system.[6] These

[5] U.S. Environmental Protection Agency (U.S. EPA) Federal 8-Hour Ozone Standards for attainment and nonattainment.

[6] CP-206, Section 2.4.4, allows AST GDFs to maintain their pre-EVR Phase I equipment until the end of useful life in attainment areas, unless that system is replaced by a system that meets the performance standards or specifications of CP-206. The replacement may be voluntary or required by district rules.

amendments also allowed certain ASTs that are located in federal ozone non-attainment areas to continue operating with their current pre-EVR Phase I systems until such time as those systems wear out and require replacement, i.e., reach the end of their useful life.

The Phase II EVR requirements were not addressed during the April 2015 hearing because the first Phase II EVR system had only recently been certified in March 2015, and not enough time had elapsed to perform a cost-effectiveness analysis. According to State law, vapor recovery equipment that is required by Air District rules for the control of hydrocarbon and toxic emissions generated at GDFs must be certified by CARB. CARB certification procedures contain the performance standards and specifications that must be met by equipment manufacturers to obtain CARB certification in the form of an Executive Order. During the April 2015 hearing, CARB decided the Phase II EVR requirements would need to be considered at a later date.

Beginning in early 2017 and continuing into 2018, CARB staff surveyed the local Air Districts regarding their AST population demographics and queried equipment distributors, installers, and manufacturers regarding costs associated with upgrading to Phase II EVR systems. Staff found that the costs for regulated entities with protected ASTs to upgrade to the single available Phase II EVR system are about a hundred times higher than the estimates at the time of EVR regulations adoption:

	2007 Estimate[7]	2018 Cost (Average)[8]
If upgrading pre-EVR Phase II systems:	$362	$36,058

When CARB approved EVR regulations in 2007, the rulemaking relied on several assumptions about developing new technologies as the basis for establishing EVR standards. First, the 2007 cost estimates were based on surveys of vapor recovery equipment manufacturers for pre-EVR and EVR costs. The 2007 cost estimates assumed Phase II EVR systems for ASTs would have costs similar to pre-EVR costs for ASTs and to EVR costs for underground storage tanks. In addition, the estimated costs presumed multiple Phase II EVR systems would be available for AST owners to purchase at reasonable prices, and that these purchases could be made well before compliance deadlines.

As technology-forcing regulations, the EVR standards were designed to force the development of emission control technologies that meet regulatory requirements.

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[7] The 2007 estimates for Phase II EVR system installation and upgrade costs are for the AST lifetime (15 years, assuming five-year component lifetime). See Appendix J, Table J-1 in:

CARB. 2007. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations for the Certification And Testing of Gasoline Vapor Recovery Systems Using Aboveground Storage Tanks. Report date: May 4, 2007. Available at: https://www.arb.ca.gov/regact/2007/ast07/ast07.htm

[8] Appendix E provides an explanation and breakdown of the Phase II EVR upgrade cost estimates.

However, industry has developed only one Phase II EVR system that has been tested and certified by CARB for use at GDFs equipped with ASTs, and it can only be installed on the small subset of GDFs that have protected ASTs with remote dispensing and that meet the requirements for Phase I EVR installation.[9] CARB certified the Phase II EVR system for GDFs with protected ASTs with remote dispensing on March 13, 2015 through Executive Order VR-501-A, which was later superseded by Executive Order VR-501-B. As of March 13, 2019, all new installations, or major modifications, of GDFs equipped with protected ASTs with remote dispensing, must install Phase II EVR systems using equipment certified by Executive Order VR-501-B. In the absence of any regulatory action by CARB, all existing GDFs with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing and are located in state ozone non-attainment areas are required either to upgrade to Phase II EVR systems by March 13, 2019 or to stop operating.

Compliance with existing regulations (business as usual (BAU) scenario) would require all AST GDFs with the prerequisite configuration to upgrade to Phase II EVR by March 13, 2019, regardless of annual gasoline throughput. The generation of ROG emissions is directly proportional to the volume of fuel that GDFs dispense. AST GDFs that would be required to comply with the existing regulations have a wide range of annual throughputs. Therefore, the high costs of the upgrade would be borne by all these AST GDFs, regardless of their annual throughput and ROG emissions. As noted in section VIII(E)(2) of this Staff Report, without the proposed amendments, the current Phase II EVR compliance schedule is anticipated to be economically infeasible for many GDFs, which could result in some businesses with ASTs reducing the number and salary of employees or going out of business.

These findings indicate Phase II EVR requirements should be amended in a similar fashion to the Phase I EVR requirements, as described below.

B. The Proposed Solution

To address the before-mentioned concerns about cost effectiveness and to provide consistency with the changes made in 2015 to the Phase I EVR requirements, CARB staff proposes amending AST Phase II EVR compliance schedule requirements and definitions in the following:

- CP-206: Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks, which is referenced in § 94016, Title 17 of the California Code of Regulations; and

[9] The legal language of EO VR-501-B provides that the balance Phase II EVR system is certified to be at least 95 percent efficient when used with a CARB-certified and operated/maintained Phase I EVR system.

- D-200: Definitions for Vapor Recovery Procedures, which are referenced in § 94010, Title 17 of the California Code of Regulations.

These amendments to CP-206 and D-200 would be incorporated by reference in California Code of Regulations, Title 17 §§ 94010 and 94016.

CARB staff proposes amendments to CP-206 that would establish a different compliance schedule for existing AST GDFs to upgrade to Phase II EVR systems based upon whether or not the AST GDF is located in an area that is in attainment with U.S. Environmental Protection Agency (U.S. EPA) Federal 8-Hour Ozone Standards, and based upon the annual gasoline throughput of AST GDF.[10]

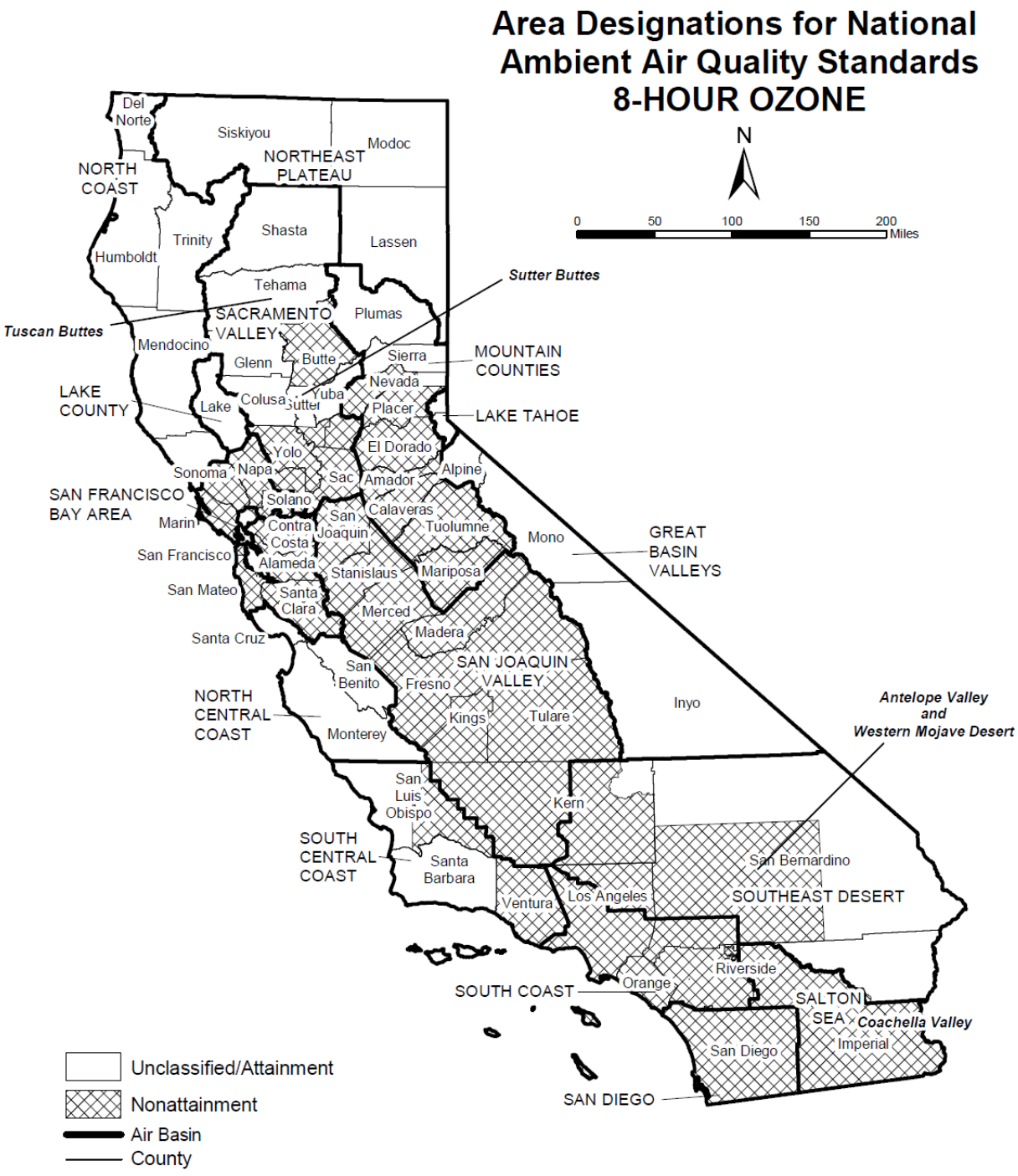
CARB staff proposes:

- In attainment areas (the white areas illustrated in Figure 3 on the following page), existing AST GDFs required by state and Air District rules to have Phase II vapor recovery systems can continue to use pre-EVR Phase II systems until end of useful life, unless replaced by a Phase II EVR system.
- In nonattainment areas (the cross-hatch areas illustrated in Figure 3), existing AST GDFs required by state and Air District rules to have Phase II systems and with annual gasoline throughput of 480,000 gallons or less can continue to use pre-EVR Phase II systems until the end of their useful life. At the end of a system's useful life, the GDF must upgrade to a Phase II EVR system.

CARB staff proposes no changes to the compliance requirements for existing AST GDFs with an annual gasoline throughput greater than 480,000 gallons in nonattainment areas. These AST GDFs would continue to be required to upgrade to Phase II EVR systems by March 13, 2019.

[10] Annual throughput is the total volume of gasoline, in gallons, dispensed from the entire GDF per year.

Figure 3: California Attainment and Nonattainment Areas



Last Updated: October 2018
Map reflects the 2015 8-hour ozone standard of 0.070 ppm
Air Quality Planning and Science Division, CARB

In addition, CARB staff proposes amendments to D-200 that consist of four new terms and definitions necessary to define terms used in the proposed amendments to CP-206 and within existing vapor recovery executive orders for ASTs. The proposed amendments include definitions for integral dispensing, remote dispensing, non-remote dispensing, and protected aboveground storage tank. Defining these terms in D-200 provides clarity for implementation and enforcement.

CARB staff's proposed amendments to CP-206 and D-200 would not impose new requirements on any AST owners.

CARB staff's proposed solution, in the form of proposed amendments to CP-206 and D-200, requires regulatory action by the Board to become effective.

Compliance with the Phase II EVR standards could impose a financial burden upon AST GDF owners by requiring AST GDFs, regardless of annual gasoline throughput and generated gasoline vapor emissions, to upgrade pre-EVR Phase II systems with Phase II EVR systems and incur high equipment replacement costs as discussed above. The proposed amendments would ensure that emission benefits are maintained while focusing control efforts on the greatest source of emissions, thereby improving cost-effectiveness.

The purpose of the proposed amendments is to safeguard public health benefits by ensuring the gasoline vapor emission reductions envisioned for the Phase II EVR standards would be met while delaying costly compliance issues. The Phase I EVR standards were amended in 2015 to include an annual gasoline throughput threshold (beyond which AST GDFs would have to comply with Phase I EVR standards), based on several determining factors, and to improve cost effectiveness. The proposed amendments would bring the Phase II EVR requirements in line with the 2015 Phase I EVR amendments by establishing an annual throughput threshold and provide more time for owners of smaller AST GDFs to meet the Phase II EVR requirements, while preserving air quality benefits in areas of the state where emission reductions are needed most. This would provide some cost relief with minimal loss of gasoline vapor emission reductions.

CARB staff carefully considered the ozone attainment status and the annual gasoline throughput dispensed from an AST GDF when evaluating regulatory options. Throughput is an important consideration from both an emissions and cost perspective because AST GDFs with low throughput tend to have lower emissions that are therefore less cost effective to control. CARB staff's alternative analysis described in chapter IX and Appendix E, illustrates that CARB staff's proposed annual throughput threshold of 480,000 gallons ensures the largest emission sources would continue to be subject to the existing Phase II EVR compliance deadline of March 13, 2019. AST GDFs with annual throughputs greater than 480,000 gallons and with the AST configuration addressed by the one certified Phase II EVR system generate the majority of emissions.

