DATE: December 20, 2018

TO: SJVUAPCD Governing Board

FROM: Samir Sheikh, Executive Director/APCO
Project Coordinator: Dave Warner

RE: ITEM NUMBER 13: APPROVE EXPEDITED BARCT IMPLEMENTATION SCHEDULE AS REQUIRED UNDER AB 617

RECOMMENDATION:

Approve proposed expedited Best Available Retrofit Control Technology (BARCT) implementation schedule required under AB 617.

BACKGROUND:

In September 2017, the California State Legislature and Governor passed Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017), Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. In addition to community monitoring and emission reduction program requirements, an additional requirement of AB 617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis for all categories of units at facilities subject to the state Cap-and-Trade program. According to AB 617, the District must adopt an expedited schedule by January 1, 2019, for performing further determination of BARCT requirements.

Given the Valley's unique and difficult air quality challenges, the District has continually evaluated and updated its attainment plans and regulations through exhaustive searches of air quality regulations throughout the nation, reviews of existing emission control technologies, and analyses of advanced emission control technologies that may soon be available, to identify potential technologically and economically feasible emission reduction measures. Through these processes, the District demonstrates on an ongoing basis that District rules meet state and federal emission control requirements, including

BARCT and Most Stringent Measures (which exceed BARCT requirements). Therefore, it is anticipated that most, if not all, District rules already satisfy or exceed BARCT requirements. The District recognizes that emission control technologies are continually evolving, and therefore robust and ongoing analysis is necessary to demonstrate that the District's rules continue to meet BARCT and other requirements on an ongoing basis.

The District utilized an extensive evaluation process to make an initial determination of whether the rules that apply to Cap-and-Trade facilities meet all state BARCT requirements, as mandated by AB 617. While District rules are expected to meet BARCT due to the District's ongoing extensive regulatory evaluations, the proposed BARCT implementation schedule includes commitments to establish updated BARCT determinations for District rules as required under AB 617. The proposed schedule was prepared through a public process, which included two public workshops. In addition to the BARCT implementation schedule, the District will be proceeding with amending a number of District rules included as commitments in the new 2018 PM2.5 Plan recently adopted by your Board that are also subject to the AB 617 BARCT implementation requirement.

The purpose of this item is to seek your Board's approval of the proposed expedited BARCT implementation schedule, as required under AB 617.

DISCUSSION:

In September 2017, the State Legislature and Governor agreed to extend Cap-and-Trade as part of a legislative package that included the appropriation of $1.5 billion in Cap-and-Trade funding. The Cap-and-Trade deal also included the passage of AB 617 that requires the state Air Resources Board and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities.

The San Joaquin Valley Air Basin is currently designated as serious nonattainment for the federal PM2.5 standards and extreme nonattainment for the federal eight-hour ozone standards. Due to the severity of the historical air quality problems in the Valley, since its formation in 1992, the District has adopted over 600 rules and rule amendments in order to control emissions from stationary sources and other sources. The District was the nation's first air district to adopt an Indirect Source Review rule, and was one of the first air districts to adopt rules to control emissions of volatile organic compound (VOC) from wine production and storage operations and residential fireplaces. In addition, the District leads the nation with the most stringent regulations on emissions of oxides of nitrogen (NOx) from source categories such as engines, boilers, turbines, and glass-melting furnaces.

In conjunction with the above rules applicable to stationary source equipment, under the District's New Source Review permitting regulation, new facilities or facilities modifying equipment that emit air pollutants greater than 2 pounds per day (lb/day), are subject to stringent emissions control requirements. For each piece of equipment that has the potential to emit over the 2 lb/day threshold, the District requires the use of the best available air pollution control technology (BACT) used to control emissions from similar types of equipment. As part of this BACT analysis, the District determines if cleaner technologies that are not generally used for the equipment being analyzed could be used to further reduce emissions from the proposed equipment. This very stringent requirement ensures that the most effective air pollution control technique is utilized resulting in the least amount of air pollution possible.

Best Available Retrofit Control Technology (BARCT)

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> *Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.*

Unlike other regions in the state, the District has not relied on market-based systems such as South Coast AQMD's RECLAIM program to achieve regional emissions reductions needed for attainment. Such market-based systems allow sources of pollution to avoid installing BARCT-level controls if regional emissions are reduced at an established rate. This potential path to avoiding installing the best air pollution controls in other air districts was a significant portion of the genesis of this BARCT requirement of AB 617.

In contrast, businesses in the San Joaquin Valley have always had to comply with BARCT in accordance to the implementation schedules established in District rules. When developing attainment plans or amending prohibitory rules, the District evaluates all applicable sources of emissions for potential strategies to reduce emissions. These evaluations include an exhaustive search of air quality regulations throughout the nation, review of existing emission control technologies, and analysis of advanced emission control technologies that may soon be available, to identify potential technologically and economically feasible emission reduction measures. Through these processes, the District demonstrates on an ongoing basis that District rules meet state and federal emission control requirements, including BARCT and Most Stringent Measures, which exceeds BARCT requirements. Therefore, given the District's ongoing

and extensive work to identify and apply most stringent measures necessary to attain the ever-tightening federal health-based standards under the Clean Air Act, it is anticipated that most if not all District rules satisfy BARCT requirements.

The District recognizes that emission control technologies are continually evolving, and therefore robust and ongoing analysis is necessary to demonstrate that the District's rules continue to meet BARCT and other requirements on an ongoing basis. Furthermore, in the context of the 2016 Ozone attainment plan, the recently adopted PM2.5 attainment plan, and upcoming plans, future rule development actions will be required and, in this process, rules that have recently been determined to meet BARCT during this AB 617 analysis may be subject to further analysis to ensure they continue to meet BARCT requirements. Additionally, in those instances where the District is made aware of new technology, further case specific and rule specific BARCT determinations may be conducted.

Affected Rules Included in the District's Expedited BARCT Implementation Schedule

As captured in Section 40920.6 of the Health and Safety Code, AB 617 identifies specific requirements for the District to meet when establishing the expedited BARCT implementation schedule. AB 617 requires the schedule to apply to each industrial source that, as of January 1, 2017, was subject to a specified market-based compliance mechanism and give highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time.

Based on information provided by ARB, as of January 1, 2017, 109 facilities within the District were identified as being subject to the state Cap-and-Trade program, a market-based compliance mechanism adopted by the state board pursuant to subdivision (c) of Section 38562, and therefore AB 617 BARCT requirements. Evaluating the 109 affected facilities, the District identified that approximately 4,500 active permit units are within the scope of this BARCT analysis. From the 4,500 active permit units, the District determined that 32 District rules that apply to specific source categories of equipment were subject to the BARCT analysis required under AB 617.

District staff performed analysis of 32 affected rules and determined that:

- 5 rules were superseded by a more stringent rule known to meet BARCT or by a rule subject to further BARCT analysis,
- 5 rules were determined to meet Most Stringent Measures (MSM) for NOx, the only relevant pollutant for these affected rules and therefore meet BARCT, and
- 6 rules were specifically determined to meet BARCT through an extensive rule and source category evaluation that compared our rule requirements with federal and state air quality regulations and with regulations of other air districts in California.
- While the remaining 16 rules likely already meet BARCT due to the District's ongoing extensive regulatory evaluations and enhancements, the proposed

BARCT implementation schedule includes commitments to establish updated BARCT determinations for these rules.

Prioritization Criteria for Expedited BARCT Analysis Schedule

Section 40920.6(c)(3) of the Health and Safety Code requires Districts to give highest priority to conduct the BARCT analysis to those rules affecting permitted units that have not modified emissions-related permit conditions for the greatest period of time. To assist in further prioritization, the District also considered local public health, clean air benefits to the surrounding community, and regional air quality and attainment benefits by prioritizing units that emit NOx and are located within communities selected for action under AB 617. In addition, while cost-effectiveness of controls can't be fully analyzed until each rule is addressed during the development of a BARCT rule, the District also prioritized rules with the greatest number of potentially affected units, which, when coupled to the law's requirement of prioritizing based on the length of time since the units were last modified, provides some consideration of the most likely controls to be cost-effective.

Public Process

As a part of the public process associated with establishing this schedule, the District conducted a public scoping meeting on June 14, 2018, to solicit input from stakeholders regarding the District's proposed methodology to address the AB 617 requirement to adopt an expedited BARCT analysis schedule by the end of 2018.

In addition, the District held a public workshop on November 1, 2018, to solicit input from the stakeholders regarding the Districts proposed expedited BARCT Rule implementation schedule. No comments were received from stakeholders after this workshop.

