

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Final Staff Report for

Proposed Amended Rule 1415 – Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems and Proposed Rule 1415.1 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems

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EXECUTIVE SUMMARY

In December 2009, the California Air Resources Board (CARB) approved the Management of High Global Warming Potential Refrigerants for Stationary Sources regulation (commonly called the Refrigerant Management Program) to help reduce the state's greenhouse gas (GHG) emissions to 1990 levels by year 2020, as required by the California Global Warming Solutions Act of 2006 (AB 32). The regulation will go into effect on January 1, 2011.

The Refrigerant Management Program's goal is to reduce emissions of high global warming potential (GWP) refrigerants such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) used in commercial and industrial refrigeration systems. The regulation requires registration, leak detection and monitoring, leak repair, retrofit or retirement, reporting, and recordkeeping for the affected industries including owners or operators of refrigeration systems, any person who services a refrigeration system, and distributors, wholesalers, and reclaimers of high GWP refrigerants.

Currently, the AQMD has a similar regulation, Rule 1415 – Reduction of Refrigerant Emissions from Stationary Refrigeration and Air Conditioning Systems (Rule 1415), which covers the reduction of ozone depleting refrigerant (CFC and HCFC) emissions. Rule 1415 requirements, however, apply to both stationary refrigeration and air conditioning systems whereas the Refrigerant Management Program covers only stationary refrigeration systems. In certain aspects, the CARB's regulation is more stringent than Rule 1415 particularly when it comes to leak inspection, leak detection and monitoring, and reporting requirements, while other components are less stringent. In particular, the CARB regulation allows leak repair periods of 45 or 120 days depending on the nature of the refrigeration system, and circumstances surrounding the leak, while the existing Rule 1415 requires completion of leak repairs within 14 days of initial leak detection. Further, the CARB rule has a provision that allows an exemption from the leak repair and retrofit or retirement plan requirements for a period of up to three years if specific exemption criteria are met. Rule 1415 does not provide such exemption. Staff's goal is to ensure that the AQMD refrigerant rule is equivalent in every aspect to the CARB regulation; therefore, a new Rule 1415.1 – Reduction of Refrigerant Emissions from Stationary Refrigeration Systems (Rule 1415.1) is being proposed to reduce refrigerant emissions from stationary refrigeration systems and to align AQMD's program with CARB's Refrigerant Management Program. Proposed Rule (PR) 1415.1 will consolidate all emission control requirements for stationary refrigeration systems currently in Rule 1415, and adopt all provisions in the state regulation pertaining to the control of high GWP refrigerant emissions.

For Rule 1415, which will apply only to air conditioning systems, staff is proposing to expand the scope of the rule to include high GWP refrigerants. In addition, staff's proposed amendments to Rule 1415 would place all emission control requirements solely for air conditioning systems under this Rule. Similar to PR 1415.1, staff's proposal would also allow an extended leak repair period of up to 45 days in situations where a certified technician is not available or the part(s) needed to complete the repair is unavailable within 14 days of initial leak detection.

Staff believes that having separate rules for air conditioning (PAR 1415) and refrigeration systems (PR 1415.1) would minimize confusion with regard to rule applicability, improve clarity, and enhance rule enforceability.

The CARB Refrigerant Management Program will result in an estimated GHG emission reduction for the South Coast Air Basin of approximately 3.5 MMT CO₂E by year 2020. Implementing PR 1415 is not expected to achieve additional GHG emission reductions beyond what is expected from the CARB regulation. Extending the leak repair period to 45 days in PAR 1415 could result in foregone emissions of 497 metric tons per year of CO₂E. For PR 1415.1, extending the time period during which a leak must be repaired from 14 days to 45 or 120 days for refrigeration systems could result in foregone CO₂E emissions of 5,849 metric tons per year. Additionally, the exemption provision in PR 1415.1 could result in foregone emissions of 4,618 metric tons per year of CO₂E. The total emissions impacts of relaxing the leak repair period in PAR 1415 and PR1415.1, including the exemption provision in PR1415.1, translate to foregone CO₂E emissions of 10,964 metric tons per year, which is a small amount when compared to the 3.5 MMT CO₂E emission reductions anticipated from this program.

BACKGROUND

Rule 1415 – Reduction of Refrigerant Emissions from Stationary Refrigeration and Air Conditioning Systems was adopted on June 7, 1991, and later amended on October 14, 1994, to reduce emissions of Class I and Class II ozone-depleting refrigerants from stationary refrigeration and air conditioning systems. Class I refrigerants are typically CFCs, while Class II refrigerants are all HCFCs, and are listed under section 602 of the Clean Air Act.

Production of CFCs and HCFCs were designated for phase out under the Montreal Protocol, primarily due to concerns about stratospheric ozone depletion. The use of these ozone depleting substances (ODS) as refrigerants is also regulated for the same reason. As a result of the Montreal Protocol's phase-out of ODS, the use of CFCs and HCFCs as refrigerants has been replaced with HFCs and PFCs, generally referred to as ODS substitutes. These ODS substitutes are not ozone depleters, but have much higher global warming potential. The use of ODS substitutes are increasing, and will continue to increase as ODS refrigerants are replaced by these high global warming potential ODS substitutes, particularly the HFCs. Consequently, greenhouse gas (GHG) emissions are projected to increase on a CO₂ equivalent basis.

The increase in GHGs in the atmosphere has been attributed to the average rise in the Earth's temperature that has been observed in recent years, which is commonly referred to as global warming. These GHGs make the Earth warmer by trapping heat from the sun in the earth's atmosphere, which increases the temperature. Many chemical compounds found in the Earth's atmosphere, such as methane, carbon dioxide, nitrous oxide, HCFCs, PFCs, and HFCs, act as GHGs. There is strong evidence that significant amounts of GHGs are added to the atmosphere as a result of human activities, thereby, contributing to global warming. Scientists believe that a warmer Earth may lead to changes in weather patterns, a rise in sea level, and may have significant impacts on plants, wildlife, and humans.