As described in Appendix E, the GDFs with annual throughputs greater than 480,000 gallons account for 14% of the GDFs that are required to, but have not yet, installed Phase II EVR systems, while accounting for about 68 percent of all throughput and associated gasoline vapor emissions. These proportions are not expected to change substantially during the implementation period of the proposed amendments because AST GDFs are permitted by their Air Districts to operate below maximum throughput limits.

CARB staff recommends the annual throughput threshold of 480,000 gallons for the proposed amendments for two reasons:

(1) The proposed threshold balances two goals important to CARB and the Air Districts, maintaining the timing of the majority of emission reductions provided under the existing Phase II EVR regulations while improving their cost effectiveness.

(2) The proposed threshold is consistent with the threshold in the Benzene Airborne Toxic Control Measure (ATCM) for Retail Service Stations (17 CCR 93101),[11] and therefore would create less confusion for Air Districts and AST GDF owners over requirements for upgrading existing AST GDFs.

CARB staff's proposal makes use of the following definition of "useful life" provided in D-200 as illustrated in Appendix B of this document:

> "the period of time during which a vapor recovery system or component can be used as intended, conforms to manufacturer's specifications, and complies with all applicable CARB regulations, standards, and specifications. The end of useful life occurs when the vapor recovery system or component can no longer be maintained or operated per manufacturer's specifications and as certified by CARB regulations, standards, and specifications."

The dashed-underlined portion of the above definition was adopted by the Board at their October 25, 2018, Public Hearing (see section C.3 in Chapter I), but has not yet been approved by the Office of Administrative Law (OAL). This expanded definition of useful life is applicable to CARB staff's current proposal because it will provide necessary clarification and specificity for existing AST GDF owners and operators. The expanded definition specifies that existing AST GDFs are allowed to continue to use their pre-EVR Phase II systems so long as the systems can be maintained and operated per manufacturer's specifications and as certified by CARB regulations, standards, and specifications.

CARB staff anticipates that the nozzle dimensions rulemaking, including the expanded portions of the useful life definition, will be approved by OAL before the proposed

[11] The Benzene ATCM, adopted by CARB on May 13, 1988, exempts existing retail service stations with an annual station gasoline throughput of 480,000 or fewer gallons from the requirement to install Phase II vapor recovery controls.

amendments described above for AST GDFs are submitted to OAL. If there are substantial delays to the timing of OAL approval of the nozzle dimensions rulemaking, CARB staff may update the proposed amendments described above to include the expansion to the useful life definitions, at which time the public will have an opportunity for review and comment.

III. THE SPECIFIC PURPOSE OF AND RATIONALE SUPPORTING EACH AMENDMENT

This chapter provides the specific purpose of each proposed amendment and the rationale for CARB staff's determination of why the proposed amendments are reasonably necessary to carry out the purpose of the provisions of law they are implementing and to address the problems described in Chapter II. Appendices A through C provide the full text of the proposed regulatory amendments.

A. California Code of Regulations Title 17, Division 3, Chapter 1, Subchapter 8, Article 1

This section provides a summary and rationale for proposed amendments to §§ 94010 and 94016, which incorporate by reference CARB's vapor recovery definitions in D-200 and certification procedures CP-206, respectively. Appendix A provides the full proposed regulatory language of these sections.

§ 94010. Definitions

Summary and Purpose of § 94010 Amendment. Section 94010 incorporates by reference the definitions listed in D-200, *Definitions for Vapor Recovery Procedures*, which describe common terms and acronyms used in the certification and test procedures specified in §§ 94011, 94012, 94013, 94014, 94015, 94016, and 94017. The proposed amendment changes the last amended date to the proposed amendment date (likely to be in 2019).

Rationale for § 94010 Amendment. This change is necessary to incorporate by reference the new and expanded definitions proposed by CARB staff, which would provide necessary clarification for terms utilized in CP-206 and corresponding executive orders.

§ 94016. Certification of Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks

Summary and Purpose of § 94016 Amendment. Section 94016 incorporates by reference CARB's CP-206, *Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks*. The proposed amendment changes the last amended date to the proposed amendment date (likely to be in 2019).

Rationale for § 94016 Amendment. This change is necessary to incorporate by reference the amended applicability requirements for AST GDFs requiring Phase II EVR systems that CARB staff proposes for CP-206, which would establish an annual gasoline throughput threshold to determine which existing AST GDFs must upgrade to

Phase II EVR systems. This amendment is necessary to provide some financial relief to AST GDF owners where the upgrade is not cost effective.

B. CARB Certification Procedure 206 – Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities using Aboveground Storage Tanks

The following is a summary of the specific regulatory amendments proposed for CP-206. The amendments are necessary to improve the cost effectiveness of the Phase II EVR regulations by establishing an annual gasoline throughput threshold to establish which existing AST GDFs must upgrade to Phase II EVR. Appendix C provides the full proposed regulatory language of CP-206, shown in strike and add format.

§ 1. General Information and Applicability

§ 1. General Information and Applicability, First Paragraph

Summary and Purpose of First Paragraph Amendment. Section 1 provides general information and applicability for the procedures for evaluating and certifying AST vapor recovery systems and equipment. The proposed amendment to the first paragraph is a non-substantive, grammatical edit.

Rationale for § 1 Amendment. The change to § 1 is required for grammatical purposes.

§ 2. Performance Standards and Specifications

§ 2.4.4 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.4 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed amendment to § 2.4.4 explicitly specifies AST GDFs located in areas classified by the U.S. Environmental Protection Agency as being in attainment with the federal 8-hour ozone standard shall continue to use the Phase II pre-EVR system until end of useful life, unless replaced by a Phase II EVR system. Additionally, § 2.4.4 provides a table, Table 2-2 that calls out which pre-EVR systems may continue to be utilized as installed.

Rationale for § 2.4.4 Amendment. The change to § 2.4.4 is required to identify AST GDFs that are not required to comply with Phase II EVR performance standards and specifications, and to identify which pre-EVR Phase II executive orders in Table 2.2 may be maintained at AST GDFs.

§ 2.4.5 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.5 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.5 text corrects a grammatical error in the first paragraph. Language is also amended to clarify the intent of the 2015 amendments with the Phase I EVR throughput thresholds being equal to, or less than, the annual gallons listed.

Rationale for § 2.4.5 Amendment. The amendment of § 2.4.5 clarifies the intent language added during the 2015 amendment of CP-206.

§ 2.4.6 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.6 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.6 text identifies AST GDFs that do not have to upgrade to Phase II EVR by the March 13, 2019 deadline by establishing an annual gasoline throughput threshold. AST GDFs at or below the threshold may maintain their pre-EVR Phase II system certified by CARB under one of the executive orders found in Table 2-2.

Rationale for § 2.4.6 Amendment. The addition of § 2.4.6 to CP-206 is required to establish an annual gasoline throughput threshold for existing GDFs to maintain their pre-EVR Phase II systems until the end of useful life, to increase the cost effectiveness of Phase II EVR while maintaining the current level of emission reductions.

Table 2-2. Existing Phase I and Phase II Vapor Recovery Systems Whose Continued Use is Allowed Pursuant to Sections 2.4.4, 2.4.5, and 2.4.6

Summary and Purpose of Table 2-2 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed Table 2-2 amendment explicitly identifies the pre-EVR Phase II systems, by executive order, that may continue to be used until the end of useful life of the systems pursuant to Sections 2.4.4, 2.4.5, and 2.4.6.

Rationale for Table 2-2 Amendment. The change to Table 2-2 is required to incorporate additional pre-EVR executive orders for those AST GDFs that may keep their pre-EVR systems until the end of useful life to increase cost effectiveness of Phase II EVR while maintaining the current level of emission reductions.

§ 2.4.7 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.7 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.7 text explicitly states that AST GDFs installed before the Board Hearing date and located in an area that is classified by the U.S. Environmental Protection Agency as being in nonattainment with the federal 8-hour ozone standard, and that has an annual throughput of greater than 480,000 gallons shall upgrade to a Phase II EVR system.

Rationale for § 2.4.7 Amendment. The addition of § 2.4.7 to CP-206 is required to explicitly establish which existing AST GDFs are required to upgrade their pre-EVR Phase II systems to Phase II EVR for greater emissions reduction.

§ 2.4.8 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.8 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.8 text is to update the numbering of the section to accommodate previous added language.

Rationale for § 2.4.8 Amendment. The change to § 2.4.8 is required to maintain section numbering.

§ 2.4.9 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.9 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.9 text states that when a pre-EVR Phase II system at an AST GDF that meets the criteria of § 2.4.4 and § 2.4.6 has reached the end of useful life, that it shall be replaced with a certified Phase II system that complies with the performance standards and specifications of Table 5-1, if Air District rules require vapor recovery.

Rationale for § 2.4.9 Amendment. The addition of § 2.4.9 to CP-206 is required to establish that existing AST GDFs that were allowed to maintain their pre-EVR Phase II systems until the end of its useful life, pursuant to § 2.4.6, are required to upgrade to Phase II EVR once end of useful life has been reached. Over time, as AST GDFs replace pre-EVR Phase II systems, the emission benefit lost in 2019 by not requiring all AST GDFs to upgrade, would be recouped.

§ 2.4.10 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.10 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.10 text is to update the numbering of the section to accommodate previous added language.

Rationale for § 2.4.10 Amendment. The change to § 2.4.10 is required to maintain section numbering.

§ 2.4.11 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.11 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.11 text is to update the numbering of the section to accommodate previous added language.

Rationale for § 2.4.11 Amendment. The change to § 2.4.11 is required to maintain section numbering.

§ 2.4.12 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.12 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.12 text is to update the numbering of the section to accommodate previous added language.

Rationale for § 2.4.12 Amendment. The change to § 2.4.12 is required to maintain section numbering.

§ 2.4.13 in § 2.4. Additional or Amended Performance Standards or Performance Specifications

Summary and Purpose of § 2.4.13 Amendment. Section 2.4 specifies the certification period for certified systems for which additional and amended standards and performance specifications are adopted. The proposed § 2.4.13 text is to update the numbering of the section to accommodate previous added language.

Rationale for § 2.4.13 Amendment. The change to § 2.4.13 is required to maintain section numbering.

C. CARB D-200, Definitions for Vapor Recovery Procedures

Summary and Purpose of D-200 Amendments. The following is a summary of the specific regulatory amendments that are proposed for D-200. CARB staff proposes adding definitions for terms used in the proposed amendments to CP-206 § 2.4 and within existing vapor recovery executive orders for ASTs. Appendix B provides the full proposed regulatory language of D-200, shown in strike and add format.

Rationale for D-200 Amendments. The added definitions are necessary to define terms used and inferred in proposed amendments to CP-206 and within existing vapor recovery executive orders for ASTs. These terms are necessary because they are critical elements in determining applicability of vapor recovery requirements for AST GDFs. Defining these terms provides clarity for implementation and enforcement.

Integral dispensing – This definition is added to point the reader to the newly proposed definition for non-remote dispensing. The terms often are used interchangeably; however, non-remote dispensing encompasses a broader meaning. CARB and local Air District staff prefer the use of the term non-remote over integral dispensing as it encompasses dispensers that may not necessarily be mounted directly on the tank, but that are configured in such a way to allow liquid condensate in the vapor return line to drain directly to the headspace of the AST. The terms are found and inferred in existing AST EVR Executive Orders.

Non-remote dispensing – This definition refers to the configuration of a dispenser and associated equipment such that it allows liquid condensate in the vapor return line to drain directly to the AST headspace. It is added to define the term as referenced and inferred in existing AST EVR Executive Orders. This definition is based on input from local Air District staff and reflects the interpretation they use in their permits.

Protected aboveground storage tank – This definition is added to define the term as inferred in section 3 of CP-206 and used in AST EVR Executive Orders. The term refers to insulated ASTs that conform to the Underwriters Laboratories, UL-2085 Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids (September 29, 2010; Edition 2, Revision 3), and incorporates UL-2085 by reference. Protected ASTs consist of an inner steel tank surrounded on the outside by an insulating material and, in some but not all cases, a second layer of steel on the outer surface.

Remote dispensing – This definition is added to define the term as referenced in AST EVR Executive Orders. This term refers to the configuration of a dispenser and associated equipment such that it prevents liquid condensate in the vapor return line to drain directly to the AST headspace. With remote dispensing, a vapor ‘trap’ is created by the slope of the vapor return piping, necessitating the use of equipment to collect and return the vapor condensate back to the AST.