Proposed Expedited BARCT Implementation Schedule

As required under AB 617, the District proposes the following expedited BARCT implementation schedule:

Rule	Title	BARCT Determination Status	BARCT Determination Schedule	BARCT Rulemaking Schedule (if necessary)
4454	Refinery Process Unit Turnaround	Scheduled	2019	2020
4641	Cutback, Slow Cure, And Emulsified Asphalt, Paving And Maintenance Operations	Scheduled	2019	2020

4104	Reduction of Animal Matter	Scheduled	2019	2020
4409	Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities	Scheduled	2019	2020
4455	Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants	Scheduled	2019	2020
4702	Internal Combustion Engines (VOC only)	Scheduled in conjunction with PM2.5 Plan commitment	2020	2020
4623	Storage of Organic Liquids	Scheduled	2020	2021
4694	Wine Fermentation and Storage Tanks	Scheduled	2020	2021
4624	Transfer of Organic Liquid	Scheduled	2020	2021
4603	Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts	Scheduled	2020	2021
4601	Architectural Coatings	Scheduled	2020	2021
4401	Steam-Enhanced Crude Oil Production Wells	Scheduled	2021	2022
4566	Organic Material Composting Operations	Scheduled	2021	2022
4625	Wastewater Separators	Scheduled	2021	2022
4621	Gasoline Transfer Into Stationary Storage Containers, Delivery Vessels, and Bulk Plant	Scheduled	2021	2022
4402	Crude Oil Production Sumps	Scheduled	2021	2022
4351	Boilers, Steam Generators, and Process Heaters - Phase 1	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---

4405	Oxides of Nitrogen Emissions from Existing Steam Generators Used in Thermally Enhanced Oil Recovery - Central and Western Kern County Fields	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---
4406	Sulfur Compounds from Oil-Field Steam Generators - Kern County	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---
4305	Boilers, Steam Generators, and Process Heaters - Phase 2	Rule superseded by District Rules 4306 and 4320, more a stringent rules	---	---
4701	Internal Combustion Engines - Phase 1	Rule superseded by District Rule 4702, a more stringent rule	---	---
4309	Dryers, Dehydrators, and Ovens	Rule determined to meet BARCT	---	---
4703	Stationary Gas Turbines	Rule determined to meet BARCT	---	---
4306	Boilers, Steam Generators, and Process Heaters - Phase 3	Rule determined to meet BARCT	---	---
4307	Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr	Rule determined to meet BARCT	---	---
4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr	Rule determined to meet BARCT	---	---
4311	Flares	Rule determined to meet BARCT	---	---
4354	Glass Melting Furnaces	Rule determined to meet BARCT	---	---
4408	Glycol Dehydration Systems	Rule determined to meet BARCT	---	---

4453	Refinery Vacuum Producing Devices or Systems	Rule determined to meet BARCT	---	---
4612	Motor Vehicle and Mobile Equipment Coating Operations	Rule determined to meet BARCT	---	---
4622	Gasoline Transfer into Motor Vehicle Fuel Tanks	Rule determined to meet BARCT	---	---

Upcoming 2018 PM2.5 Plan Rule Amendment Efforts

In addition to the BARCT implementation schedule above, the District will be proceeding with amending eight District rules to pursue additional emission reduction opportunities beyond BARCT, included as commitments in the new 2018 PM2.5 Plan recently adopted by your Board as follows:

Rule	Title	BARCT Status	PM2.5 Plan Rulemaking Schedule
4901	Wood Burning Fireplaces and Wood Burning Heaters	No units subject to AB 617 BARCT analysis	2019
4311	Flares	Rule meets or exceeds BARCT	2020
4306 and 4320	Boilers, Steam Generators, and Process Heaters - Phase 3 and Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	Rule meets or exceeds BARCT	2020
4702	Internal Combustion Engines	Rule meets or exceeds BARCT for NOx, updated AB 617 BARCT determination scheduled for VOCs	2020
4692	Commercial Charbroiling	No units subject to AB 617 BARCT analysis	2020
4352	Solid Fuel-Fired Boilers, Steam Generators and Process Heaters	No units subject to AB 617 BARCT analysis	2021
4354	Glass Melting Furnaces	Rule meets or exceeds BARCT	2021

FISCAL IMPACT:

The District's 2018-19 Budget currently includes sufficient appropriations to accommodate the current workload associated with the new state AB 617 mandates, supported by state funding specifically allocated to the District for this program. As the workload continues to be defined by the state and increases over the coming years, the District anticipates additional state funding to support additional Districts costs to implement this program. Any required Budget adjustments will be brought to your Board for consideration at future hearings.

Attachment: *Final Draft Staff Report: Expedited Best Available Retrofit Control Technology Implementation Schedule Under AB 617 (94 pages)*

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
December 20, 2018

APPROVE EXPEDITED BARCT IMPLEMENTATION SCHEDULE AS REQUIRED UNDER AB 617

Attachment:

FINAL DRAFT STAFF REPORT:

Expedited Best Available Retrofit Control Technology Implementation Schedule Under AB 617

(94 PAGES)

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

FINAL DRAFT STAFF REPORT

December 20, 2018

Expedited Best Available Retrofit Control Technology Implementation Schedule Under AB 617

Prepared by: Jesse A. Garcia, Air Quality Engineer
Dustin Brown, Senior Air Quality Engineer

Reviewed by: Errol Villegas, Permit Services Manager
Arnaud Marjollet, Director of Permit Services

I. SUMMARY

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017), Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB 617 is for air districts located in non-attainment areas to adopt an expedited schedule by January 1, 2019, for performing further determination of Best Available Retrofit Control Technology (BARCT) requirements for all categories of units located at facilities subject to the state Cap-and-Trade program and for the implementation of BARCT as necessary.

As a component of the San Joaquin Valley Air Pollution Control District's (District) efforts to implement the requirements of AB 617, the District conducted a public scoping meeting on June 14, 2018, to solicit input from stakeholders regarding the District's proposed methodology to address the AB 617 requirement to adopt an expedited BARCT analysis schedule by the end of 2018.

In addition, the District held a public workshop on November 1, 2018, to solicit input from the stakeholders regarding the Districts proposed expedited BARCT Rule implementation schedule. No comments were received from the stakeholders subsequent to this workshop.

II. BACKGROUND

In September 2017, the State Legislature and Governor agreed to extend Cap-and-Trade as part of a legislative package that included the appropriation of $1.5 billion in Cap-and-Trade funding. The Cap-and-Trade deal also included the passage of AB 617 that requires the state Air Resources Board and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities.

As discussed above, one component of AB 617 is the advancement of air pollution control efforts through accelerated retrofit of pollution controls on industrial sources. Under State law, regional air districts have been delegated the authority to issue permits to stationary sources, allowing them to operate within emission limitations. Permitting requirements vary by location based on the facility and equipment type, the allowable amount of emissions, consideration of State and local air toxics programs, and the national and State ambient air quality standards attainment[1] designation status of each air district.

The San Joaquin Valley Air Basin is currently designated as serious nonattainment for the PM2.5 (Particulate Matter 2.5 microns or less in diameter) National Ambient Air Quality Standard (NAAQS) and extreme nonattainment for the eight-hour ozone NAAQS. Due to the severity of the air quality problems in the Valley, since its formation in 1992, the District has adopted over 600 rules and rule amendments in order to control emissions from stationary sources and other sources. The District was the nation's first air district to adopt an Indirect Source Review rule, and was one of the first air districts to adopt rules to control emissions of volatile organic compound (VOC) from wine production and storage operations and residential fireplaces. In addition, the District leads the nation with some of the most stringent oxides of nitrogen (NOx) emission limits on source categories such as engines, boilers, turbines, and glass-melting furnaces.

In conjunction with the above rules applicable to stationary source equipment, the District's New Source Review (NSR) rule is designed to meet both the state and federal NSR requirements for nonattainment areas. District Rule 2201 applies to all new stationary sources and all modifications to existing stationary sources that are subject to District permit requirements.

[1] An air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without any harmful effects on people or the environment. Attainment of an air quality standard means the air quality of a region is as clean as or cleaner than the national and State ambient air quality standards.

New facilities or facilities modifying equipment that emit air pollutants greater than 2 pounds per day (lb/day), are subject to stringent emissions control requirements. For each equipment that have the potential to emit over the 2 lb/day thresholds, the District requires the use of the best available air pollution control technology (BACT) commonly used to control emissions from similar type of equipment. As part of this BACT analysis, the District determines if cleaner technologies that are not generally used for the equipment being analyzed could be used to further reduce emissions from the proposed equipment. This very stringent requirement ensures that the most effective air pollution control technique is utilized resulting in the least amount of air pollution possible.

In addition to these stringent requirements on new sources of air pollution, rules adopted in the San Joaquin Valley are regularly analyzed for compliance with the state's BARCT requirements.

III. BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY (BARCT)

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> *Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.*

AB 617 requires districts that are in nonattainment for one or more air pollutants to adopt expedited schedules by January 2019 for the implementation of Best Available Retrofit Control Technology. The bill would require the schedule to apply to each industrial source that, as of January 1, 2017, was subject to a specified market-based compliance mechanism and give highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time.

In establishing Best Available Retrofit Control Technology through the adoption of a rule, state law requires that the District must perform all of the following:

1. Identify one or more potential control options, which achieves the emission reduction objectives for the regulation.

2. Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of the potential control option divided by emission reduction potential, in tons, of the potential control option.

3. Calculate the incremental cost-effectiveness for the potential control options identified in paragraph (1). To determine the incremental cost-effectiveness under this paragraph, the District shall calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.