In 2006, the State Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), establishing a comprehensive program to reduce the state's GHG emissions to the 1990 level by year 2020. AB 32 directed CARB to begin developing discrete early action measures to reduce greenhouse gases while also preparing a scoping plan to identify the best approach to reach the 2020 target. In addition, AB 32 requires that any GHG emission reduction measures developed be technologically feasible and cost-effective.

In December 2009, the CARB Board approved the Management of High Global Warming Potential Refrigerants for Stationary Sources regulation, commonly referred to as the Refrigerant Management Program. This program is one of the early action measures adopted by CARB under AB32 aimed at reducing the state's GHG emissions. The adopted final regulation and related documents has been ~~submitted to approved by the Office of Administrative Law for final approval and/or action, which is expected sometime in on~~ October 20, 2010. This regulation is scheduled to go into effect on January 1, 2011.

The Refrigerant Management Program seeks to reduce emissions of high GWP refrigerants from stationary refrigeration systems. A high-GWP refrigerant is any compound used as a heat transfer fluid or gas, and includes CFCs, HCFCs, HFCs, PFCs, or any compound or blend of compounds with a global warming potential value equal to or greater than 150, or any ozone depleting substance as defined in Title 40 of the Code of Federal Regulation, Part 82, §82.3. These substances are GHGs which are thousands of times more potent than carbon dioxide (CO₂). The CARB regulation addresses stationary commercial and industrial refrigeration systems that can have high leak rates and minimal oversight. Specifically, facilities with refrigeration systems using more than 50 pounds of high GWP refrigerants, or those who service refrigeration systems, or distribute, sell or reclaim high GWP refrigerants, must comply with the regulation.

The CARB regulation requires registration, leak detection and monitoring, leak repair, retrofit or retirement, reporting, and recordkeeping for owners or operators of refrigeration systems subject to the regulation. Reporting and recordkeeping requirements are also applicable to distributors, wholesalers, and reclaimers of high GWP refrigerants. Additionally, required service practices for refrigerant management are applicable to any person who services a refrigeration system that uses a high GWP refrigerant.

The requirements in the CARB Refrigerant Management Program are similar to existing federal regulations under section 608 of the Clean Air Act, particularly in the areas of leak repair, required service practices, and recordkeeping requirements. In addition, the CARB regulation was developed to be as consistent as possible with the current Rule 1415. However, there are certain areas where the existing Rule 1415 differs with the CARB regulation.

While current Rule 1415 applicability is limited to ODS refrigerants, such as CFCs and HCFCs, the CARB Refrigerant Management Program includes both ODS and ODS substitute refrigerants. In addition, Rule 1415 covers both refrigeration and air conditioning systems while the CARB regulation is limited to refrigeration systems only. In certain aspects, the CARB's regulation is more stringent than Rule 1415 particularly when it comes to leak inspection, leak detection and monitoring, and reporting requirements, while other requirements are less stringent. In particular, the CARB regulation allows leak repair periods of 45 or 120 days depending on the nature of the refrigeration system, and circumstances surrounding the leak, while the existing Rule 1415 requires completion of leak repairs within 14 days of initial leak detection. Further, the CARB rule has a provision that allows an exemption from the leak repair and retrofit or retirement plan requirements for a period of up to three years if specific exemption criteria are met. Rule 1415 does not provide such exemption.

Staff's proposal to create a new Rule 1415.1 to control high GWP refrigerant emissions solely from stationary refrigeration systems would align AQMD's regulation with CARB's Refrigerant

Management Program. PR 1415.1 will consolidate all emission control requirements for stationary refrigeration systems currently in Rule 1415, and incorporate all provisions in the state regulation to reduce emissions of high global warming potential refrigerants. By proposing Rule 1415.1, AQMD staff can implement or enforce the state's Refrigerant Management Program, which is expected to be done through a Memorandum of Understanding (MOU) with CARB. The CARB MOU will provide additional guidelines related to the implementation and enforcement of the Refrigerant Management Program, including rule interpretation and training. The CARB regulation is based largely on the AQMD's existing program for controlling refrigerant emissions from stationary refrigeration systems.

In addition, the proposed changes to Rule 1415 would place all emission control requirements for air conditioning systems under this rule. Staff believes that proposing separate rules for air conditioning (PAR 1415) and refrigeration systems (PR 1415.1) would minimize confusion with regard to rule applicability, improve clarity, and enhance rule enforceability.

LEGISLATIVE AUTHORITY

The California Legislature created the South Coast Air Quality Management District (AQMD) in 1977 (The Lewis-Presley Air Quality Management Act, Health and Safety Code section 40400 et seq.) as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin). The AQMD obtains its authority to adopt, amend, or rescind rules and regulations from Health and Safety Code sections 39002, 40000, 40001, 40702, 41508, and 41700.

RULE PROPOSAL

Proposed Amended Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems

Staff's proposal is to amend Rule 1415 to incorporate all registration, emission control, and recordkeeping requirements in the rule solely for stationary air conditioning systems. Staff's proposal will also expand the scope of the current rule to include all high GWP refrigerants, similar to the CARB regulation for stationary refrigeration systems. Other administrative changes to the rule are also proposed. A summary of the proposed amendments to Rule 1415 is as follows:

1. Amend Rule Title

Currently, the rule title pertains to stationary refrigeration and air conditioning systems. Staff's proposal revises the rule title solely for the reduction of refrigerant emissions from stationary air conditioning systems, and eliminates reference to refrigeration systems.

2. Modify Rule Purpose and Applicability, subdivisions (a) and (b)

Staff is proposing to modify the rule purpose to include emission reductions from high global warming potential refrigerants, and limit the applicability of this to stationary air conditioning systems only. Requirements pertaining to stationary refrigeration systems such as refrigerators, freezers, and other refrigeration appliances will be in the Proposed

Rule 1415.1 – Reduction of Refrigerant Emissions from Stationary Refrigeration Systems.