Useful life – The term useful life was approved by the Board at the October 25, 2018, meeting but the regulation incorporating this term has not yet completed the regulatory process. This term is necessary for this regulatory amendment. Useful life refers to the period of time where a vapor recovery system or component can be used as intended, complying with applicable regulations, standards, and specifications. The end of useful life occurs when the vapor recovery system or component can no longer be maintained or operated per manufacturer's specifications and as certified by CARB.

IV. BENEFITS ANTICIPATED FROM THE REGULATORY ACTION

The proposed amendments would provide benefits in the form of net cost-savings of about $1.3 million for businesses and government agencies that own GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing, that are required to upgrade their equipment by state and local Air District rules and have not yet done so. The proposed amendments would have no significant effect on emission reductions compared to existing regulations. The proposed amendments would allow more time for AST GDFs with lower emissions to comply with Phase II EVR regulations and would improve regulatory consistency with the Phase I EVR regulations.

The proposed amendments would allow about 50 businesses and about 111 government agencies that own AST GDFs with annual gasoline throughput less than 480,000 gallons to delay upgrades to Phase II EVR systems until the end of the useful life of their pre-EVR systems. Such upgrade delays result in cost-savings for California GDFs associated with:

- Maintaining the value of pre-EVR Phase II systems that would have been lost if they were required to be replaced by March 13, 2019, about one to five years before the end of their useful life; and
- Delaying Phase II EVR equipment purchases, installation, and permitting costs.

Cost-savings were estimated using the methods described in Chapter VIII and Appendix E.

V. AIR QUALITY

Gasoline vapor emissions from GDFs can lead to increased health risk through two primary mechanisms. First, ROG emissions lead to the formation of ground level ozone, which can cause adverse health effects, particularly in children and individuals with respiratory conditions. Second, gasoline vapors contain benzene, which is a toxic air contaminant and known carcinogen. Reducing ROG emissions benefits the health and welfare of California residents by reducing ambient ground level ozone and benzene exposure. Reducing ROG emissions from GDFs is an integral part of California's plan for reaching its goal of attaining and maintaining federal and State ozone standards. Reducing benzene emissions is critical for reducing exposure to people who live and work near GDFs.

To evaluate the potential effect of the proposed amendments on air quality, CARB staff evaluated the difference between ROG emissions under hypothetical future conditions with the existing regulations (BAU scenario) and under the proposed amendments. The evaluation indicates the proposed amendments would allow a slight delay in emission reduction benefits compared to implementation of the existing EVR regulations originally adopted in 2008. This is because under the proposed amendments, about 161 AST GDFs would be allowed to maintain their pre-EVR Phase II equipment until the end of useful life instead of being required to install Phase II EVR equipment by March 13, 2019. The proposed amendments would not lead to the creation of any new ROG and benzene emissions and would not increase emissions compared to 2018 emissions under the existing Phase II EVR regulations. CARB staff estimates that from 2019 to 2023, the proposed amendments would result in a foregone emission reduction of about 29,835 pounds (~15 tons) compared to BAU.

Several types of information are needed to estimate ROG emissions under BAU and the proposed amendments:

1. Number and annual gasoline throughput of AST GDFs throughout the state, particularly for those GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing, that are required to upgrade their pre-EVR Phase II equipment by state and Air District rules and have not yet done so, and therefore would be affected by the proposed amendments;
2. Emission factors to estimate the amount of emissions from AST GDFs installed with Phase II pre-EVR and EVR equipment based on the annual gasoline throughput of the GDFs; and
3. Typical useful life span of pre-EVR Phase II equipment, which is needed to estimate the amount of delay in emission reduction benefits (i.e., "foregone emission reductions") under the proposed amendments compared to BAU.

The following section A provides a summary of these elements. Appendix E provides a detailed description of the available data, calculation methods, and assumptions for each element used to estimate emissions under the proposed amendments as well as alternatives. Section B in this chapter provides a summary of estimated emissions under BAU and the proposed amendments and associated foregone emission reductions, and Section C provides an evaluation of the potential foregone emission reductions. See Chapter VI and Chapter VIII (section F) for a review of potential impacts and benefits of emission reductions under the proposed amendments, compared to BAU, for the health and welfare of California residents, worker safety, and the state's environment.

A. Key Elements for Emission Estimates

1. Number and Throughput of AST GDFs

As described in Appendix E, a recent survey of Air Districts indicates there are 2,761 AST GDFs subject to one or more vapor recovery control requirements by state and Air District rules in non-attainment districts throughout the state. However, only about 187 AST GDFs meet the conditions for the one available CARB-certified Phase II EVR system and have not yet upgraded their systems. The majority of GDFs that are required by Air District rules to install vapor recovery systems have ASTs with non-remote dispensing for which the CARB-certified Phase II EVR system is not applicable and; therefore, cannot upgrade to Phase II EVR.

Annual gasoline throughput for the 2,761 AST GDFs subject to one or more vapor control rules in non-attainment districts is approximately 106,782,636 gallons. Of this total annual gasoline throughput, only 55,536,802 gallons are dispensed from the 187 AST GDFs that meet the conditions required by state and Air District rules to install vapor recovery systems but have not yet upgraded to Phase II EVR systems. About 161 of the 187 AST GDFs have annual throughput ≤480,000 gallons and dispense only about 17,642,271 gallons per year (~32 percent). The 26 AST GDFs with annual gasoline throughput greater than 480,000 gallons account for most (~68 percent) of the throughput of the 187 AST GDFs, or 37,894,531 gallons per year. Appendix E describes the methods for determining the annual gasoline throughput.

2. Emission Factors for pre-EVR Phase II and Phase II EVR

To estimate emissions related to the transfer of fuel into vehicles from AST GDFs using pre-EVR and EVR Phase II equipment, CARB staff calculated the emission factor for fuel transfers from the AST GDF to the vehicle fuel tank with Phase II EVR equipment installed. For comparison, staff also generated the emission factors for uncontrolled emissions that occur when transferring fuel from an AST into a vehicle with no Phase II vapor recovery controls. Pre-EVR Phase II systems have been certified by CARB to control 90 percent of the emissions that would occur during an uncontrolled transfer, which was the required performance standard at the time of certification. Phase II EVR

systems have been certified by CARB to control 95 percent of the emissions that would occur during an uncontrolled transfer, which is the performance standard specified in regulations adopted in 2008. Emission factors are expressed as pounds (lbs) of emissions (ROG) per thousand gallons (kgal) of gasoline dispensed. For a detailed discussion of the method and assumptions used to calculate the three emission factors, please see section I of Appendix E. Table 1 shows the emission factors.

Table 1: Emission Factors for Uncontrolled Transfers and Phase II Systems

	Phase II System Type		
	Uncontrolled	Pre-EVR	EVR
Emission Factor (lbs / kgal)	2.29	0.94	0.33

3. Useful Life of Pre-EVR Phase II Equipment

As described in Appendix E, CARB staff estimates the useful life of pre-EVR Phase II equipment to be about five years, and for this emission analysis assumes a uniform age distribution of the 161 GDFs so that an equal number of GDFs would be upgraded in each year between 2019 and 2023 (i.e., the timing of upgrades for the 161 AST GDFs would be delayed by one to five years from March 2019 as they reach the end of useful pre-EVR Phase II equipment life). Table 2 presents the schedule of Phase II EVR system upgrades assumed for emission calculations.

Table 2: Estimated Timing of Phase II EVR System Upgrades under the Proposed Amendments Compared to BAU

	By March 13, 2019	Remainder of 2019	2020	2021	2022	2023
BAU	187	0	0	0	0	0
Proposed Amendments	26	33	32	32	32	32

B. Foregone Emission Reductions Under Proposed Amendments

Under the existing regulations (BAU),[12] all 187 GDFs would be required to upgrade to Phase II EVR by March 13, 2019. To estimate annual emissions under BAU, CARB staff assumed all 187 GDFs would upgrade at the end of February 2019. To estimate emissions under the proposed amendments, CARB staff assumed the 26 GDFs with

[12] As noted in section VIII(E)(2) of this Staff Report, without the proposed amendments, the current Phase II EVR compliance schedule is anticipated to be economically infeasible for many GDFs, which could result in some businesses with ASTs reducing the number and salary of employees or going out of business. While we refer to this scenario as the "BAU" scenario for ease of comprehension, staff believes the BAU scenario is unlikely to be achieved even if the proposed regulatory amendments are not adopted.

annual throughput greater than 480,000 gallons would upgrade to Phase II EVR systems at the end of February 2019. Staff assumed the 161 AST GDFs allowed upgrade delays until the end of useful equipment life would be evenly distributed over five years: 33 GDFs would upgrade at the end of December 2019, and 32 GDFs would upgrade at the end of 2020, 2021, 2022, and 2023.[13] In 2019 through 2023, the Phase II EVR equipment upgrade delay allowed these 161 AST GDFs by the proposed amendments would generate higher emissions in 2019-2023 than under BAU. In 2024 through 2027, annual emissions under the proposed amendments would be the same as BAU, assuming a useful life of about five years for pre-EVR Phase II equipment.

Table 3 summarizes annual emissions under each scenario and the foregone emission reductions under the proposed amendments. Appendix E provides a detailed explanation of how staff calculated the emission estimates. CARB staff estimates that from 2019 to 2023, the proposed amendments would result in a foregone emission reduction of about 29,835 pounds (~15 tons)[14] compared to BAU, an emission increase of about 31 percent compared to BAU over five years. Over those five years, as pre-EVR systems reach the end of their useful life and are upgraded, the foregone emission reductions would decrease each year. The proposed amendments are expected to achieve the same emission reductions as BAU by 2024, as illustrated in Figure 4.

Table 3: Statewide ROG Emissions under BAU and the Proposed Amendments and Foregone Emission Reductions under Proposed Amendments

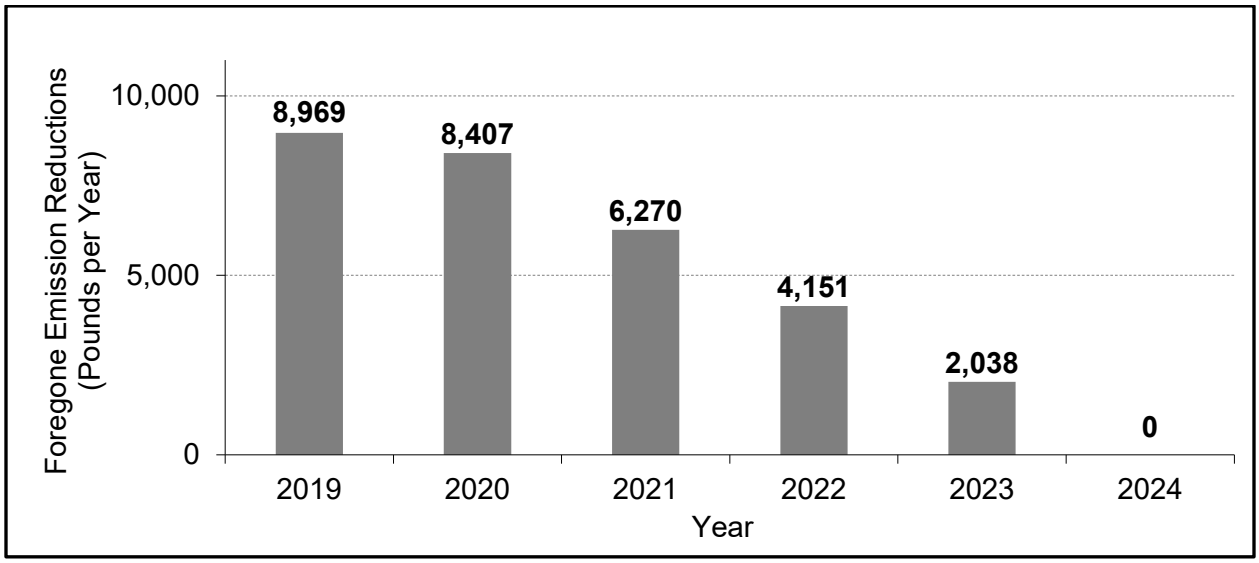
	2019	2020	2021	2022	2023	Five-Year Total
Estimated Emissions (pounds) [(a)]						
BAU	23,973	18,327	18,327	18,327	18,327	97,281
Proposed Amendments	32,942	26,734	24,597	22,478	20,365	127,116
Foregone Emission Reductions under Proposed Amendments (pounds)						
Difference between Emissions under BAU and Proposed Amendments for 187 GDFs	**8,969**	**8,407**	**6,270**	**4,151**	**2,038**	**29,835**

(a) In 2024 emissions under the proposed amendments would be the same as BAU, 18,327 pounds per year.