4. Consider, and review in a public meeting, all of the following:

    a. The effectiveness of the proposed control option in meeting the above requirements as well as impact on downwind regions' ozone concentrations due to emissions transport.

    b. The cost-effectiveness of each potential control option.

    c. The incremental cost-effectiveness between the potential control options.

5. Make findings at the public hearing at which the regulation is adopted stating the reasons for the district's adoption of the proposed control option or options.

AB 617 also requires ARB to establish and maintain a statewide clearinghouse that identifies the best available control technology, best available retrofit control technology for criteria air pollutants, and related technologies for the control of toxic air contaminants.

Unlike other regions in the state, the District has not relied on market-based systems such as South Coast AQMD's RECLAIM program to achieve regional emissions reductions needed for attainment. Such market based systems allow sources of pollution to avoid installing BARCT-level controls if regional emissions are reduced at an established rate. This potential path to avoiding installing the best air pollution controls in other air districts was a significant portion of the genesis of this BARCT requirement of AB 617.

In contrast, businesses in the San Joaquin Valley have always had to comply with BARCT in accordance to the implementation schedules established in District rules. Consistent with the District Governing Board's long-standing direction, when developing attainment plans or amending prohibitory rules, the District evaluates all sources of emissions for potential strategies to reduce emissions. These evaluations include exhaustive search of air quality regulations throughout the nation, review of existing emission control technologies, and analysis of advanced

emission control technologies that may soon be available, to identify potential technologically and economically feasible emission reduction measures. Based on these ongoing evaluations, the District demonstrates that District rules meet all federal emission control requirements, including BARCT and Most Stringent Measures that exceed BARCT requirements. Therefore, given the District's ongoing and extensive work to identify and apply most stringent measures necessary to attain the ever-tightening federal health-based standards under the Clean Air Act, it is anticipated that most if not all District rules already satisfy or exceed BARCT requirements.

The District recognizes that emission control technologies are continually evolving, and therefore robust and ongoing analysis is necessary to demonstrate that the District's rules continue to meet BARCT and other requirements on an ongoing basis. Furthermore, in the context of the 2016 Ozone attainment plan, the recently adopted PM2.5 attainment plan, and upcoming plans, future rule development actions will be required and, in this process, rules that have recently been determined to meet BARCT during this AB 617 analysis may be subject to further analysis to ensure they continue to meet BARCT requirements. Additionally, in those instances where the District is made aware of new technology, further case specific and rule specific BARCT determinations may be conducted.

AB 617 (California H&SC 40920.6(d)(1)-(3)) requires the Board to consider the following prior to adopting the expedited BARCT implementation schedule:

(1) The local public health and clean air benefits to the surrounding community.
(2) The cost-effectiveness of each control option.
(3) The air quality and attainment benefits of each control option

Local Public Health and Clean Air Benefits

Although there are compliance costs for implementing controls to achieve the necessary emission reductions, there will be significant improvements in public health and clean air benefits both locally and regionally by achieving additional emissions reductions and lowering health risks. These needed emission reductions to attain the ozone and PM2.5 air quality standards will also contribute to improved public health with cleaner air quality across the region.

Ozone

Ozone is a gas of three oxygen atoms (O_3). Ground-level ozone is the main component of smog. It is not directly emitted into the atmosphere, but produced by photochemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. The Valley generally experiences the highest ozone concentrations on hot, sunny summer days with prolonged periods of stagnation.

Breathing ozone can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. Children are at a greater risk of experiencing negative health impacts because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, thus increasing their exposure. Studies have linked rising hospital admissions and emergency room visits to higher ozone levels.

In addition to public health, ozone affects Valley ecosystems and crops. Ozone damages plant cells and deteriorates leaf tissue, which reduces the plants' ability to photosynthesize and produce their own food. Plants respond by growing more leaves, which depletes carbohydrates stored in roots and stems. This weakens plants and makes them susceptible to disease, pests, cold, and drought. Ozone also reduces agricultural yields for many economically important crops, such as grapes, soybeans and cotton, and damages the leaves of trees and other plants, marring the appearance of cities, national parks, forests, and recreational areas.

Furthermore, ozone can cause substantial damage to a variety of materials such as rubber, plastics, fabrics, paint, and metals. Over time, ozone exposure progressively damages both the functional and aesthetic qualities of these types of materials and products. The resulting increases in maintenance, upkeep, and replacement of materials can accumulate to significant economic losses.

PM2.5 and PM10

Particulate matter (PM) is a mixture of solid particles and liquid droplets in the air. PM can be emitted directly into the atmosphere (primary PM), or can form as secondary particulates in the atmosphere through the photochemical reactions of precursors (when precursors are energized by sunlight). Thus, PM is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. PM10 is particulate matter that is 10 microns or less in diameter, and the PM2.5 subset includes smaller particles that are 2.5 microns or less in diameter.

Any particles 10 microns or less are considered respirable, meaning they can be inhaled into the body through the mouth or nose. PM10 can generally pass through the nose and throat and enter the lungs. PM2.5 can be inhaled more deeply into the gas exchange tissues of the lungs, where it can be absorbed into the bloodstream and carried to other parts of the body. The potential health impacts of particle pollution are linked to the size of the particles, with the smaller particles having larger impacts. Numerous studies link PM2.5 to a variety of health problems, including aggravated asthma, increased respiratory symptoms (irritation of the airways, coughing, difficulty

breathing), decreased lung function in children, development of chronic bronchitis, irregular heartbeat, non-fatal heart attacks, increased respiratory and cardiovascular hospitalizations, lung cancer, and premature death. Children, older adults, and individuals with heart or lung diseases are the most likely to be affected by PM2.5. Many studies have quantified and documented the health benefits of attaining the U.S. Environmental Protection Agency (EPA) air quality standards for PM.

Cost-Effectiveness

Consistent with Health & Safety Code Section 40920.6, a cost-effectiveness analysis is performed when establishing BARCT emission limits. Cost-effectiveness is measured in terms of the control cost in dollars per ton of air pollutant reduced. The costs for the control technology includes purchasing, installing, operating, and maintaining the control technology. As noted above, the legal definition of BARCT is "an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source." Determining the cost effectiveness of a particular control measure for BARCT purposes is intrinsic to determining the economic impact of implementing such a requirement.

Attainment Benefits

An integrated control strategy addressing multiple objectives provides for a more efficient path in meeting all clean air standards, including the federal ozone and PM2.5 standards. In designing an integrated control strategy to achieve the ozone and PM2.5 air quality standards, consideration must be given to the health of the public, the economic well-being of the region, and challenges for local business. Each control measure addressed through the AB 617 BARCT determination process will also be evaluated to assess their contribution to the District's attainment strategy for the federal PM2.5 and ozone standards. In addition to the proposed expedited AB 617 BARCT schedule, the 2018 PM2.5 Plan also includes 8 stationary source control measures designed to reduce PM2.5 levels that are to be adopted and implemented in the next several years and that will also help the District attain the federal National Ambient Air Quality Standards.

In satisfying the applicable BARCT determination mandates under AB 617, significant work is necessary to demonstrate that the District's rules continue to meet BARCT and other requirements on an ongoing basis. The District must also share its findings with the state as ARB compiles the BARCT clearinghouse.

IV. RULES INCLUDED IN DISTRICT'S EXPEDITED BARCT IMPLEMENTATION SCHEDULE

As discussed above, AB 617 requires districts that are in nonattainment for one or more air pollutants to adopt expedited schedules by January 2019 for the implementation of BARCT. The District is in attainment for the Carbon Monoxide (CO), Sulfur Dioxide (SO2) and PM10 National Ambient Air Quality Standards (NAAQS). Therefore, the pollutants of CO, SOx, and PM10 are not being evaluated for BARCT under AB 617. The District is non-attainment for the Ozone and PM2.5 NAAQS; therefore, the BARCT analyses under AB 617 will focus on NOx (as an Ozone and PM2.5 precursor) and VOC (as an Ozone precursor) only.

As captured in Section 40920.6 of the Health and Safety Code AB 617 identifies specific requirements for the District to meet in establishing the expedited BARCT implementation schedule:

(*c) (1) On or before January 1, 2019, each district that is a nonattainment area for one or more air pollutants shall adopt an expedited schedule for the implementation of best available retrofit control technology (BARCT), by the earliest feasible date, but in any event not later than December 31, 2023.*
(2) The schedule shall apply to each industrial source that, as of January 1, 2017, was subject to a market-based compliance mechanism adopted by the state board pursuant to subdivision (c) of Section 38562.
(3) The schedule shall give highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time. The schedule shall not apply to an emissions unit that has implemented BARCT due to a permit revision or a new permit issuance since 2007.

(d) Prior to adopting the schedule pursuant to paragraph (1) of subdivision (c), a district shall hold a public meeting and take into account:
(1) The local public health and clean air benefits to the surrounding community.
(2) The cost-effectiveness of each control option.
(3) The air quality and attainment benefits of each control option.

The District has developed a list of the rules to be included in its draft expedited BARCT schedule, utilizing the following steps:

Step 1: Identify Affected Rules

Based on information provided by ARB, as of January 1, 2017, 109 facilities within the District were identified as being subject to the AB 3228 Cap-and-Trade program, *a market-based compliance mechanism adopted by the state board pursuant to subdivision (c) of Section 38562,* and AB 617 (see Appendix A).