3. Amend the definition section, subdivision (c)

Staff proposes to add definition for new terms used in the rule and modify existing ones to clarify rule intent, and make the definitions consistent with Proposed Rule 1415.1 as follows:

- Additional refrigerant charge
- Air conditioning system
- Audit
- Bubble test
- Certified reclaimer
- Certified refrigerant recovery or recycling equipment
- Certified technician
- Chlorofluorocarbon or CFC
- Component
- Global warming potential value
- High global warming potential refrigerant
- Hydrochlorofluorocarbon or HCFC
- Hydrofluorocarbon or HFC
- Perfluorocarbon
- Reclaim
- Recycle
- Refrigerant leak
- Self-contained recovery equipment

In addition, staff is proposing to delete terms that are no longer applicable, as follows:

- Approved recycling equipment
- Certified auditor
- Class I refrigerant
- Class II refrigerant
- High-pressure refrigeration system
- Low-pressure refrigeration system

- Maintenance
 - Refrigeration system
 - Very high pressure refrigeration system
4. Move registration and leak inspection requirements in paragraph (d)(2) to paragraph (d)(1), and clarify requirements that pertain to owners or operators of air conditioning systems as follows:
 - a) Registration Plan requirement in subparagraph (d)(2)(C) is moved to subparagraph (d)(1)(A). Further, staff has added new information to be included during submission of the Registration Plan, consistent with existing data reported in the current Rule 1415 Registration Form.
 - b) The annual audit requirements in subparagraphs (d)(2)(A) and (d)(2)(B) are moved to and consolidated under subparagraph (d)(1)(B). Language pertaining to leak detection methods has been modified to reflect current industry practices, such as the use of refrigerant leak detection device, a bubble test, or observation of oil residue. Further, the rule provision in clause (d)(2)(B)(i) requiring a certified technician to conduct leak inspection is removed to make it consistent with state and federal leak inspection requirement.
 - c) Delete redundant recordkeeping requirement in clause (d)(2)(B)(ii). This requirement is included in the Recordkeeping section, paragraph (e)(1).
 5. Move leak repair requirements in paragraph (d)(3) to paragraph (d)(2).
 6. Add a provision in paragraph (d)(3) to allow leak repair period of up to 45 days.

Staff's proposing a longer repair period of up to 45 days to fix a refrigerant leak only in situations where a certified technician is not available, or the part(s) needed to complete the repair is unavailable within 14 days of initial leak detection. The owner or operator of the affected refrigeration system shall keep a written record to prove that a certified technician or the required parts are not available.
 7. Move requirements in paragraph (d)(1) to paragraph (d)(4). In addition, language is proposed in (d)(4)(A) to clarify the U.S. EPA certified technician requirement.
 8. Move language in paragraph (e)(5), under Recordkeeping section, to subparagraph (d)(5)(B) under Requirements section, which allows an authorized representative of a person employing at least one certified technician to purchase refrigerant. Consequently, similar language in paragraph (e)(5) is proposed for deletion.
 9. Modify language by deleting the words "Class I or Class II" and replacing them with "high global warming" in paragraph (d)(6) to clarify rule intent and enhance rule enforceability.
 10. Modify certain languages in subdivision (e), Recordkeeping.

Staff is proposing to add clarifying language in paragraphs (e)(1), (e)(4) and (e)(5), as well as delete obsolete rule language in (e)(1)(iv) and (e)(8)(D) pertaining to permit number requirement for refrigerant recovery and recycling equipment. Such equipment

is now exempt from permit requirements pursuant to Rule 219 (d)(11). Facilities are expected to continue using the Rule 1415 Recordkeeping Forms when documenting annual audits and leak repair activities for each air conditioning system pursuant to the recordkeeping provisions of paragraph (e)(1). Such records shall be kept at the facility for a minimum of 5 years, and shall be made available to the Executive Officer upon request.

Proposed Rule 1415.1 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems

As stated in the previous section, Proposed Rule 1415.1 mirrors CARB's Refrigerant Management Program, and will implement all provisions in the state regulation to reduce emissions of high GWP refrigerants. Staff is proposing to incorporate the following provisions pertaining to stationary refrigeration systems in Rule 1415.1:

1. Rule Title

Staff's proposed rule title is specific to the reduction of refrigerant emissions from stationary refrigeration systems only.

2. Purpose and Applicability

The scope and applicability is for high GWP refrigerants used in stationary refrigeration systems.

3. Definitions

Staff is proposing 56 definitions for terms used in the rule in order to clarify rule intent and enhance rule enforceability. These definitions are consistent with those found in the CARB Refrigerant Management Program.

4. Registration Requirements, paragraph (d)(1)

Staff is proposing that owners and operators of refrigeration systems with full charge greater than 50 lbs of high GWP refrigerant submit annually a Registration Plan to the District. However, registration with the District ceases once the CARB registration requirements for the refrigeration system begins. Registration of the refrigeration system with CARB will be required in 2012 for large refrigeration systems (full charge greater than or equal to 2,000 lbs refrigerant); 2014 for medium-size refrigeration systems (full charge equal to or greater than 200 lbs but less than 2,000 lbs refrigerant); and 2016 for small refrigeration systems (full charge greater than 50 lbs but less than 200 lbs refrigerant). For facilities with multi-size systems, e.g. large and medium-size refrigeration systems operating at the facility, the owner or operator has the option of registering the medium-size refrigeration system at the same time as the registration for the large system is due in 2012, even though registration of a medium-size refrigeration system would not be due until year 2014 if it was the largest or only system operating at the facility.

The proposed registration provision also includes information that facilities need to provide about the refrigeration systems during registration, and a provision requiring initial and annual implementation fees to cover the costs of administering and enforcing the rule based on fee guidelines established by CARB.

Currently, CARB's initial and annual implementation fees for large refrigeration systems (full charge greater than or equal to 2,000 lbs refrigerant) are both set at \$370 per facility, and \$170 per facility for medium-size refrigeration systems (full charge greater than or equal to 200 lbs but less than 2,000 lbs refrigerant). Fees paid are based on the largest system operating at the facility; therefore, a facility with both large and medium-size refrigeration systems operating will pay an initial and annual implementation fee of \$370. There is no implementation fee for small refrigeration systems. Additionally, the proposal includes change of ownership requirements for refrigeration systems previously registered with CARB.