[13] CARB staff assumes that upgrades for the GDFs with delayed compliance schedules under the proposed amendments would be delayed by one to five years. This analysis assumes a uniform age distribution of existing GDFs with ASTs so that an equal number of GDFs would be upgraded in each year between 2019 and 2023.

[14] In comparison, the UST vapor recovery program results in gasoline vapor emissions of 19.5 TPD as of 2010 (see chapter 1, section B of this Staff Report). The foregone gasoline vapor emission reductions that result from the proposed amendments equate to foregone emission reductions of approximately 0.008 TPD over a five year period (29,835 lbs ÷ 2,000 lbs ÷ 5 years ÷ 365 days).

Figure 4: Foregone ROG Emission Reductions under Proposed Amendments



C. Evaluation of Potential Foregone Emission Reductions

The proposed amendments would not increase emissions from AST GDFs above current levels. However, as described in the previous section, foregone emission reductions could result from delaying Phase II EVR implementation by one to five years for 161 AST GDFs under the proposed amendments. CARB staff evaluated the potential annual foregone emission reductions for 2019 through 2023. Because they do not result in any increased emissions above the CEQA baseline, foregone emission reductions are not the same as emissions increases, and are not considered emissions impacts under CEQA. However, for transparency and to add perspective to the quantity of foregone emissions benefits, CARB staff has quantified them and compared them to (a) California Environmental Quality Act (CEQA) thresholds of significance for direct and cumulative impacts as specified by Air Districts,[15] and (b) State Implementation Plan commitments.

[15] Note that comparison to Air District thresholds of significance is not required here, as those significance thresholds are typically used to determine the significance of emissions from discrete development projects or stationary sources, not for statewide planning and regulation. Furthermore, the Air District thresholds are specific to the individual Air Districts, and are again not developed for purposes of assessing the significance of statewide planning and regulatory actions. However, for the purposes of this analysis, CARB has included reference to Air District thresholds as a useful metric for helping the public understand the emissions numbers discussed in this analysis. Considering these thresholds also provides an extremely conservative method for considering the potential significance of the proposed amendments.

Section I.E in Appendix E provides CARB staff's estimates of potential annual foregone emission reductions summed statewide and by Air District and their comparison to Air District CEQA thresholds of significance. For the five largest Air Districts, the most stringent thresholds are 55 pounds per day (10 tons per year); some of the small Air Districts have a more stringent threshold of 25 pounds per day, and 5 pounds per day for a specific planning area (the Ojai Planning Area in Ventura County). Under the proposed amendments, statewide annual foregone emission reductions are expected to decrease from about 24.7 pounds per day (4.3 tons per year) in 2019, to 5.6 pounds per day (1.0 ton per year) in 2023. These statewide sums, and associated Air District-specific estimates, are all below the most stringent Air District CEQA thresholds of significance. It is therefore appropriate to conclude that any potential foregone emission reductions that may result from delaying Phase II EVR implementation by one to five years for 161 AST GDFs under the proposed amendments are less than significant, even if they were considered to be impacts under CEQA. As explained above, however, foregone emission reductions are not the same as CEQA impacts because they do not involve any increases above the existing conditions baseline.

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 attain air quality and maintain NAAQS. In 2007, CARB adopted the California SIP for ozone [CARB, 2007]. The 2007 SIP did not include any accounting for the emission reductions associated with EVR for AST in the SIP emission inventory. The regulatory proposal for EVR for AST was under evaluation at the time the emissions inventory was developed in 2007. The most recent emission inventory developed for the SIP includes emissions from GDFs in the "Petroleum Production and Marketing/Petroleum Marketing" source category, but includes emission estimates only for GDFs with underground storage tanks (USTs) because nearly all (about 95 percent or more) gasoline dispensed in the state is dispensed from GDFs with underground tanks [CARB, 2018].

The 2007 SIP included an annual statewide ROG emissions estimate of 3.1 tons per day from all ASTs in 2004. The 2007 SIP included a measure that called for reducing emissions by 90 percent from new aboveground storage tanks, by 76 percent from retrofitting existing nonagricultural tanks, and by 60 percent from retrofitting existing agricultural tanks, and anticipated a statewide ROG emission reduction from tanks of two tons per day. However, the 2007 SIP did not include the emissions in the SIP's baseline inventory because the statewide AST emissions had not been apportioned by region. Because the emissions were not in the inventory, the SIP states that the potential reductions are not included as an emission reduction commitment.

Even so, as noted in Chapter I, in 2007 CARB approved EVR regulations for GDFs equipped with ASTs that achieve the intent of the 2007 SIP measure. Further, as described in Appendix E (section I.E), statewide annual foregone emission reductions are expected to decrease from about 24.7 pounds per day in 2019, to 5.6 pounds per

day in 2023 under the proposed amendments. These foregone emission reductions equate to 0.01 tons per day in 2019 and 0.003 tons per day in 2023, which are about 0.4% and 0.09%, respectively, of the 3.1 tons per day estimated for all ASTs statewide in 2004 in the 2007 SIP. Consequently, the potential foregone emission reductions under the proposed amendments would not conflict with or obstruct implementation of any air quality plan or otherwise significantly impact statewide SIP commitments.

Further, because the statewide sums, and associated Air District-specific estimates, of foregone emission reductions under the proposed amendments are all below the most stringent Air District CEQA thresholds of significance,[16] the foregone emission reductions would not significantly impact Air District-specific ozone SIP commitments. The following comparison of District-specific SIP emission inventories (SJVAPCD, 2016; SCAQMD, 2017) supports this finding for the two air basins that have the most AST GDFs that may be allowed to delay Phase II EVR compliance and are not yet in attainment with the ozone NAAQS:

Air Basin	2012 Summer ROG Emissions (TPD)	2031 Summer ROG Attainment Emissions (TPD)	2012-2031 Summer ROG Reduction Amount (TPD)	Estimated Foregone Emission Reduction under Proposed Amendments in TPD and as % of SIP Reduction Amount: 2019	2023
San Joaquin Valley (SJVAPCD, 2016)	337.2	296.7	40.5	1.0 (2.5%)	0.3 (0.7%)
South Coast (SCAQMD, 2017)	499.69	361.56	138.13	0.6 (0.4%)	0.2 (0.1%)

Importantly, note that the ozone SIPs for the San Joaquin Valley and South Coast Air Districts do not have measures or commitments specific to AST GDFs (SJVAPCD, 2016; SCAQMD, 2017). In other words, while the data shown above are useful for understanding the scope of the potential foregone emission reductions, the proposed amendments would not affect the planned reductions from quantified SIP measures in either the South Coast or San Joaquin Valley air basins.

[16] As noted above, comparison to Air District thresholds of significance is not required here, but is provided as a useful metric for helping the public understand the emissions numbers discussed in this analysis. Considering these thresholds also provides an extremely conservative method for considering the potential significance of the proposed amendments.

VI. ENVIRONMENTAL ANALYSIS

This chapter provides an environmental analysis for the proposed regulatory amendments for Phase II EVR requirements for ASTs. Based on CARB's review, CARB staff has determined that implementing the proposed regulatory amendments would not result in any potentially significant impacts on the environment. The following section provides a brief explanation of this determination.

A. Environmental Review Process

CARB is the lead agency for the proposed amendments and has prepared this environmental analysis pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (14 CCR 15251(d); 17 CCR 60000-60008). In accordance with Public Resources Code § 21080.5 of the California Environmental Quality Act (CEQA), public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies (14 CCR 15250). CARB has prepared this environmental analysis (EA) to assess the potential for significant adverse environmental impacts associated with the proposed regulatory amendments, as required by CARB's certified regulatory program (17 CCR 60005(b)). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (17 CCR 60005(b)).

If comments received during the public review period raise significant environmental issues, staff will summarize and respond to the comments in the Final Statement of Reasons (FSOR) prepared for the amendments. The written responses to environmental comments will be approved prior to final action on the proposed amendments (17 CCR 60007(a)). If the amendments are adopted, a Notice of Decision will be posted on CARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (17 CCR 60007(b)).

B. Prior Environmental Analysis

In March 2000, CARB approved EVR regulations for GDFs. The EVR regulations established new standards for vapor recovery systems to reduce emissions during storage and transfer of gasoline at GDFs. The EVR regulations were updated in 2001, 2002, 2003, 2004, 2005, 2006, 2008, 2013, 2014, and 2015. Previous updates were necessary to improve test procedures for vapor recovery system certifications, and to modify performance standards or implementation dates to reflect issues associated with evolving technology. Previous environmental analyses for the EVR regulations and subsequent amendments identified no adverse environmental impacts.

C. Analysis of Proposed Amendments

1. Description

The proposed amendments are described in detail in sections II and III of this Staff Report. Briefly, the proposed amendments will amend CP-206 to allow for the continued use of existing pre-EVR Phase II systems on certain ASTs with an annual throughput of 480,000 gallons, or less, and will add definitions to D-200 for protected ASTs, remote dispensing, and non-remote dispensing.

2. Methods of Compliance

Under the proposed amendments, certain AST GDF owners would be allowed to continue to operate their GDFs with their current pre-EVR Phase II systems until the end of the useful life of those systems, rather than being required to upgrade to a Phase II EVR system by the March 13, 2019, deadline. AST GDF owners with GDFs with annual gasoline throughputs greater than 480,000 gallons would still be required to install a Phase II EVR system by the current upgrade deadline, and therefore they would experience no change from the existing regulations.

D. Environmental Impacts

1. Air Quality

The proposed amendments do not increase emissions over 2018 levels (which constitute the CEQA baseline), but instead cause a delay of up to about one to five years in the full emission reduction realized by implementation of the Phase II EVR upgrade as the regulation is currently written (BAU scenario). As noted in section VIII(E)(2) of this Staff Report, without the proposed amendments, the current Phase II EVR compliance schedule is anticipated to be economically infeasible for many GDFs, which could result in some businesses with ASTs reducing the number and salary of employees or going out of business.

Approximately 161 existing AST GDFs would be allowed to maintain their pre-EVR Phase II systems, resulting in some foregone emission reduction benefits during the implementation period as described in the Staff Report. However, as those systems reach the end of their useful life, they would upgrade to Phase II EVR, and full emission reduction benefits, as projected in Appendix E are expected by 2024. Until the end of useful life is reached, the 161 existing AST GDFs with pre-EVR Phase II systems, which already achieve emission reductions over uncontrolled transfers at the AST GDF, are reducing gasoline vapor emissions as compared to uncontrolled systems.[17] In addition, CARB staff's evaluation of potential air quality impacts associated with the potential

[17] As seen in Table 1 in Chapter V, Section A.2 of this Staff Report, the uncontrolled emission factor is 2.29 (lbs/kgal). The installation of pre-EVR Phase II equipment reduces the emission factor to 0.94 (lbs/kgal).

foregone emission reductions that may result from delaying Phase II EVR upgrades are less than significant because none exceed CEQA thresholds of significance for direct and cumulative impacts specified by Air Districts. Please see section V.C, above, for additional information regarding the air quality related implications of this proposal.

2. Other Resource Areas with No Impacts

Based on CARB's review of the proposed amendments, staff concludes that the proposed amendments would not have any significant or potentially significant adverse impacts on the environment. Compliance with the proposed amendments does not involve or result in any adverse physical changes to the existing environment, such as new development, modifications to existing buildings or facilities, or new land use designations. Further, compliance with the proposed amendments would not involve any activity that would involve or affect aesthetics, air quality, agricultural and forestry resources, biological resources, cultural resources, geology and soils, greenhouse gases, hazardous material, hydrology and water quality, mineral resources, noise, population and housing, public services, recreation, or traffic and transportation because the proposed amendments would not require any action by the regulated community that could affect these resources. No discussion of alternatives or mitigation measures is necessary because no significant adverse environmental impacts were identified.

VII. 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, regulations, and policies (Government Code § 65040.12, subdivision (c)). CARB is committed to making environmental justice an integral part of its activities. The Board approved its Environmental Justice Policies and Actions (Policies) on December 13, 2001, to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State law [CARB, 2001]. These policies apply to all communities in California, recognizing that low-income communities and communities of color continue to bear a disproportionate environmental burden.