The following criteria was used to identify the District rules subject to the expedited BARCT implementation schedule under AB 617:

- Identified 109 affected facilities subject to Cap-and-Trade,
- Evaluating the 109 affected facilities, the District identified that approximately 4,500 active permit units are within the scope of this BARCT analysis,
- From the 4,500 active permit units, the District's permit database was queried to identify the specific prohibitory rules applying to these permit units,
- 35 applicable District rules were identified (see Appendix B).

Step 2: Refining List of Affected Rules

From the District rules list established in Step 1, the District proceeded with the following applicability criteria:

A. Rule 4606 was removed from consideration as the rule reference was found to be incorrectly included on 11 permit units. The appropriate applicable rule to the specific permit units should have been District Rule 4306. Therefore, the following rule has been identified and removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617:

    - Rule 4606, Wood Products and Flat Wood Paneling Products Coating Operations

B. Certain rules were referenced on permit units only to document an exemption that existed for the specific rule. The District determined that no sources in the San Joaquin Valley exist that are subject to the following two rules, and they were therefore removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617:

    - Rule 4407, In-Situ Combustion Well Vents
    - Rule 7012, Hexavalent Chromium - Cooling Towers

    Note that one other rule, Rule 4402, Crude Oil Production Sumps, was originally identified as being referenced on permit units only to document an exemption that existed for the specific rule. However, for this rule the reasoning was slightly different than the above two rules: the District determined that while there are crude oil production sumps in the San Joaquin Valley, there are no such sources at Cap-and-Trade facilities based on exemption criteria contained in the rule. The District initially determined, and presented in workshops and related documents, that the AB 617 BARCT review process does not apply to this rule, and the rule should therefore be removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617. However, the District recognizes that an analysis of the relevant exemption criteria for this rule could have an impact on the

determination of whether BARCT requirements are satisfied for this category. Therefore, this rule will be included in the schedule of rules for determination of BARCT.

C. If an existing rule was superseded by more a stringent rule, no further BARCT analysis was needed and the rule was removed from the list. The following rules have been identified and removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617:

- Rule 4351, Boilers, Steam Generators, and Process Heaters - Phase 1, superseded by District Rule 4305
- Rule 4405, Oxides of Nitrogen Emissions from Existing Steam Generators Used in Thermally Enhanced Oil Recovery - Central and Western Kern County Fields, superseded by District Rule 4305
- Rule 4406, Sulfur Compounds from Oil-Field Steam Generators - Kern County, superseded by District Rule 4305
- Rule 4305, Boilers, Steam Generators, and Process Heaters - Phase 2, superseded by District Rules 4306 and 4320
- Rule 4701, Internal Combustion Engines - Phase 1, superseded by District Rule 4702

Step 3: Units subject to BACT Analysis since 2007

As discussed in Section 40920.6(c)(3) of the Health and Safety Code, "*the schedule shall not apply to an emissions unit that has implemented BARCT due to a permit revision or a new permit issuance since 2007.*"

In order to make this determination, the District reviewed permitting actions that occurred after January 1, 2007 that required the implementation of Best Available Control Technology (BACT).In fact, as discussed below, BACT is always at least as stringent as BARCT: BARCT acts as a floor for BACT stringency.

According to the San Joaquin Valley's NSR rule (District Rule 2201), Section 3.10, BACT is defined as follows:

Best Available Control Technology (BACT): is the most stringent emission limitation or control technique of the following:

3.10.1 Achieved in practice for such category and class of source;

3.10.2 Contained in any State Implementation Plan approved by the Environmental Protection Agency for such category and class of source. A specific limitation or control technique shall not apply if the owner of the proposed emissions unit demonstrates to the satisfaction of the APCO that such a limitation or control technique is

not presently achievable; or

3.10.3 Contained in an applicable federal New Source Performance Standard; or

3.10.4 Any other emission limitation or control technique, including process and equipment changes of basic or control equipment, found by the APCO to be cost effective and technologically feasible for such class or category of sources or for a specific source.

The District's BACT Policy further explains that a top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule. The first step in a top-down analysis is to identify, for the emissions unit in question, all available control options (emphasis added). Available control options are those air pollution control technologies or techniques, including alternate basic equipment or process with a practical potential for application to the emissions unit in question. The control alternatives should include not only existing controls for the source category in question, but also through technology transfer, controls applied to similar source categories and gas streams. As specifically outlined in Rule 2201 sections 3.10.1 through 3.10.4, these available control options are those that are achieved in practice, contained in any SIP approved by EPA, contained in a federal NSPS, or any other emission limit or control technique (including alternate basic equipment) found to be cost effective and technologically feasible.

CH&SC Section 40406 defines Best Available Retrofit Control Technology (BARCT) as: "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source."

As discussed above, BACT goes beyond controls that are achieved in practice and requires the evaluation of controls or limits that are contained in any SIP. This means that any rules and regulations throughout California and any other State that have emissions limits or controls that exist in any SIP (regardless if the requirement to implement those controls are still in the future), the District must evaluate that control option during the BACT analysis. This is how BARCT rules become the floor level of controls when evaluating BACT pursuant to the District's NSR Rule.

The top-down BACT process then goes a step further than BARCT and is technology forcing as BACT requires the evaluation of any other emission limit or technique found to be cost effective and technology feasible. Additionally, this step includes the evaluation of alternate basic equipment and can even require the installation of different equipment than initially proposed, if that technology is found to be cost effective and technologically feasible.

An additional critical point is that while BARCT requires the maximum degree of reduction achievable, the term contains the word “retrofit”. So the control technology must be able to be retrofitted onto an existing emissions unit to be considered feasible. Whereas when BACT is applied, the emissions unit is often a new emissions unit and therefore not limited to only technologies that can be retrofitted. Rather the project proponent may have to redesign their operation and/or propose a different emissions unit if that were to be required by BACT.

Therefore, as explained above, BACT is almost always more stringent than BARCT, and is always at least as stringent as BARCT

Regarding the BARCT analysis under AB 617, while some units within a source category were identified that had implemented BACT since 2007, there were no specific source categories found where ***all*** units in that source category implemented BACT. Therefore, no rules were removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617, as a result of this step.

Step 4: Rules Meeting BARCT (No further Analysis Required)

The District performed a rule specific analysis. As a part of the analysis, each District rule and source category were compared to federal and state air quality regulations, and the regulations of the other most progressive air districts in California, including but not limited to the following:

- South Coast Air Quality Management District (AQMD)
- Bay Area AQMD
- Sacramento Metropolitan AQMD
- Ventura County Air Pollution Control District (APCD)

Based on the rule analyses conducted by District staff (see Appendix C), the following rules were found to have the most stringent limits/control requirements in place and therefore, the District has concluded that these rules meet BARCT without any further analysis:

- Rule 4408, Glycol Dehydration Systems
- Rule 4453, Refinery Vacuum Producing Devices or Systems
- Rule 4612, Motor Vehicle and Mobile Equipment Coating Operations
- Rule 4622, Gasoline Transfer Into Motor Vehicle Fuel Tanks

Step 5: Rules Meeting MSM (No further Analysis Required)

Concurrently, the District has also been developing the 2018 PM2.5 Plan to satisfy the Clean Air Act (CAA) requirements for the 1997, 2006, and 2015 PM2.5 ambient air quality standards. As a part of the 2018 PM2.5 Plan, the District performed a

Most Stringent Measures (MSM) analysis for all rules that contain NOx limits/requirements. MSM is addressed on a pollutant-by-pollutant basis and is more stringent than BARCT. Therefore, any rule that was shown to meet MSM requirements for NOx in the 2018 PM2.5 Plan is considered to meet BARCT requirement for NOx under AB 617.

a. Rules addressed by the 2018 PM2.5 Plan MSM analysis and for which NOx is the only non-attainment pollutant affected by the rule:

- Rule 4309, Dryers, Dehydrators, and Ovens
- Rule 4703, Stationary Gas Turbines
- Rule 4306, Boilers, Steam Generators, and Process Heaters - Phase 3
- Rule 4307, Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr
- Rule 4320, Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr

These five rules were determined to meet MSM for NOx. Since NOx is the only non-attainment pollutant affected by these 5 rules, they have been removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617.

b. Rules addressed by the 2018 PM2.5 Plan MSM analysis and for which NOx is NOT the only non-attainment pollutant affected by the rule:

- Rule 4311, Flares
- Rule 4354, Glass Melting Furnaces
- Rule 4702, Internal Combustion Engines

The 2018 PM2.5 Plan showed that Rule 4311, Flares, Rule 4354, Glass Melting Furnaces, and Rule 4702, Internal Combustion Engines meet MSM for NOx emissions. However, these three rules also affect another non-attainment pollutant, VOC, which was not addressed by the 2018 PM2.5 Plan MSM analysis. Therefore, an additional rule analysis similar to the analysis described in Step 4 above was required for VOC. Based on the rule analyses conducted by District staff, Rule 4311 and Rule 4354 were found to have the most stringent limits/control requirements in place for VOC (see Appendix C). Since these two rules were also determined to meet MSM for NOx, Rules 4311 and 4354 have been removed from the list of rules subject to the expedited BARCT implementation schedule under AB 617. However, further BARCT analysis is required for Rule 4702 for VOC only.