5. Leak Detection and Monitoring Requirements, paragraph (d)(2)

The proposed requirements incorporate existing Rule 1415 and CARB's regulation on leak inspection and monitoring. Prior to January 1, 2011, owners or operators of refrigeration systems, with full charge capacity greater than 50 pounds of high GWP refrigerants, are required to conduct annual leak inspection of their refrigeration system to ensure that the system does not have refrigerant leaks. Annual leak inspection is already being done by owners or operators of refrigeration systems, and the proposed provision is a continuation of an existing leak inspection requirement in Rule 1415 for refrigeration systems.

Beginning January 1, 2011, owners or operators of large refrigeration systems (full charge greater than or equal to 2,000 lbs refrigerant) are required to conduct monthly leak inspections. Quarterly leak inspections are required for medium-size refrigeration systems (full charge greater than or equal to 200 lbs but less than 2,000 lbs refrigerant), while small refrigeration systems (full charge greater than 50 lbs but less than 200 lbs refrigerant) will continue to conduct annual leak inspections. These leak inspection requirements do not apply if the refrigeration system has an automatic leak detection system. In comparison, current Rule 1415 requires an annual leak inspection regardless of the size of the refrigeration system, considered to be less stringent for large and medium-size refrigeration systems.

In addition, the proposal will require the installation of an automatic leak detection system for large refrigeration systems beginning in year 2012. The automatic leak detection system has to be calibrated annually, i.e., within one year of installation and every year thereafter, using the manufacturer's recommended procedures to ensure that the system accurately detects a vapor concentration level of 10 parts per million (ppm) of the specific refrigerant used in the refrigeration systems, and alerts the operator when 100 ppm of vapor concentration is reached. In addition, sensors or intakes of the automatic leak detection system shall be placed in the proximity of the compressor, evaporator, condenser, and other areas with a high potential for a refrigerant leak. Based on discussions with CARB, the specific placement of sensors was not defined in the regulation in order to allow flexibility in accommodating the different application-

specific designs of refrigeration systems and refrigerant monitoring systems. The proximity of sensors to the refrigeration system parts with high potential for refrigerant leaks would be dependent on each installation, but need to be close enough to the refrigeration system's principal components to detect a leak. Leak inspection methods consistent with industry practices, e.g. refrigerant leak detection device, bubble test, observation of oil residue, are also being proposed.

6. Leak Repair Requirements, paragraph (d)(3)

Consistent with Rule 1415, the proposal will require the repair of a refrigerant leak within 14 days of initial leak detection. In order to be consistent with the CARB regulation, however, PR 1415.1 will allow longer repair periods of 45 days and 120 days depending on the nature of the refrigeration system, and the circumstances surrounding the leak. For example, if a certified technician or a part needed to repair the refrigerant leak is not available within 14 days of initial leak detection, or the leak repair requires an industrial shutdown, then additional time to complete the repair may be allowed up to 45 days from initial leak detection. Further, facilities that are subject to the Mandatory Greenhouse Gas Emissions Reporting requirements under section 101 of the California Code of Regulations may qualify for a 120-day repair period. Such facilities include cement plants, electrical generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cogeneration facilities, and industrial sources that emit more than 25,000 MT CO₂ per year.

The proposal will also require the owner or operator to prepare and implement a retrofit and retirement plan if the refrigerant leak cannot be repaired within the allowable repair period of 14, 45, or 120 days.

7. Retrofit or Retirement Plan Requirements, paragraph (d)(4)

The proposed provision will require the owners or operators of refrigeration systems that continue to leak to establish a schedule to retrofit or retire the system within six months of initial leak detection. All work shall be completed during this six-month period. This section also includes specific information that needs to be included in the plan pertaining to the facility and to the retrofitted or newly installed refrigeration system.

The retrofit or retirement plan is not required to be submitted to the Executive Officer, but needs to be maintained and kept at the facility.

8. Approval of Exemptions, paragraph (d)(5)

This rule provision outlines specific conditions upon which a facility may be exempted from the leak repair and retrofit/retirement plan requirements for up to three years. Such provision allows flexibility in rule implementation to address significant hardship as a result of complying with the leak repair and retrofit/retirement plan requirements in the rule. Facility owners or operators need to submit a written application to the Executive Officer demonstrating that one or more of the exemption criteria have been met.

Any exemption granted may be extended for additional periods of up to three years (maximum of six years exemption) if the Executive Officer determines that the

demonstrations made to satisfy the exemption remain valid. Based on additional guidance from CARB staff, any exemption and extension granted may not necessarily be for the full three years as a facility has to submit documentation to justify the exemption, including any mitigation and compliance plans. For any extensions, a facility must document that the criteria for granting the exemption remain valid, including reasons why the mitigation and compliance plans have not been effective.

9. Required Service Practices and Prohibitions, subdivision (e)

Staff is proposing specific required service practices for a person who installs, services, maintains, repairs or disposes of any refrigeration systems, regardless of its charge size. The proposed rule also includes provisions for operating a certified refrigerant recovery or recycling equipment, and prohibitions pertaining to the sale, use and disposal of refrigerants. Some of the requirements include the mandatory use of U.S. EPA certified technician for service or repair of refrigeration systems; recovery and recycling of refrigerant and the use of certified refrigerant recovery and recycling equipment during leak repair; and restrictions on the sale of refrigerants.

The proposed provisions, expanded to include high GWP refrigerants, are modeled from Title 40, Part 82 of the Code of Federal regulations, Subpart F requirements specific to ODS refrigerants. In addition, most of these provisions are already part of the requirements in the current Rule 1415, but limited to ODS refrigerants.

10. Reporting Requirements, subdivision (f)

Staff's proposal includes reporting requirements for owners or operators of refrigeration systems, including refrigerant distributors, wholesalers, and reclaimers. Specifically, owners or operators of large and medium-size systems are required to submit annually to CARB a Facility Stationary Refrigeration Report (Annual Report). There is no reporting requirement for facilities with small refrigeration systems.

Submission of the Annual Report begins in year 2012 for an owner or operator of a facility with a large refrigeration system, and year 2014 for an owner or operator of a facility with a medium-size refrigeration system. The Annual Report contains information about the refrigeration system such as equipment type and model, specific data on refrigeration system service and leak repairs, as well as refrigerant purchases and use information.