The proposed amendments to the EVR regulations would apply to ASTs at GDFs in ozone nonattainment regions of the State, and would serve to delay reductions in, but not increase, gasoline vapor releases, until 2024, when the proposed amendments are expected to achieve the same emission reductions as the current regulation. From 2019 to 2023, the delay in implementing the equipment upgrade granted by the proposed amendments would result in foregone emission reductions of about 29,835 pounds (~15 tons, or ~0.01 TPD). As AST GDFs with pre-EVR systems reach the end of useful life and upgrade to Phase II EVR, after 2023, emission reductions will be the same as current regulations and thus reduce ROG and benzene emissions. Reducing ROG emissions is an integral part of California reaching its goal of attaining and maintaining federal and State ozone standards. Reducing benzene emissions is critical for reducing exposure to people who live and work near GDFs, who tend to belong to lower-income communities. Consequently, all communities, including disadvantaged low-income communities and communities of color, would see a delay in benefit by up to one to five years from the air quality improvements associated with the current regulation. Alternatives to the proposed amendments, such as not implementing the proposed amendments, would affect all communities throughout California.

The proposed amendments are consistent with CARB’s environmental justice policy of reducing exposure to air pollutants and reducing adverse health impacts from toxic air contaminants in all California communities.

VIII. ECONOMIC IMPACTS ASSESSMENT

This chapter provides an economic impact assessment for the proposed regulatory amendments. The proposed amendments would reduce the cost of compliance with existing regulations for as many as about 161 GDFs by delaying requirements to upgrade to Phase II EVR systems until the end of the useful life of their pre-EVR equipment. Staff estimates the proposed amendments could result in a net cost-savings of about $1,303,019 for AST GDF owners. However, the proposed amendments could have a negative economic impact on equipment manufacturers and installers by delaying the timing of Phase II EVR equipment sales to about 161 GDFs by one to five years.

Appendix E provide the background information, calculation methods, and assumptions for assessing potential economic impacts and benefits associated with the proposed amendments. The next chapter provides an evaluation of alternatives to the proposed amendments, and Appendix E provides additional information needed to assess their potential costs and cost-savings.

A. Legal Requirements

Government Code §§ 11346.2, 11346.3, and 11346.5 require state agencies to assess the potential adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulation. In addition to providing estimates of the dollar amounts of costs and savings associated with complying with the regulatory proposal, the assessment must assess whether and to what extent the regulatory proposal would affect:

- The creation or elimination of jobs within the state;
- The creation of new businesses or the elimination of existing businesses within the state;
- The expansion of businesses currently doing business within the state; and
- The benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.

State agencies are also required to estimate the costs and savings to any state or local agency and school districts in accordance with instructions adopted by the Department of Finance. This estimate is to include any nondiscretionary costs or savings to local agencies and the costs or savings in federal funding to the state.

Health and Safety Code § 57005 requires CARB 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 regulatory amendments do not exceed this threshold. Therefore, this proposal is not a major regulation as defined by Health and Safety Code § 57005. Nonetheless, a review of potential costs of key alternatives is provided in Appendix E because the costs affected CARB staff's selection of a preferred option. Attendees of the December 2018 public workshop and earlier workshops and meetings did not propose any alternatives to those that CARB staff identified. (See Chapter IX for a description of alternatives and Chapter XI for a description of the public workshops.)

B. Description of Businesses

The proposed amendments directly affect about 161 retail and non-retail GDFs throughout California. About 31 percent of these GDFs are owned by businesses, about 65 percent are owned by state and local governments, and 4 percent are owned by federal and military agencies. The businesses are operated by a variety of organizations that vary in size, revenue, and types of operations and can be generally classified as:

	Percent of businesses	NAICS Codes
Agriculture	21%	111335, 112120, 115114
Amusement Park / Racetrack	10%	711212, 713110, 611620
Auto Sales / Rental	7%	441110, 532111
Cardlock Gas Stations	28%	447190
Fuels and Energy	7%	211120, 213111
Manufacturing	3%	333611
Retail Gas Stations	17%	447110
Trucking / Transport	7%	483111, 484110

Existing CARB regulations and Air District rules currently require about 187 GDFs throughout California to upgrade to Phase II EVR systems by March 13, 2019, that have not yet done so. These are GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing. This number of GDFs was estimated from survey responses provided by 7 Air Districts, including 4 of the largest districts that encompass about 51 percent of all ASTs in California. (See Appendix E section II for a description of the survey and estimation method.) The proposed amendments would reduce the cost of compliance with existing regulations for as many as about 161 of these facilities by delaying requirements to upgrade to Phase II EVR systems (Table 5). These cost-savings are described in section E of this chapter. The proposed amendments do not affect requirements for about 26 facilities that have an annual throughput greater than 480,000 gallons; these facilities would still need to comply with existing regulations to upgrade to Phase II EVR systems by March 13, 2019.

Table 5: Estimated number of Phase II EVR system upgrades required by March 13, 2019, by the existing regulations and proposed amendments

	Estimated number of GDFs with protected ASTs, pre-EVR Phase II systems, and remote dispensing, required to upgrade their equipment by state and Air District rules by March 13, 2019, and have not yet done so			
	In Attainment Areas [(a)]	In Nonattainment Areas		**TOTAL**
		Annual Throughput ≤480,000	Annual Throughput >480,000	
BAU [(b)]	0	161	26	**187**
Proposed Amendments	0	0	26	**26**

(a) Per the 2015 amendments, existing GDFs in attainment areas were not required to install Phase I EVR, but could continue to operate their pre-EVR Phase I equipment unless replaced by Phase I EVR system. Therefore, even with no amendment to Phase II EVR regulations, the GDFs are effectively exempted from Phase II EVR requirements. Per Executive Order VR-501, Phase II EVR equipment can be installed only on a system that has Phase I EVR equipment. Consequently, the proposed amendments provide clarity and consistency with the 2015 amendments but have no monetary effect on the business as usual conditions.

(b) BAU: Business as usual scenario, which describes conditions under economic baseline (existing) regulations in the absence of the proposed amendments. Note: The term "baseline", as used in the required economic analysis, arises under a different legal construct from CEQA. As such, it carries a distinct meaning from the CEQA concept of "baseline."

The proposed amendments are not expected to result in any new compliance costs for GDFs. Businesses own about 31 percent (~50) of the estimated 161 GDFs that may have delayed requirements to upgrade to Phase II EVR systems under the proposed amendments. Of these, about 59 percent (~30) are owned by California small businesses. The following information supports the small business estimate:

- The Air Districts provided the business names, addresses, and other site information for 41 business-owned GDFs that are required to install Phase II EVR systems under existing regulations. However, not all districts responded to CARB staff's survey. CARB staff used available information to estimate about 70 business-owned GDFs statewide that have not yet installed Phase II EVR systems, and about 50 businesses throughout the state that may be affected by the proposed amendments (those that may have delayed compliance dates because they have annual throughput ≤480,000 gallons per year).
- Of the 41 business-owned GDFs for which the districts provided information, 29 would have delayed compliance dates under the proposed amendments because their annual throughput is ≤480,000 gallons per year, and 17 of these

29 GDFs (59 percent) meet the definition of small business[18] based on CARB staff's review of business ownership information provided by the Air Districts and retrieved from the Dun & Bradstreet Business Profile database, California Environmental Reporting System database, and other information sources. The estimate of the total number of statewide business-owned GDFs that are small businesses affected by the proposed amendments is calculated by:
50 x 59% = 30.

The proposed amendments may negatively affect Phase II EVR system equipment manufacturers and installers. The proposed amendments would likely delay the timing of equipment sales to about 161 facilities by up to one to five years. Per CARB Executive Order VR-501-B, there are four companies that manufacture components of the only Phase II EVR system certified by CARB for use in California by GDFs with ASTs with remote dispensing. Of the four companies, only one is based in California, and it meets the definition of small business. Three of the companies manufacture hanging hardware components (nozzles, safe break valves, hoses, and breakaway couplings), and the fourth company manufactures the thermal oxidizer processor, the only processor certified for use with the available Phase II EVR system for ASTs. These companies can be generally classified as manufacturers of industrial process furnaces and ovens (NAICS code 33394), industrial valves (NAICS code 332911), measuring, dispensing, and other pumping equipment (NAICS code 333914), and motors and generators (NAICS code 33512).

In addition, there are over 200 California companies that have technicians currently certified by one or more of the AST EVR system equipment manufacturers to install their equipment. About 47 of these companies have technicians currently certified by both the processor manufacturer and at least one of the hanging hardware manufacturers, and are contractors for installing/designing systems (versus inspection and repair services). Because only technicians with current certifications can install vapor recovery equipment in California, CARB staff assumes these 47 companies are the most likely to be contracted by GDF owners to install Phase II EVR system upgrades. About 96 percent (45) of these 47 companies are small businesses. These companies can be classified under multiple NAICS categories, most typically "commercial and institutional building construction" (NAICS code 236220) and "all other specialty trade contractors" (NAICS code 238990).[19] CARB staff estimated the number of installation companies using lists of companies with certified technicians provided by the equipment manufacturers. CARB staff estimated the number of installation

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[18] Government Code § 11346.3, subdivision (a)(4)(B)

[19] Installation contractors also can be classified as: "engineering services" (NAICS code 541330), "environmental consulting services" (NAICS code 541620); "industrial machinery and equipment merchant wholesalers" (NAICS code 423830); "petroleum and petroleum products merchant wholesalers (except bulk stations and terminals)" (NAICS code 424720); other electronic and precision equipment repair and maintenance (NAICS code 811219); and commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance (NAICS code 811310).

companies that are small businesses based on information retrieved from the Dun & Bradstreet Business Profile database. CARB staff cannot predict which of the installation companies may be contracted by GDF owners to upgrade their AST Phase II systems, and therefore cannot predict how many might be affected by the proposed amendments through delayed revenue. Consequently, CARB staff assumes the impact of delayed revenue is distributed evenly across the 47 installation companies with technicians currently certified by both the processor manufacturer and at least one of the hanging hardware manufacturers.

In all, there are about 98 California businesses that may be impacted (either positively or negatively) by the proposed amendments, and about 76 (78 percent) are small businesses.

C. Estimated Costs

Direct and indirect costs and cost-savings related to the proposed amendments result from the delayed timing of requirements for 161 GDFs to upgrade pre-EVR Phase II systems to Phase II EVR systems by one to five years (see Table 1 in Chapter V). This economic analysis assumes a uniform age distribution of the 161 GDFs so that an equal number of GDFs would be upgraded in each year between 2019 and 2023. The economic analysis also includes 2024 through 2027 to encompass five-year loan payments by business-owned GDFs for Phase II EVR system upgrades.

The proposed amendments would allow about 161 GDFs with ASTs, about 31 percent (~50) of which are owned by businesses, to delay upgrades to Phase II EVR systems until the end of the useful life of their pre-EVR systems. Such upgrade delays would result in net cost-savings for California GDFs. At the same time, upgrade delays could result in delayed revenue for four equipment manufacturers, one of which is a California small business, and about 47 California equipment installation companies. Table 6 presents a summary of the costs and cost-savings that businesses and government agencies could incur under the proposed amendments. Table 7 presents a summary of the costs and cost-savings that *businesses* could incur under the proposed amendments from 2019 to 2027.

Table 6: Estimated Net Difference in Costs and Cost-Savings of Proposed Amendments Compared to BAU for Businesses and Government Agencies

YEAR	EVR System and Installation Costs for GDFs	Delay in Permitting Costs for GDFs	Delay in Permitting Fee Revenue for Air Districts	Loss in Useful Life Costs for GDFs	Fuel Lost Cost for GDFs	Delay in CA Manufacturer and Installer Revenues	NET IMPACT [a]
2019	(3,396,245)	(144,788)	144,788	(528,235)	5,281	3,504,918	(414,281)
2020	526,373	36,197	(36,197)	(396,176)	4,951	(876,229)	(741,082)
2021	607,045	36,197	(36,197)	(264,118)	3,692	(876,229)	(529,610)
2022	687,717	36,197	(36,197)	(132,059)	2,444	(876,229)	(318,127)
2023	768,389	36,197	(36,197)	-	1,200	(876,229)	(106,640)
2024	322,688	-	-	-	-	-	322,688
2025	242,016	-	-	-	-	-	242,016
2026	161,344	-	-	-	-	-	161,344
2027	80,672	-	-	-	-	-	80,672
Total [a]	**-**	**-**	**-**	**(1,320,588)**	**17,570**	**-**	**(1,303,019)**
Costs Only	3,396,245	144,788	144,788	-	17,570	3,504,918	7,208,309
Cost-Savings Only	(3,396,245)	(144,788)	(144,788)	(1,320,588)	-	(3,504,918)	(8,511,328)

a) All sums are calculated using unrounded numbers.