Step 6: Final List of Affected Rules

The District rules listed below require further analysis and will be included in the District's expedited BARCT implementation schedule:

- Rule 4104, Reduction of Animal Matter
- Rule 4401, Steam-Enhanced Crude Oil Production Wells
- Rule 4409, Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities
- Rule 4454, Refinery Process Unit Turnaround
- Rule 4455, Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants
- Rule 4566, Organic Material Composting Operations
- Rule 4601, Architectural Coatings
- Rule 4603, Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts
- Rule 4621, Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants
- Rule 4623, Storage of Organic Liquids
- Rule 4624, Transfer of Organic Liquid
- Rule 4625, Wastewater Separators
- Rule 4641, Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations
- Rule 4694, Wine Fermentation and Storage Tanks
- Rule 4702, Internal Combustion Engines
- Rule 4402, Crude Oil Production Sumps

V. DISTRICT'S EXPEDITED BARCT IMPLEMENTATION SCHEDULE

1. Prioritization Criteria for Expedited BARCT Analysis Schedule

As discussed in Section III above, AB 617 requires the District to adopt an expedited schedule by January 1, 2019, for implementation of BARCT. Section 40920.6(c)(3) of the Health and Safety Code requires Districts to give highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time. To assist in further prioritization, the District also considered local public health, clean air benefits to the surrounding community, and regional air quality and attainment benefits by prioritizing units that emit NOx and are located within communities selected for action under AB 617. In addition, while cost-effectiveness of controls can't be fully analyzed until each rule is addressed during the development of a BARCT rule, the District prioritized rules with the greatest number of potentially affected units, which, when coupled to the law's requirement of prioritizing based on the length of time since the units were last modified, provides some consideration of the most likely controls to be cost-effective:

Therefore, the criteria used to prioritize the list of rules to be analyzed for BARCT purposes under AB 617 are:

1. *The greatest period of time since the last permit amendment:*
   AB 617 Section 40920.6(c)(3) of the Health and Safety Code requires that the expedited BARCT implementation schedule give highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time. The District requires permits to be modified as rules are amended, and therefore considered the last rule amendment date as a surrogate to the last date a permitted unit was modified.

2. *Any rule applicable to units located within selected communities:*
   Since AB 617 is intended to reduce air pollution exposure in impacted communities (i.e. South Central Fresno and Shafter), this criteria was considered as the most important.

3. *Any rule with the purpose of controlling NOx emissions:*
   This criteria was selected because NOx is the main pollutant of concern with respect to the attainment status for the San Joaquin Valley Air Basin, for both ozone and PM2.5.

4. *A rule applicable to the greatest number of permitted units:*
   With the goal of reducing air pollution exposure, this criteria was selected to ensure that the maximum number of affected permit units is addressed as expeditiously as practicable.

See Appendix D for a summary of all affected rules along with their prioritization criteria.

2. Proposed Expedited BARCT Implementation Schedule

As a part of the public process associated with establishing this schedule, the District conducted a public scoping meeting on June 14, 2018, to solicit input from stakeholders regarding the District's proposed methodology to address the AB 617 requirement to adopt an expedited BARCT analysis schedule by the end of 2018.

In addition, the District held a public workshop on November 1, 2018, to solicit input from the stakeholders regarding the Districts proposed expedited BARCT Rule implementation schedule. No comments were received from stakeholders after this workshop.

Therefore, based on the criteria described above, the District proposes to perform the required AB 617 BARCT determinations as follows:

Rule	Title	BARCT Determination Status	BARCT Determination Schedule	BARCT Rulemaking Schedule (if necessary)
4454	Refinery Process Unit Turnaround	Scheduled	2019	2020
4641	Cutback, Slow Cure, And Emulsified Asphalt, Paving And Maintenance Operations	Scheduled	2019	2020
4104	Reduction of Animal Matter	Scheduled	2019	2020
4409	Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities	Scheduled	2019	2020
4455	Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants	Scheduled	2019	2020
4702	Internal Combustion Engines (VOC only)	Scheduled in conjunction with PM2.5 Plan commitment	2020	2020
4623	Storage of Organic Liquids	Scheduled	2020	2021

4694	Wine Fermentation and Storage Tanks	Scheduled	2020	2021
4624	Transfer of Organic Liquid	Scheduled	2020	2021
4603	Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts	Scheduled	2020	2021
4601	Architectural Coatings	Scheduled	2020	2021
4401	Steam-Enhanced Crude Oil Production Wells	Scheduled	2021	2022
4566	Organic Material Composting Operations	Scheduled	2021	2022
4625	Wastewater Separators	Scheduled	2021	2022
4621	Gasoline Transfer Into Stationary Storage Containers, Delivery Vessels, and Bulk Plant	Scheduled	2021	2022
4402	Crude Oil Production Sumps	Scheduled	2021	2022
4351	Boilers, Steam Generators, and Process Heaters - Phase 1	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---
4405	Oxides of Nitrogen Emissions from Existing Steam Generators Used in Thermally Enhanced Oil Recovery - Central and Western Kern County Fields	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---
4406	Sulfur Compounds from Oil-Field Steam Generators - Kern County	Rule superseded by more stringent rules, District Rules 4305, 4306, and 4320	---	---
4305	Boilers, Steam Generators, and Process Heaters - Phase 2	Rule superseded by District Rules 4306 and 4320, more a stringent rules	---	---

4701	Internal Combustion Engines - Phase 1	Rule superseded by District Rule 4702, a more stringent rule	---	---
4309	Dryers, Dehydrators, and Ovens	Rule determined to meet BARCT	---	---
4703	Stationary Gas Turbines	Rule determined to meet BARCT	---	---
4306	Boilers, Steam Generators, and Process Heaters - Phase 3	Rule determined to meet BARCT	---	---
4307	Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr	Rule determined to meet BARCT	---	---
4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr	Rule determined to meet BARCT	---	---
4311	Flares	Rule determined to meet BARCT	---	---
4354	Glass Melting Furnaces	Rule determined to meet BARCT	---	---
4408	Glycol Dehydration Systems	Rule determined to meet BARCT	---	---
4453	Refinery Vacuum Producing Devices or Systems	Rule determined to meet BARCT	---	---
4612	Motor Vehicle and Mobile Equipment Coating Operations	Rule determined to meet BARCT	---	---
4622	Gasoline Transfer into Motor Vehicle Fuel Tanks	Rule determined to meet BARCT	---	---

See Appendix D for a table showing the prioritization criteria for the 16 rules requiring further BARCT analysis.

Upcoming 2018 PM2.5 Plan Rule Amendment Efforts

In addition to the BARCT implementation schedule above, the District will be proceeding with amending eight District rules to pursue additional emission reduction opportunities beyond BARCT, included as commitments in the new 2018 PM2.5 Plan recently adopted by your Board as follows:

Rule	Title	BARCT Status	PM2.5 Plan Rulemaking Schedule
4901	Wood Burning Fireplaces and Wood Burning Heaters	No units subject to AB 617 BARCT analysis	2019
4311	Flares	Rule meets or exceeds BARCT	2020
4306 and 4320	Boilers, Steam Generators, and Process Heaters - Phase 3 and Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	Rule meets or exceeds BARCT	2020
4702	Internal Combustion Engines	Rule meets or exceeds BARCT for NOx, further analysis necessary to determine whether BARCT for VOC	2020
4692	Commercial Charbroiling	No units subject to AB 617 BARCT analysis	2020
4352	Solid Fuel-Fired Boilers, Steam Generators and Process Heaters	No units subject to AB 617 BARCT analysis	2021
4354	Glass Melting Furnaces	Rule meets or exceeds BARCT	2021

3. Next Steps

- District Governing Board to adopt expedited BARCT schedule: December 20, 2018
- District staff to send Expedited BARCT schedule to ARB: Before Jan 1, 2019

4. After Adoption of Prioritized Schedule

- District will immediately begin performing a BARCT analysis of the rules in the order of published priority. Five rules will be analyzed each year in 2019, 2020, and 2021.

- For any rules found to not meet state BARCT requirements, the District will enter into a full rule development process immediately after the BARCT analysis is complete.

- Any necessary BARCT rule adoption(s) will take place at the earliest feasible date, as identified in the schedule above.