Refrigerant distributors or wholesalers are also required to report annually to CARB specific information for the previous calendar year on each type of high GWP refrigerant that was purchased or received for the purpose of subsequent resale; high GWP refrigerants sold or distributed, excluding sales to facilities outside of California or to a refrigerant distributor or wholesaler for eventual resale; or high GWP refrigerants shipped to a certified reclaimer. In addition, certified reclaimers are required to submit an annual report on the amount of high GWP refrigerants received for reclamation or destruction, the amount of high GWP refrigerant reclaimed in California, or the amount of high GWP refrigerant shipped outside of California for reclamation or destruction.

CARB is developing a web-based reporting system that facilities will be able to use for the reporting requirements.

11. Recordkeeping Requirements, subdivision (g)

This section describes recordkeeping requirements for facilities with stationary refrigeration systems, refrigerant wholesalers or distributors, refrigerant reclaimers, and persons owning and operating a certified refrigerant recovery or recycling equipment. CARB clarified that documentation of leak detection system may include the type of leak detection method used at the facility such as automatic leak detection system, leak detection device, bubble test, etc, and any records generated by the leak detection system used. These may be strip charts, hand filled out forms, computer records, etc.

12. Exemption Section, subdivision (h)

Staff is proposing to add exemption provisions in the rule as follows:

- a. Exemption for tactical support equipment, as defined in paragraph (c)(55);
- b. Criteria for fee exemption;
- c. Conditions for exemption from leak repair and retrofit/retirement plan requirements; and
- d. Exemption from the contractor's license requirements.

13. Section Pertaining to Violations, subdivision (i)

This subdivision clarifies enforcement actions for failure to comply with the provisions of the rule.

14. Severability Section, subdivision (j)

This section is added to clarify that in the event any provision of the rule is invalidated by judicial order, the remainder of the rule shall remain in effect.

EMISSIONS INVENTORY AND REDUCTIONS

The emissions inventory for high GWP refrigerants used in stationary refrigeration system was developed by CARB using several models. First, CARB utilized the United States Environmental Protection Agency (U.S. EPA) Vintage Model in determining national GHG emissions estimates for years 2010-2020. This model was developed to estimate nationwide patterns of GHG emissions of HFCs, PFCs, CFCs, and HCFCs from all major emission sources, including refrigerant usage.

In order to get a rough estimate of statewide GHG emissions from stationary refrigeration and air conditioning units, CARB scaled down the national estimates from the U.S. EPA Vintage Model to California's proportion of the U.S. population of 12.5%. In addition, CARB used additional California-specific data sources to further refine the emissions estimates and establish a more accurate year 2010 baseline emissions for California, with year 2020 as the initial target date for AB 32 measures. Details of CARB's methodology for estimating statewide GHG emissions inventory are discussed in Appendix B of CARB's Initial Statement of Reasons for Proposed

Regulation for the Management of High Global Warming Potential Refrigerants for Stationary Sources, dated October 23, 2009.

The following table shows the number of facilities statewide with stationary refrigeration systems with refrigerant full charge of at least 50 pounds, including year 2010 baseline GHG emissions and projected pre-rule emissions for year 2020. The total statewide GHG emission reduction by year 2020 from implementing the Refrigerant Management Program is about 8.1 MMT CO₂E per year.

Table 1 – Emissions Inventory for High GWP Refrigerants in Refrigeration Systems

¹ Statewide Commercial Refrigeration Systems with Full Charge Greater Than or Equal to 50 lbs.					
		Emissions in Million Metric Tons CO ₂ Equivalent (MMT CO ₂ E)			
Equipment Size	Number of Facilities	2010 Baseline Emissions	2020 Pre-Rule Emissions	2020 Total GHG Emission Reductions	2020 Post-Rule Emissions
Small Commercial (50 to <200)	15,500	1.2	1.4	0.9	0.5
Medium Commercial (200 to <2000)	8,500	5.7	7.9	3.3	4.6
Large Commercial	2,000	5.0	6.5	3.9	2.6
Total	26,000	11.9	15.8	8.1	7.7

¹ Appendix B of CARB's Initial Statement of Reasons for Proposed Regulation for the Management of High Global Warming Potential Refrigerants for Stationary Sources, dated October 23, 2009

Following CARB's methodology, the statewide emissions inventory is scaled down to South Coast Air Basin's proportion of the state population of 43% to determine GHG emissions for the South Coast Air Basin. As a result, the year 2010 baseline GHG emissions for the South Coast Air Basin is estimated at 5.1 MMT CO₂E, and year 2020 pre-rule GHG emissions is about 6.8 MMT CO₂E. The total GHG emission reduction for the South Coast Air Basin portion is approximately 3.5 MMT CO₂E by year 2020. However, this is not an incremental emission reduction from Proposed Rule 1415.1, but rather reflects the projected GHG emission reductions as a result of implementing the CARB's Refrigerant Management Program that focuses on best management practices to minimize the emissions of refrigerants.

PAR 1415 does not result in additional GHG reductions since the proposed changes are administrative in nature.

However, staff estimates that extending the repair period from 14 days to 45 days in PAR 1415 for air conditioning systems could result in 497 metric tons per year of CO₂E emissions foregone. For PR 1415.1, extending the time period during which a leak must be repaired from 14 days to 45 or 120 days for refrigeration systems could result in 5,849 metric tons per year of

foregone CO₂E emissions. In addition, PR1415.1 would include certain exemptions from leak repair and retrofit or retirement plan requirements for up to three years. Approximately 4,618 metric tons per year of CO₂E emissions foregone could result from these exemptions. The total emissions impacts of the slightly relaxed leak repair requirements in PAR 1415 and PR1415.1 are estimated to be 10,964 metric tons per year of foregone CO₂E emissions. However, an estimated 3.5 million metric tons of CO₂E emission reductions are expected from fully implementing the proposed regulation.