Table 7: Estimated Net Difference in Costs and Cost-Savings of Proposed Amendments Compared to BAU for Businesses

YEAR	EVR System and Installation Costs for GDFs	Delay in Permitting Costs for GDFs	Loss in Useful Life Costs for GDFs	Fuel Lost Cost for GDFs	Delay in CA Business Revenues		NET IMPACT [a]
					Manu-facturer	Installers	
2019	(322,688)	(45,246)	(180,761)	2,278	1,594,560	1,910,358	2,958,500
2020	(242,016)	11,312	(135,571)	2,181	(398,640)	(477,589)	(1,240,323)
2021	(161,344)	11,312	(90,380)	1,656	(398,640)	(477,589)	(1,114,986)
2022	(80,672)	11,312	(45,190)	1,108	(398,640)	(477,589)	(989,672)
2023	-	11,312	-	568	(398,640)	(477,589)	(864,350)
2024	322,688	-	-	-	-	-	322,688
2025	242,016	-	-	-	-	-	242,016
2026	161,344	-	-	-	-	-	161,344
2027	80,672	-	-	-	-	-	80,672
Total [a]	**-**	**-**	**(451,902)**	**7,792**	**-**	**-**	**(444,111)**
Costs Only	806,721	45,246	-	7,792	1,594,560	1,910,358	4,364,676
Cost-Savings Only	(806,721)	(45,246)	(451,902)	-	(1,594,560)	(1,910,358)	(4,808,787)

(a) All sums are calculated using unrounded numbers.

The itemized list below provides a summary of the methodology, staff assumptions, and data used in quantifying the direct costs for each category. See Appendix E section II for more detailed descriptions.

- Pre-EVR and EVR systems costs and timing of upgrades:
  Pre-EVR Phase II systems cost about $2,400 to $26,615 each, averaging $12,800, depending on the specifications of the AST and configuration of the entire system, and installation costs about $6,765. Simple pre-EVR Phase II systems do not have processors and cost less, while processors and supporting equipment add greater costs. Phase II EVR systems with processors cost about $18,566 to $21,455 each, averaging $20,002; processor costs alone average about $12,458. Installations cost about $6,000 to $25,000, averaging $14,925, depending on existing equipment onsite and what equipment is ultimately utilized or replaced. System and installation costs were provided by equipment distributors and installers. CARB staff assumes that upgrades for the ~161 GDFs with delayed compliance schedules under the proposed amendments would be spread evenly between 2019 and 2023. Table 1 (Chapter V) presents the schedule of Phase II EVR system upgrades assumed for cost and cost-savings calculations.

- Permit Fees:
  Local Air District permit fees are assessed before Phase II EVR upgrades are made, and typically include fees for application review, engineering analysis, inspection, witnessing testing, and permit renewal. Permit fees of this nature, among the Air Districts, average $1,131 and are assessed only during the upgrade process. Any additional permit fees not associated with the upgrade to Phase II EVR, i.e. renewal fees, would be incurred regardless of Phase II system equipment and as not considered in this rulemaking. The proposed amendments could delay the timing of Air District permitting activities for, and permit fee payments from, about 161 GDF owners by up to one to five years. As shown in Table 6, short-term cost-savings for GDF owners associated with delayed permit fees have corresponding permit fee revenue delays for the local Air Districts.

- Loan period:
  CARB staff assumed that businesses would have a five-year loan period with a five percent real interest rate for Phase II pre-EVR and EVR equipment and installation costs.

- Loss in Useful Life Costs for GDFs:
  Requiring the upgrade of pre-EVR systems before the end of their useful life results in costs due to lost equipment and installation value. Existing regulations (BAU) results in such costs for about 187 GDFs, while the proposed amendments result in such costs for only about 26 GDFs. Based on surveys for past rulemakings (CARB, 2015), CARB staff assumed pre-EVR Phase II systems have a useful life of about five years. CARB staff assumed installation of pre-EVR equipment was evenly distributed during the prior five years (2014 to 2018), and assumed costs for business-owned GDFs would include the before-

mentioned loan interest. For example, a pre-EVR system that is installed in 2015 and is replaced with an EVR system in 2019 would lose one year of pre-EVR system useful life. This would result in an estimated cost of $4,519, the annualized cost of the pre-EVR system assuming amortization over a five-year load period with five percent interest.

- Fuel Lost Costs:
  ASTs with Phase II pre-EVR systems lose more fuel through emissions than ASTs with EVR systems. Consequently, AST owners who continue using their current pre-EVR systems until end of useful life rather than replacing the systems by March 13, 2019, would have an increased cost due to fuel loss. Staff estimated the annual value (cost) of statewide fuel lost with the following equation: Total gallons lost (statewide emissions increase by GDF sector in tons per year divided by a conversion factor of 6.3 pounds/gallon gasoline) multiplied by the average value per gallon of the fuel lost ($3.71/gallon).

D. Estimated Private Sector Cost Impacts

1. Total Statewide Costs that California Businesses May Incur

The total estimated costs to all California businesses from the proposed amendments is $4,364,676, as shown in the "Costs Only" row of Table 7. The costs are due to changes in the timing of Phase II EVR installations and differences in fuel loss between Phase II pre-EVR systems and EVR systems. There are also cost-savings of $4,808,787 associated with the change in timing of Phase II EVR installation requirements. Permitting costs and costs due to delays in California manufacturer revenues are fully offset by cost-savings and additional revenue in other years. Therefore, the net effect on businesses is a cost-savings of about $444,111.

2. Costs for a Small Business

The typical California small business affected by the proposed amendments is a GDF with a protected AST with a Phase I EVR system, a pre-EVR Phase II system with remote dispensing. The proposed amendments would allow about 50 business-owned GDFs to delay upgrades to a Phase II EVR system until the end of the useful life of the pre-EVR system. California small businesses own about 59 percent (~30) of the 50 business-owned GDFs affected by the proposed amendments. Section B describes the small business determination. Table 7 describes the costs and cost-savings for business-owned GDFs, including small businesses. The total estimated costs to all business-owned GDFs is about $859,759, as summed from the "Costs Only" row of Table 7, not including the "Delay in CA Manufacturer Revenues" column. This equates to an average cost of about $17,195 ($859,758 ÷ 50) for an individual business, including small businesses, for the entire 2019-2027 period, which equates to $1,911 per business per year on average.

There are also cost-savings of about $1,303,869 for business-owned GDFs associated with the change in timing of Phase II EVR installation requirements, which equates to $26,077 per individual business for 2019-2027 and $2,897 per year per business on average. Therefore, the net effect on a typical small business is a cost-savings of about $444,111 for the nine-year period, which equates to about $8,882 per business (including small businesses) on average and $987 per year per business on average.

The proposed amendments may negatively impact one California small business that is a manufacturer of Phase II EVR equipment, and about 45 California small businesses that are equipment installers, that would experience delayed revenue under the proposed amendments. Section B describes the small business determination and the "Delay in CA Manufacturer and Installers Revenues" column in Table 7 describes the potential impact.

3. Costs for a Typical Business

The typical business affected by the proposed amendments is a GDF with a protected AST with a Phase I EVR system, a pre-EVR Phase II system, and with remote dispensing. The proposed amendments would allow about 50 business-owned GDFs to delay upgrades to a Phase II EVR system until the end of the useful life of the Phase II pre-EVR system. Table 7 describes the costs and cost-savings for business-owned GDFs. Calculation methods for estimating costs for a typical business-owned GDF are the same as those described for small business-owned GDFs in section D.2. During 2019-2027, costs for a typical business-owned GDF average $1,911 per year. Given there also is a cost-savings of $2,897 per year per business on average, the net effect on a typical business is a cost-savings of about $987 per year.

4. Share of Cost by Industry

The total estimated costs to all California businesses from the proposed amendments is $4,364,676, as shown in the "Costs Only" row of Table 7. About $859,759 (~20 percent) is distributed across 50 business-owned GDFs, as indicated by the industry breakdown with NAICS codes described in section B. About $1,594,560 (~36 percent) in delayed revenues is borne by one California equipment manufacturer, and about $1,910,358 (~44 percent) in delayed revenues is borne by as many as about 47 California equipment installers.

As described in section D.1, permitting costs and costs due to delays in California manufacturer revenues are fully offset by cost-savings and additional revenue in other years, resulting in a net cost-savings for business-owned GDFs and no net difference for equipment manufacturers and installers.

5. Costs for Individuals

No individuals are likely affected by the proposed amendments. Information provided by the Air Districts indicates no individuals, only businesses and government agencies,

own GDFs that have protected ASTs with pre-EVR Phase II systems with remote dispensing that are required to upgrade their systems by March 13, 2019, and have not yet done so.

6. Potential Impact on Business Creation or Elimination, Jobs, and Business Competitiveness

Business Creation or Elimination

No GDFs are expected to be created or eliminated in response to the proposed amendments. It is unlikely that the delay in the purchase requirements for Phase II EVR systems would substantially change the business models of businesses with ASTs to the extent that new businesses are created.

Under the business as usual (BAU) scenario, which includes impacts in absence of the proposed amendments, CARB staff anticipates that some businesses with ASTs would be negatively impacted by high compliance costs. Impacts are anticipated to include reducing the number and salary of employees and going out of business. Under the proposed amendments, these organizations would receive some financial relief through delayed compliance costs.

The proposed amendments may negatively impact manufacturers and installers of Phase II EVR equipment by delaying the timing of equipment sales to about 161 GDFs by one to five years. The impact is expected to be negligible for the large out-of-state manufacturers and for the installers because they provide equipment and services for a variety of AST and UST systems, of which equipment and installation for AST Phase II EVR comprise a very small portion. As mentioned previously, CARB staff estimates there are about 187 GDFs with protected ASTs with remote dispensing and Phase I EVR currently required to install Phase II EVR by state and local Air Districts that have not yet done so. In contrast, the California Environmental Reporting System database indicates that in all there are about 14,000 USTs and about 10,000 ASTs throughout California. CARB staff estimates approximately 2,800 AST GDFs are subject to one or more vapor recovery control and that nearly 1,000 GDFs with ASTs are subject to requirements to upgrade to Phase I EVR. Not all of these AST GDFs would be able to upgrade to Phase II EVR because there is not a certified Phase II EVR system for their configuration (i.e., these are not protected ASTs with remote dispensing).

Jobs Creation or Elimination

The proposed amendments delay the timing of requirements for about 161 GDFs to upgrade pre-EVR Phase II systems to Phase II EVR systems. Under the proposed amendments, these businesses and agencies would receive some financial relief through delayed compliance costs and avoidance of enforcement penalties that would be assessed under the BAU scenario. The financial relief could potentially result in additional employment growth.

The proposed amendments may negatively impact manufacturers and installers of Phase II EVR equipment by delaying the timing of equipment sales to about 161 GDFs by one to five years. The impact is expected to be negligible for the large out-of-state manufacturers and for the installers because they provide equipment and services for a variety of AST and UST systems. The single California-based equipment manufacturer that is a small businesses could experience elimination of one or more jobs.

Business Competitiveness

The proposed amendments are expected to have no noticeable effect on the ability of California businesses to compete with businesses in other states.

E. Estimated Benefits for Businesses

1. Cost-Savings

The proposed amendments provide benefits in the form of cost-savings for businesses that own GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing, that are required to upgrade their equipment by state and local Air District rules and have not yet done so. The cost-savings are due to delays in the timing of Phase II EVR system installations and avoiding costs due to value lost when GDFs replace pre-EVR systems before the end of their useful life. Cost-savings to California businesses from the proposed amendments is $4,808,787 as shown in the “Cost-Savings Only” row of Table 7.

When compared to the costs described in section B, these savings result in net cost-savings of about $444,111 for the 2019-2027 period (Table 7). The proposed amendments would allow about 50 businesses with ASTs to delay upgrades to Phase II EVR systems until the end of the useful life of their pre-EVR systems. Such upgrade delays result in cost-savings for California GDFs associated with:

- Maintaining the value of pre-EVR Phase II systems that would have been lost if they were required to be replaced by March 13, 2019, one to five years before the end of their useful life; and
- Delaying Phase II EVR equipment purchases, installation and permitting costs.

Cost-savings were estimated using the methods described in section C.

The proposed amendments could provide additional cost-savings in the form of avoidance of enforcement penalties and costs associated with using an alternative fuel source. As stated earlier, affected AST GDFs are required to upgrade to Phase II EVR systems by March 13, 2019, or to stop operating, and Air Districts are responsible for enforcing emission control measures at GDFs. Because this compliance deadline has passed, CARB staff expects affected AST GDF owners to either have stopped operating their AST GDFs and found alternative fuel supplies, or are operating their AST GDFs out of compliance. However, District-level information is not available to

estimate such BAU costs, and corresponding savings under the proposed amendments.