Appendices

A. List of Facilities within District Subject to Cap-and-Trade
B. Affected Rules Identified
C. Rule Analyses
   - C-1: Rule 4311, Flares
   - C-2: Rule 4354, Glass Melting Furnaces
   - C-3: Rule 4408, Glycol Dehydration Systems
   - C-4: Rule 4453, Refinery Vacuum Producing Devices Or Systems
   - C-5: Rule 4612, Motor Vehicle And Mobile Equipment Coating Operations
   - C-6: Rule 4622, Gasoline Transfer Into Motor Vehicle Fuel Tanks
D. Prioritization Table of the 16 Rules Requiring Further BARCT Analysis

Appendix A

List of Facilities within District Subject to Cap-and-Trade

District Facility Number	Facility Name
C-261	CERTAINTEED CORPORATION
C-273	CALIFORNIA RESOURCES PRODUCTION CORP.
C-276	CALIFORNIA RESOURCES PRODUCTION CORP.
C-311	CHEVRON USA INC
C-366	DEL MONTE FOODS HANFORD PLANT 24
C-402	CALIFORNIA DAIRIES, INC.
C-413	CRIMSON RESOURCE MANAGEMENT
C-447	E & J GALLO WINERY
C-598	GUARDIAN INDUSTRIES, LLC
C-705	J R SIMPLOT COMPANY
C-787	LOS GATOS TOMATO PRODUCTS
C-801	ARDAGH GLASS INC
C-948	VITRO FLAT GLASS LLC
C-1121	AERA ENERGY LLC
C-1163	OLAM WEST COAST INC
C-1243	TOMA-TEK INC
C-1683	HOLMES WESTERN OIL CORPORATION
C-2658	HOLMES WESTERN OIL CORPORATION
C-2872	CHEVRON USA, INC.
C-3955	LEPRINO FOODS COMPANY
C-4261	PACIFIC ETHANOL MADERA LLC
C-7336	J G BOSWELL COMPANY
C-7748	OLAM WEST COAST INC
N-238	INGREDION INCORPORATED
N-593	OWENS-BROCKWAY GLASS CONTAINER
N-672	MIZKAN AMERICA, INC
N-1252	FOSTER FOOD PRODUCTS
N-1275	HILMAR CHEESE COMPANY
N-1276	INGOMAR PACKING COMPANY
N-1326	MORNING STAR PACKING COMPANY
N-1399	LIBERTY PACKING CO - THE MORNING STAR CO
N-1657	SENSIENT NATURAL INGREDIENTS LLC
N-1662	GALLO GLASS COMPANY
N-1680	STANISLAUS FOOD PRODUCTS
N-1976	CONAGRA FOODS
N-2149	CALIFORNIA DAIRIES, INC.
N-7365	PACIFIC ETHANOL STOCKTON LLC
N-7488	AEMETIS ADVANCED FUELS KEYES INC

District Facility Number	Facility Name
S-36	SAN JOAQUIN REFINING CO
S-37	KERN OIL & REFINING CO
S-39	CRESTWOOD WEST COAST LLC
S-49	CHEVRON USA INC
S-55	CHEVRON USA INC LOST HILLS GP
S-71	PLAINS LPG SERVICES LP
S-382	CALIFORNIA RESOURCES ELK HILLS LLC
S-416	WM BOLTHOUSE FARMS INC
S-525	LAND O' LAKES INC
S-724	ALL AMERICAN OIL & GAS CO
S-1114	SENECA RESOURCES
S-1121	NAFTEX OPERATING CO
S-1128	CHEVRON USA INC
S-1129	CHEVRON USA INC
S-1131	CHEVRON USA INC
S-1135	AERA ENERGY LLC
S-1141	CHEVRON USA INC
S-1203	SAPUTO CHEESE USA INC
S-1216	CALIFORNIA RESOURCES ELK HILLS LLC
S-1242	SENECA RESOURCES
S-1246	BERRY PETROLEUM COMPANY LLC
S-1326	CALIFORNIA RESOURCES PRODUCTION CORP
S-1327	CALIFORNIA RESOURCES PRODUCTION CORP
S-1346	CALIFORNIA DAIRIES INC
S-1372	SENTINEL PEAK RESOURCES CA LLC
S-1423	CHEVRON USA INC
S-1543	AERA ENERGY LLC
S-1547	AERA ENERGY LLC
S-1548	AERA ENERGY LLC
S-1624	E&B NATURAL RESOURCES MGMT
S-1626	HOLMES WESTERN OIL CORP
S-1627	HOLMES WESTERN OIL CORP
S-1630	SENECA RESOURCES
S-1641	SENTINEL PEAK RESOURCES CA LLC
S-1699	AERA ENERGY LLC
S-1703	MACPHERSON OIL CO
S-1737	CALIFORNIA RESOURCES PRODUCTION CORP
S-1738	CALIFORNIA RESOURCES PRODUCTION CORP

District Facility Number	Facility Name
S-1807	E&B NATURAL RESOURCES MGMT CORP
S-2010	CHEVRON USA INC
S-2058	E&B NATURAL RESOURCES
S-2076	FRITO-LAY INC
S-2152	CHEVRON USA INC
S-2234	CALIFORNIA RESOURCES ELK HILLS LLC
S-2265	BERRY PETROLEUM COMPANY LLC
S-2622	TRC OPERATION CO INC
S-2918	CRIMSON RESOURCE MANAGEMENT
S-3079	CRIMSON RESOURCE MANAGEMENT
S-3088	TRC CYPRESS GROUP LLC
S-3157	CRIMSON RESOURCE MANAGEMENT
S-3187	CMO INC
S-3247	CRIMSON RESOURCE MANAGEMENT
S-3317	CHEVRON USA INC
S-3507	SENTINEL PEAK RESOURCES CA LLC
S-3550	JG BOSWELL TOMATO CO- KERN LLC
S-3585	BERRY PETROLEUM COMPANY LLC
S-3755	SENECA RESOURCES
S-3798	AERA ENERGY LLC
S-3865	AERA ENERGY LLC
S-3926	CHEVRON USA INC
S-4034	E&B NATURAL RESOURCES
S-4242	HOLMES WESTERN OIL CORP
S-6534	PIXLEY COGEN PARTNERS
S-7063	CALIFORNIA DAIRIES INC
S-7295	CHEVRON USA INC
S-7527	CALIFORNIA RESOURCES ELK HILLS LLC
S-8084	CHEVRON USA
S-8148	CHEVRON USA INC
S-8282	CALIFORNIA RESOURCES PRODUCTION CORP
S-8454	CALIFORNIA RESOURCES PRODUCTION CORP

Appendix B

Affected Rules Identified

District Rule Number	Rule Name	Pollutants Controlled	Purpose of Rule
4104	REDUCTION OF ANIMAL MATTER	Air Contaminants	The purpose of this rule is to limit air contaminants from source operations used for the reduction of animal matter.
4305	BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - PHASE 2	NOx, CO	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.
4306	BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - PHASE 3	NOx, CO	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.
4307	BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - 2.0 MMBTU/HR TO 5.0 MMBTU/HR	PM10, NOx, CO, SOx	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx), carbon monoxide (CO), oxides of sulfur (SO2), and particulate matter 10 microns or less (PM10) from boilers, steam generators, and process heaters.
4309	DRYERS, DEHYDRATORS, AND OVENS	NOx, CO	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from dryers, dehydrators, and ovens.
4311	FLARES	NOx, SOx, VOC	The purpose of this rule is to limit the emissions of volatile organic compounds (VOC), oxides of nitrogen (NOx), and sulfur oxides (SOx) from the operation of flares.
4320	ADVANCED EMISSION REDUCTION OPTIONS FOR BOILERS, STEAM GENERATORS, AND PROCESS HEATERS GREATER THAN 5.0 MMBTU/HR	PM10, NOx, CO, SOx	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx), carbon monoxide (CO), oxides of sulfur (SO_2), and particulate matter 10 microns or less (PM10) from boilers, steam generators, and process heaters.
4351	BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - PHASE 1	NOx	The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) from boilers, steam generators, and process heaters to levels consistent with reasonably available control technology (RACT).

District Rule Number	Rule Name	Pollutants Controlled	Purpose of Rule
4354	GLASS MELTING FURNACES	PM10, NOx, CO, SOx, VOC	The purpose of this rule is to limit emissions of nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), oxides of sulfur (SOx), and particulate matter (PM10) from glass melting furnaces.
4401	STEAM-ENHANCED CRUDE OIL PRODUCTION WELLS	VOC	The purpose of this rule is to limit VOC emissions from steam-enhanced crude oil production wells.
4402	CRUDE OIL PRODUCTION SUMPS	VOC	The purpose of this rule is to limit VOC emissions from first, second, and third stage sumps at facilities producing, gathering, separating, processing, and/or storing crude oil in an oil field.
4405	OXIDES OF NITROGEN EMISSIONS FROM EXISTING STEAM GENERATORS USED IN THERMALLY ENHANCED OIL RECOVERY - CENTRAL AND WESTERN KERN COUNTY FIELDS	NOx	The purpose of this rule is to limit NOx emissions from oil field steam generators. This rule also specifies an implementation schedule.
4406	SULFUR COMPOUNDS FROM OIL-FIELD STEAM GENERATORS - KERN COUNTY	SOx	The purpose of this rule is to limit the emissions of sulfur from oil field steam generators in Kern County.
4407	IN-SITU COMBUSTION WELL VENTS	VOC	The purpose of this rule is to implement federally enforceable emission limitations for insitu combustion well vents. This rule is applicable to all crude oil production wells where production has been enhanced by in-situ combustion.
4408	GLYCOL DEHYDRATION SYSTEMS	VOC	The purpose of this rule is to limit VOC emissions from glycol dehydration systems.
4409	COMPONENTS AT LIGHT CRUDE OIL PRODUCTION FACILITIES, NATURAL GAS PRODUCTION FACILITIES, AND NATURAL GAS PROCESSING FACILITIES	VOC	The purpose of this rule is to limit VOC emissions from leaking components at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities.
4453	REFINERY VACUUM PRODUCING DEVICES OR SYSTEMS	VOC	The purpose of this rule is to limit VOC emissions from refinery vacuum producing devices or systems, including hot wells and accumulators installed in a refinery operation.