COST

Beginning January 1, 2011, facilities with refrigeration systems with full charge greater than 50 pounds of high GWP refrigerants have to comply with CARB's regulation for the Management of High Global Warming Potential Refrigerants or generally referred to as the Refrigerant Management Program, and would incur additional cost to comply with the CARB regulation. Staff's proposal is administrative in nature and is designed to make the District's refrigerant rule equivalent to and consistent with the CARB regulation. Compliance with PR 1415.1 will require facilities to register their refrigeration systems annually with the AQMD until CARB registration begins in 2012 for large systems, 2014 for medium-size systems, and 2016 for small refrigeration systems. The total cost of complying with PR 1415.1 from registering refrigeration systems with the AQMD is estimated to be \$1.28M in 2011, \$745K in 2012, \$1.18M in 2013, \$516K in 2014, and \$764K in 2015.

It is worthwhile to note that CARB's cost evaluation of the Refrigerant Management Program indicates that owners or operators of refrigeration systems can benefit financially through implementation of the refrigerant best management practices required in the regulation. Such practices would reduce refrigerant purchases needed to replenish the refrigerant that had leaked and, thus, result in cost savings to the owners or operators of refrigeration systems. Details of the Refrigerant Management Program's cost analysis are contained in Appendix C of CARB's Initial Statement of Reasons for Proposed Regulation for the Management of High Global Warming Potential Refrigerants for Stationary Sources, dated October 23, 2009.

(<http://www.arb.ca.gov/regact/2009/gwprmp09/refappc.pdf>)

For PAR 1415, staff's proposal will also require registration of air conditioning systems using high GWP refrigerants other than CFCs and HCFCs, such as HFCs and PFCs. Based on CARB's inventory, it is estimated that about 2,000 facilities with stationary air conditioning units using HFCs and PFCs in the South Coast Air Basin will be affected by the registration requirements in PAR 1415. Based on the current fee schedule for Rule 1415 Registration Plan, the estimated compliance cost industry-wide will be \$115,000 annually.

SOCIOECONOMIC ASSESSMENT

The proposed amendments to Rule 1415 and Proposed Rule 1415.1 align the AQMD's requirements for GHG reductions with CARB's Refrigerant Management Program (RMP). The proposed amendments to Rule 1415 would require that facilities with air conditioning (AC) systems that use high global warming potential (GWP) refrigerants such as HFC and PFC register with AQMD every two years. Currently, only facilities with AC and refrigeration units using ODS refrigerants are required to register. All the references relating to refrigeration systems in the existing Rule 1415 would be removed and instead codified in PR 1415.1, which would adopt all the provisions in the state RMP regarding the control of high GWP and ODS emissions used in stationary refrigeration systems. PR 1415.1 would implement an annual registration through the AQMD until these systems are required to register with CARB in 2012, 2014, or 2016, depending on the size of the refrigeration system.

Based on estimates from CARB, the registration requirement for PAR 1415 is expected to affect approximately 2,000 facilities in the basin, using HFC and PFC refrigerants for AC systems. These facilities are spread in nearly every sector of the local economy. CARB estimated that over 11,100 facilities in the basin would be affected by PR 1415.1. Facilities with refrigeration systems are mostly in the sectors of manufacturing (NAICS 31-33), retail trade (44-45), transportation and warehousing (NAICS 48-49), educational services (NAICS 61), health care and social assistance (NAICS 62), and other services (NAICS 81).

The proposed amendments to Rule 1415 would add a \$114.66 registration fee (based on the fee rate in Rule 306) on facilities with AC systems that use HFC and PFC refrigerants. The estimated total additional cost to these facilities for PAR 1415 is \$229,000, payable to the AQMD every two years, beginning in 2012.

The registration fee under PR 1415.1 would be \$114.66 every year as well. Upon adoption, PR 1415.1 would require an affected facility to register at the start of its operation, and every year thereafter, until CARB registration begins. Since the last registration for refrigeration systems under the existing Rule 1415 occurred in February 2010, the next registration under PR 1415.1 is expected to be in February 2011. The registration deadlines in the CARB regulation will be 2012 for large systems, 2014 for medium systems, and 2016 for small systems of ODS and high GWP refrigerant users, respectively. CARB does not charge a fee to small systems.

The impact of PR 1415.1 herein is assessed relative to the CARB's RMP and the existing Rule 1415 on refrigeration. As such, the impact of PR 1415.1 would be an additional registration fee payment by HFC and PFC users to the AQMD before the CARB's RMP becomes effective as well as the additional payment resulting from the more frequent registration by ODS users (from biennial to annual). Table 2 shows the impact of PR 1415.1 on users of refrigerants. Since a facility may own refrigeration systems with more than one size, it is further assumed that a facility owning multiple sizes of systems would register all systems at the earliest deadline because the fee is assessed at the facility level.

Table 2 - Impact of PR1415.1 Registration Requirements by Type of Refrigerant and Year

Refrigerant/System Size		2011	2012	2013	2014	2015
ODS	Large	X				
	Medium	X		X		
	Small	X		X		X
HFC & PFC	Large	X				
	Medium	X	X	X		
	Small	X	X	X	X	X

Table 3 shows the additional payment for ODS, and HFC and PFC users by year. The total registration fees range from \$516,000 in 2014 to \$1,279,000 in 2011. There will be no fees paid to the District by users after 2015 since the CARB's RMP will be fully implemented in 2016.

**Table 3 – PR1415.1 Registration Cost by Refrigerant by Year
(in thousands of dollars)**

Refrigerant	2011	2012	2013	2014	2015
ODS	\$488		\$433		\$248
HFC & PFC	\$791	\$745	\$745	\$516	\$516
Total	\$1,279	\$745	\$1,178	\$516	\$764

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

PAR 1415/PR 1415.1 is considered a “project” as defined by the California Environmental Quality Act (CEQA), and the AQMD is the designated lead agency. Pursuant to CEQA and AQMD Rule 110, AQMD staff prepared a Draft Environmental Assessment (EA) to analyze potential adverse environmental impacts that could be generated from the proposed project. The Draft EA was circulated for a 30-day public review and comment period from November 2, 2010 to December 1, 2010. AQMD's review of the proposed project shows that the project would not have a significant adverse effect on the environment; therefore, pursuant to CEQA Guidelines §15252, no alternatives or mitigation measures were included in the Draft EA.