2. Business Expansion

As discussed in further detail in chapter II above, without the proposed amendments, the current Phase II EVR compliance schedule is anticipated to be economically infeasible for many GDFs, which could result in some businesses with ASTs reducing the number and salary of employees or going out of business. The proposed amendments are feasible and enforceable, and are not anticipated to cause businesses with ASTs to go out of business. Because of this, relative to the BAU, there is expected to be no effect or slight growth in industries with ASTs.

F. Health and Welfare of California Residents, Worker Safety, and the State's Environment

Government Code §11346.3(b)(1) requires state agencies to assess the benefits of proposed regulations to the health and welfare of California residents, worker safety, and the state's environment. As described in Chapter V, gasoline vapors contain reactive organic gases, which can lead to ozone and smog formation, and benzene, which is a toxic air contaminant. Reducing ROG and benzene emissions benefits the health and welfare of California residents and worker safety at GDFs by reducing ambient ground level ozone and benzene exposure.

Staff expects the proposed regulatory amendments would result in cost-savings of about $8,511,328 (net cost-savings of $1,303,019 when costs are considered; see Table 6) with no significant effect on emission reductions, improving regulatory consistency, and allowing more time for AST GDFs with lower emissions to comply with regulations. Costs to small and typical businesses and government agencies are due to delayed timing of equipment installation and are offset by cost-savings and revenue in other years.

The proposed amendments are not expected to have any health impacts on California residents, worker safety, and the state's environment because the proposed amendments would not lead to the creation of any new ROG and benzene emissions and would not increase existing emissions over today's levels. The proposed amendments would cause a minor delay (by about five years) in the full emission reduction benefits that would be realized under the existing regulations (BAU scenario). As described in Chapter V, the annual emission reduction benefits under the proposed amendments are expected to be the same as BAU by 2024. The delayed emission reduction benefit would not have a significant impact on the health and welfare of California residents and worker safety because the proposed amendments would still require the largest GDFs, which have the most emissions, to comply by March 13, 2019. About 187 AST GDFs are required to upgrade to Phase II EVR by March 13,

2019 and have not yet done so. Of these 187 AST GDFs, about 26 GDFs have throughput >480,000 gallons/year. These 26 GDFs account for the majority (~68 percent) of gasoline throughput and associated emissions from the 187 GDFs currently required to upgrade to Phase II EVR. CARB staff does not anticipate any cost or benefit to worker safety.

G. Fiscal Impact to State and Local Agencies

1. Fiscal Effect on Local Government

Existing CARB regulations and Air District rules currently require about 187 GDFs throughout California to upgrade to Phase II EVR systems by March 13, 2019. These are GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing, that are required to upgrade their equipment by state and local Air District rules and have not yet done so. The proposed amendments directly affect about 161 GDFs throughout California, those with annual throughout less than or equal to 480,000 gallons per year. About 44 percent (~71) of these 161 GDFs are owned by local governments. This number of GDFs was estimated from survey responses provided by 7 Air Districts, including four of the largest districts that encompass about 51 percent of all ASTs in California. (See Appendix E section II for additional information about the Air District survey.) The GDFs are operated by a variety of agencies that vary in size and types of operations and can be generally classified as:

	Percent of local agencies	NAICS Codes
Education	14%	485410, 611210
Fire Department	5%	922160
Police Protection	2%	922120
Port	5%	488310
Public Works	52%	221122, 2213, 221310, 221320, 237310, 811111
Transit Agency	10%	485210
Irrigation District	12%	221310

Direct and indirect costs and cost-savings related to the proposed amendments result from the delayed timing of requirements for GDFs to upgrade pre-EVR Phase II systems to Phase II EVR systems by one to five years. The proposed amendments would allow GDFs to delay upgrades to Phase II EVR systems until the end of the useful life of their pre-EVR systems. Such upgrade delays would result in net cost-savings for the GDFs owned by local governments. The costs and cost-savings for local government-owned GDFs for the current year and subsequent two fiscal years are summarized in Table 8. The calculation methods are identical to those described for

businesses, except that CARB staff assumes government-owned GDFs do not finance the cost of Phase II EVR systems, and instead incur the full cost in the year of purchase.

Table 8: Estimated Net Difference in Costs and Cost-Savings of Proposed Amendments Compared to BAU for Local Government

Fiscal Year	EVR System and Installation Costs for GDFs	Delay in Permitting Costs for GDFs	Delay in Permitting Fee Revenue for Air Districts	Loss in Useful Life Costs for GDFs	Fuel Lost Cost for GDFs	Net Impact [(a)]
2019/2020	(1,720,223)	(55,712)	126,690	(305,605)	3,079	(1,951,771)
2020/2021	491,492	15,918	(36,197)	(138,912)	1,693	333,994
2021/2022	491,492	15,918	(36,197)	(83,347)	1,206	389,072
Total	**(737,238)**	**(23,877)**	**54,296**	**(527,864)**	**5,978**	**(1,228,705)**
Cost Only	982,984	31,836	126,690	-	5,978	1,147,488
Cost-Savings Only	(1,720,223)	(55,712)	(72,394)	(527,864)	-	(2,376,193)

(a) All sums are calculated using unrounded numbers.

Local Air District permit fees are assessed before GDF owners upgrade their AST Phase II systems. The fees typically include fees for application review, engineering analysis, inspection, witnessing testing, and permit renewal. Permit fees of this nature, among the Air Districts, average $1,131 and are assessed only during the upgrade process. The proposed amendments could delay the timing of Air District permitting activities for, and permit fee payments from, about 161 GDF owners by up to one to five years. As illustrated in Table 6, short-term cost-savings for GDF owners associated with delayed permit fees have corresponding permit fee revenue delays for the local Air Districts. Table 8 shows the cost savings for three fiscal years for local agencies that own about 71 of the 161 GDFs in the “Delay in Permitting Costs for GDFs” column, and the permit fee revenue delays to the Air Districts for all 161 GDFs in the “Delay in Permitting Fee Revenue for Air Districts” column. This revenue delay is not expected to affect the number of permitting staff positions at the Air Districts.

In total, the proposed amendments provide a net cost-savings of about $1,228,705 for fiscal year 2019/2020 through fiscal year 2021/2022 for local governments (Table 8) when both cost-savings ($2,376,193) and costs ($1,147,488) are considered. This equates to a net annual savings of $409,568 ($1,228,705 ÷ 3 years). There is a net cost-savings of $1,283,001 for local government-owned GDFs for this three-year period. There is net cost of $54,296 due to delayed permit fee revenue for local Air Districts, which is offset by additional revenue in later years (Table 6).

As discussed above, the proposed amendments are expected to result in net cost-savings for local government-owned GDFs and no new costs, only delayed revenue, for

the districts. However, should the districts incur any costs, these costs are not reimbursable by the state because the districts can recover costs through services charges, fees, or assessments.

2. Fiscal Effect on State Government

Existing CARB regulations and Air District rules currently require about 187 GDFs throughout California to upgrade to Phase II EVR systems by March 13, 2019. These are GDFs equipped with protected ASTs, Phase I EVR systems, pre-EVR Phase II systems, and remote dispensing, that are required to upgrade their equipment by state and local Air District rules and have not yet done so. The proposed amendments directly affect about 161 GDFs throughout California, those with annual throughout less than or equal to 480,000 gallons per year. About 21 percent (~34) of these 161 GDFs are owned by state agencies. This number of GDFs was estimated from survey responses provided by seven Air Districts, including four of the largest districts that encompass about 51 percent of all ASTs in California. (See Appendix E section II for additional information about the Air District survey.) The GDFs are operated by a variety of agencies that vary in size and types of operations and can be generally classified as:

	Percent of local agencies	NAICS Codes
Correctional Institutes	10%	922140
Police Protection	55%	922120
Transportation	25%	926120
Water Resources	10%	221310

Direct and indirect costs and cost-savings related to the proposed amendments result from the delayed timing of requirements for GDFs to upgrade pre-EVR Phase II systems to Phase II EVR systems by one to five years. The proposed amendments would allow GDFs to delay upgrades to Phase II EVR systems until the end of the useful life of their pre-EVR systems. Such upgrade delays would result in net cost-savings for the GDFs owned by state agencies. The costs and cost-savings to state agencies for the current and subsequent two fiscal years are summarized in Table 9. The calculation methods are identical to those described for businesses, except that CARB staff assumes government-owned GDFs do not finance the cost of Phase II EVR systems, and instead incur the full cost in the year of purchase.

In total, the proposed amendments provide a net cost-savings of about $995,801 for FY2019/2020.

Table 9: Estimated Net Difference in Costs and Cost-Savings of Proposed Amendments Compared to BAU for State Government

Fiscal Year	EVR System and Installation Costs for GDFs	Delay in Permitting Costs for GDFs	Loss in Useful Life Costs for GDFs	Fuel Lost Cost for GDFs	Net Impact [(a)]
2019/2020	(823,769)	(26,679)	(146,346)	993	(995,801)
2020/2021	235,362	7,623	(66,521)	564	177,028
2021/2022	235,362	7,623	(39,913)	394	203,466
Total	**(353,044)**	**(11,434)**	(252,780)	**1,950**	(615,307)
Cost Only	470,725	15,245	-	1,950	487,920
Cost-Savings Only	(823,769)	(26,679)	(252,780)	-	(1,103,227)

(a) All sums are calculated using unrounded numbers.

IX. EVALUATION OF REGULATORY ALTERNATIVES

Government Code § 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. This chapter describes alternatives evaluated and provides reasons why these alternatives were not included in the proposal. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner than ensures full compliance with the authorizing law. CARB staff has not identified any reasonable alternatives that would lessen any adverse impact on small business. CARB staff considered all the alternatives proposed by attendees of the December 2018 public workshop and earlier workshops and meetings. See Chapter XI for a description of the public workshops.

A. Alternative 1: Do Not Change Existing EVR Regulations

CARB staff considered not adopting any new amendments, such that about 187 GDFs (versus 26 GDFs under the proposed amendments) would still be required to upgrade to Phase II EVR by March 13, 2019. While Alternative 1 would reduce the amount of delayed revenues for equipment manufacturers and installers and local Air Districts, CARB staff rejected this alternative because emission reduction improvements are minimal compared to the proposed amendments. Requiring the upgrade of all 187 GDFs by March 13, 2019 results in a higher individual cost to about 86 percent (161) of the GDFs (of which 50 are owned by businesses) while only resulting in a 23 percent gain in emission reductions (Table 10). Further, Alternative 1 would not allow 161 GDFs, many of which are owned by small California businesses, additional time to identify compliance financing options or alternative fueling options that already comply with Phase II EVR requirements. In addition, Alternative 1 does not accomplish the goals of aligning the structure of the Phase I and Phase II EVR requirements in CP-206 and improving clarity for the regulated community, and achieving gasoline vapor emission reductions in a cost-effective manner.

B. Alternative 2: Incorporate an Annual Gasoline Throughput Threshold of 150,000 Gallons

The proposed amendments allow existing GDFs required by state and Air District rules to have Phase II systems and with annual gasoline throughput of 480,000 gallons or less to continue to use pre-EVR Phase II systems until the end of their useful life. CARB staff considered instead having an annual gasoline throughput threshold of 150,000 gallons, which would result in about 121 GDFs being allowed compliance delays (Table 10), versus about 161 GDFs with the proposed amendments. Using the same methodology summarized in Chapter VIII and detailed in Appendix E, staff calculated the resulting costs and cost-savings to businesses and government agencies, and estimated emissions, that would result from this alternative. Table 10

summarizes and compares the results for all three alternatives and Appendix E provides the specific results for Alternative 2 (Appendix E, Attachment E-5, Tables A and B).

While Alternative 2 would reduce the amount of delayed revenues for equipment manufacturers and installers and local Air Districts, CARB staff rejected this alternative because it was more costly for GDFs with only minimal improvements in emission reductions. Requiring an additional 40 GDFs to upgrade to Phase II EVR by March 13, 2019, (of which about 16 are owned by businesses), compared to the proposed amendments, results in a reduction of the overall net savings by about a 24 percent (31 percent for California businesses), while only resulting in a 14 percent gain in emission reductions (Table 10). These percentages differ so markedly because the proposed amendments would require the largest GDFs (26 GDFs with throughput >480,000 gallons/year) that account for the majority (68 percent) of gasoline throughput and associated emissions to continue to comply with the existing compliance date of March 19, 2019. In contrast, the additional 40 GDFs that Alternative 2 would require to comply with the 2019 compliance date account for less than 20 percent of overall throughput. In addition, a threshold of 150,000 gallons per year was rejected by local Air Districts as being too restrictive for those regions of the state with less severe air quality problems. They argued that if individual Air Districts wished for increased emission reductions, than they could adopt rules requiring a lower throughput threshold, as is allowed by State law.