District Rule Number	Rule Name	Pollutants Controlled	Purpose of Rule
4454	REFINERY PROCESS UNIT TURNAROUND	VOC	The purpose of this rule is to limit VOC emissions resulting from the purging, repair, cleaning, or otherwise opening or releasing pressure from a refinery vessel during a process unit turnaround.
4455	COMPONENTS AT PETROLEUM REFINERIES, GAS LIQUIDS PROCESSING FACILITIES, AND CHEMICAL PLANTS	VOC	The purpose of this rule is to limit VOC emissions from leaking components at petroleum refineries, gas liquids processing facilities, and chemical plants.
4566	ORGANIC MATERIAL COMPOSTING OPERATIONS	VOC	The purpose of this rule is to limit VOC emissions from composting operations.
4601	ARCHITECTURAL COATINGS	VOC	The purpose of this rule is to limit VOC emissions from architectural coatings.
4603	SURFACE COATING OF METAL PARTS AND PRODUCTS, PLASTIC PARTS AND PRODUCTS, AND PLEASURE CRAFTS	VOC	The purpose of this rule is to limit VOC emissions from the coating of metal parts and products, large appliances parts or products, metal furniture, plastic parts and products, automotive/transportation and business machine plastic parts and products, and pleasure crafts.
4606	WOOD PRODUCTS AND FLAT WOOD PANELING PRODUCTS COATING OPERATIONS	VOC	The purpose of this rule is to limit VOC emissions from wood products coating operations.
4612	MOTOR VEHICLE AND MOBILE EQUIPMENT COATING OPERATIONS	VOC	The purpose of this rule is to limit VOC emissions from coatings of motor vehicles, mobile equipment, and associated parts and components.
4621	GASOLINE TRANSFER INTO STATIONARY STORAGE CONTAINERS, DELIVERY VESSELS, AND BULK PLANTS	VOC	The purpose of this rule is to limit VOC emissions from stationary storage containers, delivery vessels, and bulk plants.
4622	GASOLINE TRANSFER INTO MOTOR VEHICLE FUEL TANKS	VOC	The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline into motor vehicle fuel tanks.
4623	STORAGE OF ORGANIC LIQUIDS	VOC	The purpose of this rule is to limit VOC emissions from the storage of organic liquids.

District Rule Number	Rule Name	Pollutants Controlled	Purpose of Rule
4624	TRANSFER OF ORGANIC LIQUID	VOC	The purpose of this rule is to limit VOC emissions from the transfer of organic liquids.
4625	WASTEWATER SEPARATORS	VOC	The purpose of this rule is to limit VOC emissions from wastewater separators used for the separation of crude oil and water after custody transfer.
4641	CUTBACK, SLOW CURE, AND EMULSIFIED ASPHALT, PAVING AND MAINTENANCE OPERATIONS	VOC	The purpose of this rule is to limit VOC emissions by restricting the application and manufacturing of certain types of asphalt for paving and maintenance operations.
4694	WINE FERMENTATION AND STORAGE TANKS	VOC	The purpose of this rule is to reduce VOC emissions from the fermentation and bulk storage of wine, or achieve equivalent reductions from alternative emission sources.
4701	INTERNAL COMBUSTION ENGINES - PHASE 1	NOx, CO, VOC	The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines.
4702	INTERNAL COMBUSTION ENGINES	NOx, CO, SOx, VOC	The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), and sulfur oxides (SOx) from internal combustion engines.
4703	STATIONARY GAS TURBINES	NOx	The purpose of this rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbine systems.
7012	HEXAVALENT CHROMIUM - COOLING TOWERS	Toxic Air Contaminants (TAC)	The purpose of this rule is to limit emissions of hexavalent chromium from circulating water in cooling towers and to prohibit the use or sale of products containing these compounds for treating cooling tower water.

Appendix C

Rule Analyses

Appendix C-1

Rule 4311, Flares

2018 AB 617 BARCT Rule Control Measure Analysis

Rule 4311
Flares

Engineer: **Stephen Leonard**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[2], Non-vehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[2] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY - Flares

1. RULE SURVEY

1.1. District Rule(s)

SJVAPCD Rule 4311 *(Last Amended June 18, 2009)*

	SJVAPCD
Applicability	Operations involving the use of flares. Please note that, other than recordkeeping, this rule has no requirements for flares at sources that have a potential to emit of less than 10 tons for NOx or VOC.
Requirements	For Petroleum Refineries: Minimize sulfur dioxide flare emissions to less than 0.50 tons per million barrels of crude processing capacity, calculated as an average over one calendar year. Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18; Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG); Recordkeeping and reporting; Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr.

1.2. Bay Area AQMD Rule(s)

BAAQMD Regulation 12, Rule 12 – Flares at Petroleum Refineries
(Last Amended April 5, 2006)

	SJVAPCD	BAAQMD	Conclusion
Applicability	Operations involving the use of flares. Please note that, other than recordkeeping, this rule has no requirements for flares at sources that have a potential to emit of less than 10 tons for NOx or VOC.	Flares at petroleum refineries	SJVAPCD applies to more source types
Requirements	For Petroleum Refineries: Minimize sulfur dioxide flare emissions to less than 0.50 tons per million barrels of crude processing capacity, calculated as an average over one calendar year. Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18; Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG); Recordkeeping and reporting; Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr.	Flare minimization plan	SJVAPCD requirements are more stringent.

1.3. South Coast AQMD Rule

SCAQMD Rule 1118 – Control of Emissions From Refinery Flares
(Last Amended July 7, 2017)

	SJVAPCD	SCAQMD	Conclusion
Applicability	Operations involving the use of flares. Please note that, other than recordkeeping, this rule has no requirements for flares at sources that have a potential to emit of less than 10 tons for NOx or VOC.	Refinery and related flaring operation.	SJVAPCD applies to more source types
Requirements	For Petroleum Refineries: Minimize sulfur dioxide flare emissions to less than 0.50 tons per million barrels of crude processing capacity, calculated as an average over one calendar year. Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18; Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG); Recordkeeping and reporting; Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr.	Smokeless operation; recordkeeping and reporting; flare minimization plan; mitigation fees	SJVAPCD requirements are more stringent

1.4. Sacramento Metropolitan AQMD Rule

SMAQMD's rulebook does not have a rule that applies specifically to flares.

SMAQMD has Rule 419 which covers NO_X from Miscellaneous Combustion Units. However, since this rule does not have any VOC controls/limits, no further analysis is required.

1.5. Ventura County APCD Rule

VCAPCD's rulebook does not have a Rule that specifically applies to flares.

1.6. Rule Survey Conclusion

As presented above, District Rule 4311 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement.

1.7. Santa Barbara APCD Rule

SBAPCD Rule 359 – Flares and Thermal Oxidizers *(Adopted June 28, 1994)*

	SJVAPCD	SBAPCD	Conclusion
Applicability	Operations involving the use of flares. Please note that, other than recordkeeping, this rule has no requirements for flares at sources that have a potential to emit of less than 10 tons for NOx or VOC.	Flares and thermal oxidizers at oil and gas production sources, petroleum refinery and related sources, natural gas services and transportation sources.	Similar wide range of sources
Requirements	For Petroleum Refineries: Minimize sulfur dioxide flare emissions to less than 0.50 tons per million barrels of crude processing capacity, calculated as an average over one calendar year. Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18; Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG); Recordkeeping and reporting; Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr.	Sulfur limits on planned flaring of 15 gr (as H_2S) in Southern Zone, 50 gr (as H_2S) in Northern Zone. FMP for flares ≥ 15 MMBtu/hr. Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG) (all ratings). For planned flaring, targeted maximum monthly flared gas volume, which shall not exceed 5% of the average monthly gas handled/produced/treated at the source unless the operator demonstrates otherwise.	Same emission limits, and similar applicability. District wide only approximately 4% of gas produced in oil and gas production operations is flared. As such, on a District wide basis, the percentage of gas flared is lower than the target in Rule 359. District Rule 4311 is more stringent than the requirements of Rule 359.

1.8. Rule Survey Conclusion

As presented above, District Rule 4311 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

There are numerous open flares operating in the District. Additionally, there are several enclosed flares in the District. The majority of these enclosed flares are located at landfills (and currently exempt from Rule 4311), with a small number located at municipal wastewater treatment plants.

There are also enclosed VOC destruction devices in the District that are similar to enclosed flares but operate with mixing controls and have been put into practice as control devices. These devices do not meet the definition of flares in Rule 4311, but are an alternative method for VOC control.