COMPARATIVE ANALYSIS

Health and Safety Code section 40727.2 requires a written analysis to identify and compare any other AQMD or federal regulations that apply to the same equipment or source type.

The only federal requirement applicable to similar sources is the Protection of Stratospheric Ozone – Recycling and Emissions Reduction (40 CFR Part 82 Subpart F) for stationary air conditioning and refrigeration systems. The existing Rule 1415, the Proposed Amended Rule 1415, and Proposed Rule 1415.1 are not in conflict with this federal requirement.

The existing federal regulation, promulgated under section 608 of the Clean Air Act, establishes requirements for controlling ODS refrigerant emissions from stationary refrigeration and air conditioning systems. Specific rule provisions pertain to refrigerant venting, the use of certified equipment, technician training and certification, recordkeeping, and sales restrictions.

The current Rule 1415 goal is to reduce ODS emissions from stationary air conditioning and refrigeration systems. The rule requirements are similar to the federal regulation except that Rule 1415 is more stringent in the area of leak repair. Proposed Amended Rule 1415 expands the scope to include high GWP refrigerants but limits the rule applicability to air conditioning systems.

As discussed in an earlier section of this staff report, the CARB Board approved a statewide regulation (Refrigerant Management Program or RMP) for controlling high GWP emissions from stationary refrigeration systems. The RMP is modeled from 40 CFR Part 82, Subpart F requirements specific to ODS refrigerants, but is expanded to include high GWP refrigerants. In addition, the RMP contains stricter leak testing requirements than the federal regulation.

Proposed Rule 1415.1 incorporates provisions that are consistent with the RMP and consolidates emission control requirements for stationary refrigeration systems currently in Rule 1415.

Table 24 below has been prepared to show a comparison among Proposed Amended Rule 1415, Proposed Rule 1415.1, and 40 CFR Part 82 Subpart F.

Table 24 – Comparison of Regulations for Stationary Refrigeration Systems

Category	Proposed Amended Rule 1415	Proposed Rule 1415.1	40 CFR 82 Subpart F
Purpose	Reduce emissions of high GWP refrigerants	Reduce emissions of high GWP refrigerants	Reduce emissions of Class I/II refrigerants and their substitutes
Applicability	Applies to owners or operators of air conditioning systems; to persons who install, repair, services a/c systems; to persons who recycle and/or sell high GWP refrigerants	Applies to owners or operators of refrigeration systems; to persons who install, repair, services refrigeration systems; to persons who recycle and/or sell high GWP refrigerants	Applies to persons servicing, maintaining, or repairing any a/c and refrigeration systems; to refrigerant reclaimers, appliance owners or operators, and equipment manufacturers
Leak Detection/Repair	Annual leak inspection Repair leak within 14 calendar days from initial leak detection; 45 day repair period allowed in certain situations	Leak inspection frequency (monthly, quarterly, annual) depends on charge size of refrigeration system Repair leak within 14 calendar days from initial leak detection; 45/120 day repair period allowed in certain situations	Repair leak within 30 days if refrigerant loss will exceed 35% of full charge for commercial and industrial refrigeration, and 15% of full charge for other refrigeration systems during a 12-month period

Category	Proposed Amended Rule 1415	Proposed Rule 1415.1	40 CFR 82 Subpart F
Service Practices and Prohibitions	Repairs conducted by US EPA certified technician Recovery and recycling of refrigerant using certified equipment during service or repair of refrigeration system Restrict sale of refrigerants to certified technicians	Repairs conducted by US EPA certified technician Recover, recycle refrigerant using certified recovery equipment before repairing refrigeration system Sale of refrigerants to certified technicians only Sale of approved refrigerants only	No venting of refrigerants during servicing or repair Repairs conducted by US EPA certified technician Recovers, recycles refrigerant during repair using certified equipment Sale of refrigerants to certified technicians only
Reporting	None	Owners or operators to submit Annual Report to include leak inspections and repair data, refrigerant purchases Refrigerant wholesaler, distributors, reclaimers to submit annual report on refrigerants sold, reclaimed	Approved testing organization to report list of certified equipment to EPA
Recordkeeping	Owners or operators to keep records of leak inspections, repair activities, refrigerant purchases Distributors, wholesaler, reclaimers to keep records of refrigerants sold or reclaimed Records kept for 5 years	Owners or operators to keep records of annual reports, registration information, leak inspections, repair activities,, refrigerant purchases Distributors, wholesaler, reclaimers to keep records of annual reports, refrigerant sales invoices, amount and sources of refrigerants reclaimed Records kept for 5 years	Owners or operators to keep leak repair records and amount of refrigerant added Refrigerant distributors or wholesalers to retain invoices of refrigerants sold Refrigerant reclaimers must maintain records of refrigerants received for reclamation, including amount reclaimed and waste products Records kept for 3 years

DRAFT FINDINGS UNDER THE CALIFORNIA HEALTH AND SAFETY CODE

The California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing rules, the AQMD Governing Board shall make findings of necessity, authority,

clarity, consistency, non-duplication and reference, based on relevant information presented at the hearing. The draft findings are as follows:

Necessity - The AQMD Governing Board has determined that a need exists to amend Rule 1415 – Reduction of Refrigerant Emissions from Stationary Refrigeration and Air Conditioning Systems to expand the scope of the rule to include provisions for reducing emissions of high global warming potential refrigerants used in stationary air conditioning systems, and to adopt Proposed Rule 1415 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems to incorporate provisions for reducing emissions of certain high global warming potential refrigerants that will be consistent with CARB’s statewide rule for stationary refrigeration systems.

Authority - The AQMD Governing Board obtains its authority to adopt, amend, or rescind rules and regulations from the California Health and Safety Code sections 39002, 40000, 40001, 40702, and 41508.

Clarity - The AQMD Governing Board has determined that Proposed Amended Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems and Proposed Rule 1415 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems are written or displayed so that their meaning can be easily understood by persons directly affected by them.