Table 10: Comparison of Alternatives 1 and 2 to Proposed Amendments

	Proposed Amendments (480,000 gal/year throughput threshold for compliance delay)	**Alternative 1** (Business As Usual)	**Alternative 2** (150,000 gal/year throughput threshold for compliance delay)
# of GDFs Required to Implement Phase II EVR by March 13, 2019	26	187	66
# of GDFs with Compliance Schedule Relief	161	0	121
# of CA Business-Owned GDFs with Compliance Schedule Relief	*50*	*0*	*34*
Net Cost-Savings Compared to Alternative 1 [(a)]	1,303,019	-	$981,136
Net Cost-Savings for CA Businesses [(a)]	*$444,111*	-	*$304,908*
Emissions in 2019-2023 (pounds) [(b)]	127,116	97,281	109,201

(a) Alternative 2 would reduce overall net cost-savings by about 25%, and net cost-savings for California businesses by about 31%, compared to the Proposed Amendments:

Overall: ($1,303,019 - $981,136) ÷ $1,303,019 = 25%; and

CA businesses: ($444,111 - $304,908) ÷ $444,111 = 31%.

(b) Alternative 1 would reduce 2019-2023 emissions by about 23% more compared to the Proposed Amendments: (127,116 - 97,281) ÷ 127,116 = 23%.
Alternative 2 would reduce 2019-2023 emissions by about 14% more compared to the Proposed Amendments: (127,116 - 109,201) ÷ 127,116 = 14%.

C. Alternative 3: Change Definitions of Remote Dispensing and Non-Remote Dispensing

These terms, "remote dispensing" and "non-remote dispensing," are referenced and inferred in existing AST EVR Executive Orders. CARB staff's proposed definitions for D-200 in Appendix B are based on input from Air District staff and reflect the interpretation they use in their permits:

- non-remote dispensing: a dispenser with a coaxial hose adapter (splitter valve) configured in such a way that it allows liquid condensate in the vapor return line to drain directly back into the head space of the aboveground storage tank.
- remote dispensing: a dispenser with a coaxial hose adapter (splitter valve) configured in such a way that it prevents liquid condensate in the vapor return line from draining directly back into the head space of the aboveground storage tank.

Before the December 2018 public workshop, a stakeholder requested that CARB change the definition of "non-remote dispensing" to so that its definition would state:

> *"Non-remote dispensing is a dispenser where all vapor carrying piping, and components; except coaxial dispensing hose, nozzle, and breakaway; are at an elevation above the top of the AST."*

In this scenario, the non-remote dispenser would need to be located on top of, or above, the AST. The alternative definition changes the intent of CARB staff's proposed definition, which is to allow flexibility in the exact placement of the dispenser while ensuring that liquid condensate in the vapor return line can return directly back to the head space of the AST.

The definition proposed by CARB staff aligns with Air District practices and would not subject a new class of ASTs, whose dispenser is not mounted directly on the AST, to Phase II EVR requirements. Alternative 3 would increase the number of AST GDFs defined as having "remote dispensing" and could increase the number of AST GDFs required to install Phase II EVR systems. This alternative might help partially or entirely offset potential economic impacts to equipment manufacturers and installers that may result from the delay in equipment sales and installations that would occur with the Phase II EVR compliance schedule delay under the proposed amendments and Alternative 2. However, the one Phase II EVR system certified and available in California was certified using a dispenser configuration that meets CARB staff's proposed definition. As a result, changing CARB staff's proposed definitions for D-200

would create an inconsistency with current Executive Order for the one certified Phase II EVR system that could not be resolved until equipment manufacturers submit a certification application to CARB for the new dispenser configuration. Consequently, CARB staff rejected Alternative 3. It should be noted, the certification application process can be initiated by equipment manufacturers without any rulemaking effort, and if the new configuration meets certification requirements, it would lead to a new Executive Order, which in turn would require additional ASTs to install Phase II EVR equipment.

D. Alternative 4: Phase II EVR Exemption for 187 AST GDFs

CARB staff considered the alternative of providing an exemption, versus delaying the compliance schedule, for the 187 GDFs that have not yet complied with the Phase II EVR requirements because such a small population of AST GDFs have the configuration addressed by the one certified Phase II EVR system. However, such an exemption would reduce the incentive for manufacturers to develop additional Phase II EVR systems for ASTs. This would conflict with the goals of CARB's Vapor Recovery Program to support full implementation of EVR regulations and ensure that emissions reductions that were envisioned when EVR regulations were adopted are cost-effective. Further, the success of CARB's regulatory programs relies on the actions each regulated entity takes to achieve its compliance obligations. When GDF owners comply with the Phase II EVR regulations, they take actions they would not otherwise have taken, spending money they would not otherwise have spent, to achieve emissions reductions required by law. When a business owner complies, it relies on its competitors also complying with the regulations so that there would be a fair and level playing field for all those impacted by the regulations. Recent air district surveys indicate more than 12 owners of existing and new AST GDFs have already installed Phase II EVR systems. Consequently, owners of AST GDFs—particularly business-owned GDFs—who have already complied with the Phase II EVR requirements would be economically penalized for compliance. Exempting the remaining 187 GDFs would create an unfair advantage for them by relieving them of the responsibility to do their part to help reduce air pollution. For these reasons, CARB staff rejected Alternative 4.

E. Health and Safety Code § 57005 Major Regulation Alternatives

Health and Safety Code § 57005 requires CARB 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 of an amount exceeding ten million dollars in any single year. The proposed regulatory amendments will not result in a total economic impact on state businesses of more than $10 million in one or more years of implementation. Therefore, this proposal is not a major regulation as defined by Health and Safety Code § 57005.

F. Cost Effectiveness of Proposed AST Amendments

As described above, under existing regulations (BAU or Alternative 1) an estimated 187 AST GDFs are required to upgrade to Phase II EVR by March 13, 2019, that have not yet done so. The proposed amendments would allow an estimated 161 of these AST GDFs to continue operating their currently installed pre-EVR Phase II systems beyond the March 2019 upgrade deadline, and Alternative 2 would allow an estimated 121 AST GDFs to continue such operations. For each of these AST GDFs, the estimated Phase II EVR upgrade cost could be delayed by up to about one to five years. At the same time, the proposed amendments and Alternative 2 would result in a delay in the expected emission reductions as compared to BAU (see Appendix E, Table E-4). Under the proposed amendments and Alternative 2, the total emissions per year would decrease every year as systems reach the end of useful life and upgrade, until reaching the same emissions rate as BAU in 2024.

All the scenarios (Alternative 1, proposed amendments, and Alternative 2) would implement Phase II EVR controls and therefore have greater emission reductions than if pre-EVR Phase II controls remained in place. Using the methodology detailed in Chapter III of Appendix E, staff calculated the cost effectiveness of the three scenarios from 2019 to 2024. Table 11 summarizes the cost effectiveness of Alternative 1, the proposed amendments, and Alternative 2 compared to pre-EVR Phase II controls. The cost per pound of emissions reduced under the proposed amendments increases each year until it is the same as BAU, from $6.48 per pound in 2019 to $26.52 in 2024. The cost per pound of emissions reduced under Alternative 2 increases each year from $12.92 per pound in 2019 to $26.52 in 2024. For comparison, the cost effectiveness of control measures for volatile organic compounds adopted between 1989 and 2013 ranged between about $0.28 and $7.22 per pound (in 2013 dollars) (CARB, 2013a).

Table 11: Cost Effectiveness of Phase II EVR Implementation under BAU and Proposed Amendments

	2019	2020	2021	2022	2023	2024
Cost effectiveness (cost per pound of emissions reduced)						
BAU (Alternative 1)	$31.82	$26.52	$26.52	$26.52	$26.52	$26.52
Proposed Amendments	$6.48	$11.13	$15.83	$19.88	$23.39	$26.52
Alternative 2	$12.92	$14.34	$17.58	$20.70	$23.64	$26.52

X. JUSTIFICATION FOR ADOPTION OF REGULATIONS DIFFERENT FROM FEDERAL REGULATIONS

California Health and Safety Code § 41954 requires CARB to adopt procedures and performance standards for controlling gasoline vapors from gasoline marketing operations, including transfer and storage operations to achieve and maintain ambient air quality standards. Government Code § 11346.2(b)(6) requires CARB to (a) describe its efforts to avoid unnecessary duplication and conflicts with federal regulations contained in the Code of Federal Regulations that address the same issues and (b) justify the adoption of any regulations that differ from existing federal regulations. There are no specific federal regulations requiring the use of Phase II EVR systems on ASTs. The intent of the federal regulations is to reduce emissions associated with the storage and transfer of gasoline during marketing operations, which is consistent with the intent of California's EVR program. Although not explicitly required by federal regulations, some other states and countries require the installation of vapor recovery systems that are certified by CARB. Thus, changes to CARB EVR certifications may have a national and international impact.

XI. PUBLIC PROCESS FOR DEVELOPMENT OF THE PROPOSED REGULATORY AMENDMENTS (PRE-REGULATORY INFORMATION)

In developing any regulation, the public, air districts, and affected industries play an important role in shaping regulatory proposals. CARB staff has made efforts to have an open process and to provide opportunity for input by all parties. Consistent with Government Code § 11346, subdivision (b), and § 11346.45, subdivision (a), and with the Board's long-standing practice, CARB staff held public workshops and had other meetings with interested persons during the development of the proposed regulatory amendments. These informal pre-rulemaking discussions provided staff with useful information that they considered during development of the regulatory amendments that are now being proposed for formal public comment.

A. Public Workshops

In 2017 and 2018, CARB staff held two public workshops in Sacramento regarding the upcoming Phase II EVR upgrade requirement for existing AST GDFs, AST GDF survey results, the costs and emissions reductions associated with the installation of Phase II EVR, and potential regulatory actions:

- 2017 – June 14 (Sacramento; 41 participants): History of California's Phase I and Phase II EVR requirements for ASTs; early recognition of the high costs associated with the Phase II EVR upgrade; steps staff planned to take to determine if amendments to existing requirements were needed, including the plan to survey AST GDFs as well as equipment installers and distributors.
- 2018 – December 4 (Sacramento; 24 participants): Present survey findings and cost effectiveness and emissions data and estimation methods; present staff's early draft regulatory amendments and potential economic effects for AST owners; opportunity for participants to ask questions and comment on the proposed amendments.

A toll-free conference call number or webcast was available for both workshops for those who wished to attend remotely. Teleconference participants were able to submit comments and questions by email during the workshop so that staff could respond to their concerns and answer their questions. The workshop attendees included representatives of air districts; GDF owners and operators; equipment manufacturers; service contractors and consultants; air districts; environmental consultants; and farm bureaus.

The draft proposed amendments to CP-206 and D-200 were provided two weeks prior to the 2018 workshop. The draft documents were posted on the Vapor Recovery webpage and were also provided via email list serve.

B. Webpage and Internet Availability

To facilitate public outreach during development of this rulemaking, staff used the existing Vapor Recovery Program webpage to post workshop notices and draft amendments. Stakeholders included on the CARB vapor recovery email list server were notified whenever new information was posted. As of December 2018, there were 4,417 subscribers to the vapor recovery list.

C. Other Outreach Efforts

Staff sent out multiple emails providing announcements to upcoming workshops, a description of the draft proposed amendments, and contact information for relevant staff. Appendix F provides the notice for the two workshops, held in June 2017 and December 2018. The December 2018 workshop focused specifically on the survey findings, analysis results, and the proposed regulatory amendments. CARB staff also notified stakeholders by email when a draft version of the proposed regulatory amendments was available for public review via the CARB website.

Additionally, in an effort to build consensus and minimize areas of disagreement throughout development of the proposed regulatory amendments, CARB staff consulted with representatives of the California Air Pollution Control Officers Association (CAPCOA) Vapor Recovery Subcommittee and provided regular updates to the CAPCOA Enforcement Managers and Engineering Managers. CARB staff developed the proposed amendments in coordination with a CAPCOA AST Working Group that was formed to address concerns about the cost effectiveness of Phase II EVR for ASTs. CARB staff also met with an equipment manufacturer and answered questions regarding the proposal.

XII. REFERENCES

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XIII. APPENDICES

A. Proposed Regulation Order Amended Certification Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities

B. Proposed Amendments to D-200: Definitions for Vapor Recovery Procedures

C. Proposed Amendments to CP-206: Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks

D. Regulatory Authority: Vapor Recovery Health and Safety Code Statutes

E. Estimated Emissions and Costs for Proposed Amendments and Alternatives

F. Notices for the June 2017 and December 2018 Public Workshops