Consistency - The AQMD Governing Board has determined that Proposed Amended Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems and Proposed Rule 1415 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems are in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or regulations. The proposed new rule is consistent with the state regulation for stationary refrigeration systems.

Non-Duplication - The AQMD Governing Board has determined that Proposed Amended Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems and Proposed Rule 1415 - Reduction of Refrigerant Emissions from Stationary Refrigeration Systems do not impose the same requirement as any existing state or federal regulation, and the proposed rules are necessary and proper to execute the powers and duties granted to, and imposed upon, the AQMD. Since AQMD will be implementing the state requirements, there will not be duplication.

Reference - In adopting this regulation, the AQMD Governing Board references the following statutes which the AQMD hereby implements, interprets or makes specific: Health and Safety Code sections 40001 and 40702.

COMMENTS AND RESPONSES

A public workshop was held on September 21, 2010 in which 52 people attended. The following summarizes the comments received and staff’s responses.

COMMENT #1: Proposed Rule 1415.1 allows longer periods to repair a refrigerant leak in refrigeration systems. The same provision should be included in PAR

	1415 to allow the same flexibility to owners or operators of air conditioning systems.
RESPONSE:	Staff agrees. The leak repair requirement in PAR 1415 is modified to allow longer repair periods of up to 45 calendar days after initial leak detection only in situations where a certified technician is not available to complete the repair, or the parts necessary to repair the refrigerant leak are unavailable within 14 days of initial leak detection. This is expected to impact total GHG reductions of 3.5 million metric tons of CO ₂ E per year by 497 metric tons of CO ₂ E per year. The owner or operator is responsible for keeping records documenting that the condition(s) for allowing longer repair period exists.
COMMENT #2:	The annual energy usage data requirement in PAR 1415 and PR 1415.1 should be removed as it serves no useful purpose, and is not relevant to the refrigerant rules. Most facilities do not have separate meters to record energy used for refrigeration or air conditioning systems.
RESPONSE:	Staff reviewed the need to report energy usage and agreed to remove such reporting requirement during registration.
COMMENT #3:	The rule should specify what method to use when detecting leaks.
RESPONSE:	The provisions in PAR 1415 (d)(1)(B) and PR 1415.1 (d)(2)(E) identify approved methods that may be used when conducting refrigerant leak inspection in air conditioning and refrigeration systems, respectively. Approved leak detection methods include the use of a refrigerant leak detection device, a bubble test, observation of oil residue, or any alternate method approved by the Executive Officer.
COMMENT #4:	State and federal regulations do not require refrigerant leak inspections to be conducted by a U.S. EPA certified technician. PAR 1415 and PR1415.1 should be consistent with the state and federal regulations.
RESPONSE:	Staff agrees and has removed this rule provision in PAR 1415 and PR1415.1 requiring leak inspections by a U.S. EPA certified technician. However, all service or repair of refrigeration and air conditioning systems have to be made by a U.S. EPA certified technician.
COMMENT #5:	Are facilities with both refrigeration and air conditioning systems subject to registration, reporting, and fees with AQMD and CARB?
RESPONSE:	Separate registrations are required for facilities with air conditioning and refrigeration systems that meet the applicability of PAR 1415 and PR 1415.1. Facilities with air conditioning systems, with full charge capacity

> 50 lbs of high GWP refrigerant, are required to submit a registration plan for the air conditioning system to AQMD at the time of operation, and every two years thereafter. There is no requirement to register air conditioning systems with CARB. Other provisions pertaining to the operation of an air conditioning system are included in PAR 1415.

For refrigeration systems with full charge capacity > 50 lbs of high GWP refrigerants, registration with the AQMD is required until CARB registration begins in 2012 for large systems, 2014 for medium-size systems, and 2016 for small systems. When CARB registration begins for a size class, i.e. large, medium-size, or small systems, the facility will have to register the refrigeration system(s), pay fees, and submit reports only to CARB.

COMMENT #6: What rule would apply for a single system that is used for both refrigeration and air conditioning?

RESPONSE: A refrigeration system used for two or more applications, e.g., refrigeration and air conditioning, is considered as “other refrigeration system,” and will have to comply with the requirements of PR 1415.1 only. This is consistent with CARB staff guidance for multi-use refrigeration systems.

COMMENT #7: The definition of air conditioning system in PAR 1415 should add reference to cooling of equipment since it indicates that computer room air conditioners are included in the definition.

RESPONSE: The definition already includes reference to the cooling of objects.

COMMENT #8: The definition of high global warming potential refrigerants should reference commonly used names such as R-123, R-407, R-22, and R-134, in addition to the chemical names.

RESPONSE: It is not practical to list all trade names of commonly used refrigerants. Facilities can always refer to the MSDS to determine the chemical name of the refrigerant.

COMMENT #9: It is important to keep the common definitions in PR 1415.1 and CARB’s RMP rule the same. This will provide consistency and minimize confusion caused by misinterpretation of two different definitions.

RESPONSE: Staff referenced the RMP in defining terms used in PR 1415.1.

COMMENT #10: The definition of “High Global Warming Potential Refrigerant” does not include hydrofluorocarbon (HFC) in the list of refrigerant gases.

RESPONSE: Staff has added hydrofluorocarbon to the refrigerant list in PAR 1415 and PR 1415.1.

COMMENT #11: The rule does not specify the amount of initial and annual implementation fees to be paid to CARB for registering refrigeration systems.

RESPONSE: Staff intentionally omitted the amount of implementation fees assessed by CARB for medium-size and large systems. By doing this, staff does not have to amend the AQMD rule every time CARB changes their fee schedule. Currently, the CARB fee is \$370 for large systems, and \$170 for medium size systems. No fee is assessed by CARB on small refrigeration systems.

COMMENT #12: The proposed provisions in subparagraph (e)(1)(G) and paragraphs (e)(5) and (g)(3) of PR 1415.1 are not part of the CARB rule.

RESPONSE: Staff’s intent is to retain provisions that are in the current Rule 1415; thus, Proposed Rule 1415.1 includes provisions from both the CARB regulation and Rule 1415.