2.2. State Regulations – ATCMs and other rules

No state regulations were found that are applicable to flares.

On March 23, 2017 CARB adopted a new rule to reduce greenhouse gas emissions from oil and gas operations (Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities). With regard to flares, this rule requires at least 95% by weight vapor control efficiency and that the flare does not require the use of supplemental fuel gas, other than gas required for a pilot burner.

Please note that it is commonly accepted that properly designed and operated flares achieve a VOC destruction efficiency greater than 98% by weight. The CARB oil and gas rule is no more stringent for VOC emission requirements than is commonly achieved by flares that are subject to Rule 4311.

2.3. Federal Regulations – CFRs

40 CFR 60 Subpart A, §60.18 applies to air assisted, steam-assisted, or non-assisted open flares but only regulates operational conditions, not emissions or reductions in flare emissions.

2.4. Table Comparing Potential Retrofit Control Technologies/Emission Limits

	SJVAPCD	Other Control Options	Conclusion
Applicability	Operations involving the use of flares. Please note that, other than recordkeeping, this rule has no requirements for flares at sources that have a potential to emit of less than 10 tons for NOx or VOC.	State Regulations – New/modified flares on oil/gas operations used to comply with the State regulation Federal Regulations – Federal Regulations 40 CFR 60.18 applies to flares used to comply with emission limits of other NSPS'. Includes design requirements for flares. No emission requirements.	Rule 4311 has broader applicability.
Requirements	For Petroleum Refineries: Minimize sulfur dioxide flare emissions to less than 0.50 tons per million barrels of crude processing capacity, calculated as an average over one calendar year. Open flares (air-assisted, steam-assisted, or non-assisted): Comply with 40 CFR 60.18; Ground level enclosed flares without steam assist: 0.0051 lb-VOC/MMBtu (<10 MMBtu/hr); 0.0027 lb-VOC/MMBtu, (10-100 MMBtu/hr); 0.0013 lb-VOC/MMBtu (> 100 MMBtu/hr). Ground level enclosed flares with steam assist: 0.14 lb-VOC/MMBtu (as TOG); Recordkeeping and reporting; Flare minimization plan for refinery flares or flares ≥ 5.0 MMBtu/hr.	State Regulations – New/modified flares on oil/gas operations used to comply with the State regulation must meet 95% by weight control efficiency. Federal Regulations 40 CFR 60.18 imposes design and operational requirements. No emission requirements.	Rule 4311 requirements are more stringent.

2.5. Other Control Technology Conclusion

As presented above, no other potential retrofit control technology has been identified that is more stringent than the control technology/emission limits options identified in District Rule 4311.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4311 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement and therefore meets BARCT requirements for VOC emissions for this class and category of source. No further evaluation is necessary.

Appendix C-2

Rule 4354, Glass Melting Furnaces

2018 AB 617 BARCT Rule Control Measure Analysis

Rule 4354
Glass Melting Furnaces

Engineer: **Dustin Brown**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[3], Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[3] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY - Glass Melting Furnaces

District Rule 4354 applies to the following source categories:

Source Category A - Container Glass
Source Category B - Fiberglass
Source Category C - Flat Glass

1. RULE SURVEY

1.1. District Rule

SJVAPCD Rule 4354 *(Last Amended May 19, 2011)*

SOURCE CATEGORY A – Container Glass Furnaces

SJVAPCD Rule 4354		
Applicability	All container glass melting furnaces	
Requirements	VOC	20 ppmv @ 8% O_2, rolling 3-hour avg *(100% air fired furnace)*
		0.25 lb-VOC/ton, rolling 3-hour avg *(O_2 Assisted or Oxy-fuel furnace)*

SOURCE CATEGORY B – Fiberglass Furnaces

SJVAPCD Rule 4354		
Applicability	All fiberglass melting furnaces	
Requirements	VOC	20 ppmv @ 8% O_2, rolling 3-hour avg *(100% air fired furnace)*
		0.25 lb-VOC/ton, rolling 3-hour avg *(O_2 Assisted or Oxy-fuel furnace)*

SOURCE CATEGORY C – Flat Glass Furnaces

SJVAPCD Rule 4354		
Applicability	All flat glass melting furnaces	
Requirements	VOC	20 ppmv @ 8% O_2, rolling 3-hour avg *(100% air fired furnace)*
		0.1 lb-VOC/ton, rolling 3-hour avg *(O_2 Assisted or Oxy-fuel furnace)*

1.2. Bay Area AQMD Rule(s)

BAAQMD Regulation 9, Rule 12 - Nitrogen Oxides from Glass Melting Furnaces *(Adopted January 19, 1994)*

SOURCE CATEGORY A – Container Glass Furnaces

		SJVAPCD	BAAQMD	Conclusion
Applicability		All glass melting furnaces	All glass melting furnaces	Same Applicability
Requirements	VOC	See table above	No limit	SJVAPCD rule has more stringent VOC emissions limit

SOURCE CATEGORY B – Fiberglass Furnaces

		SJVAPCD	BAAQMD	Conclusion
Applicability		All glass melting furnaces	All glass melting furnaces	Same Applicability
Requirements	VOC	See table above	No limit	SJVAPCD rule has more stringent VOC emissions limit

SOURCE CATEGORY C – Flat Glass Furnaces

		SJVAPCD	BAAQMD	Conclusion
Applicability		All glass melting furnaces	All glass melting furnaces	Same Applicability
Requirements	VOC	See table above	No limit	SJVAPCD rule has more stringent VOC emissions limit

1.3. South Coast AQMD Rule(s)

SCAQMD Rule 1117 - Emissions of Nitrogen from Glass Melting Furnaces
(Last Amended January 6, 1984)

SOURCE CATEGORY A – Container Glass Furnaces

		SJVAPCD	SCAQMD	Conclusion
Applicability		All glass melting furnaces	All glass melting furnaces	Same Applicability
Requirements	VOC	See table above	No limit	SJVAPCD rule has more stringent VOC emissions limit

SOURCE CATEGORY B – Fiberglass Furnaces

South Coast Rule 1117, Section (d)(5) states that the provisions of the rule do not apply to furnaces used in the melting of glass for the production of fiberglass exclusively. No other rules were found applicable to fiberglass melting furnaces in SCAQMD's rulebook.

SOURCE CATEGORY C – Flat Glass Furnaces

South Coast Rule 1117, Section (d)(4) states that the provisions of the rule do not apply to flat glass melting furnaces. No other rules were found applicable to flat glass melting furnaces in SCAQMD's rulebook.

1.4. Sacramento Metropolitan AQMD Rule(s)

No rule applicable to glass melting furnaces was found in SMAQMD's rulebook.

SMAQMD has Rule 419 which covers NO_X from Miscellaneous Combustion Units. However, in accordance with Section 114.7, the requirements of this rule do not apply to furnaces. Therefore, no further evaluation of this rule is required as a part of this BARCT analysis.

1.5. Ventura County APCD Rule(s)

No rule applicable to glass melting furnaces was found in VCAPCD's rulebook.

1.6. Rule Survey Conclusion

As presented above, District Rule 4354 currently has in place the most stringent control measures/emission limits for VOC emissions that are feasible to retrofit and implement.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

Facility		Facility Name	Rule 4354 Limit	Permitted VOC Limits	Conclusion
Container Glass					
N	1662	Gallo Glass	20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	0.23 lb/ton, no avg period specified	Permitted limits are more stringent than the Rule 4354 VOC emission limit
				0.23 lb/ton, no avg period specified	
				0.23 lb/ton, no avg period specified	
				0.23 lb/ton, no avg period specified	
N	593	Owens Brockway		20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	Equivalent VOC limits
				20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	Equivalent VOC limits
				20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	Equivalent VOC limits
C	801	Ardagh		0.25 lb/ton, rolling 3-hr avg	Equivalent VOC limit
				0.2 lb/ton, rolling 3-hr avg	Permitted limit is more stringent than the Rule 4354 VOC emission limit
Flat Glass					
C	598	Guardian Industries	20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	6.6 ppmv @ 8% O_2, rolling 3-hr avg	Equivalent VOC limits
C	948	Vitro Flat Glass LLC		0.10 lb/ton, rolling 3-hr avg	Equivalent VOC limits
Fiberglass					
C	261	CertainTeed Corp	20 ppmv @ 8% O_2 or 0.25 lb/ton, rolling 3-hr avg	0.25 lb/ton, rolling 3-hr avg	Equivalent VOC limits

2.2. State Regulations – ATCMs

No state regulations were found that are applicable to glass melting furnaces.

2.3. Federal Regulations – CFRs

40 CFR 60, Subpart CC – Standards of Performance for Glass Manufacturing Plants

This subpart applies to each glass melting furnaces that commenced construction or modification after June 15, 1979. The subpart only contains requirements for particulate matter emissions and does not regulate VOC emissions. Therefore, no further analysis for this subpart is required.

40 CFR 60, Subpart PPP – Standards of Performance for Wool Fiberglass Insulation Manufacturing Plants

This subpart applies each rotary spin wool fiberglass insulation manufacturing line that commenced construction or modification after February 7, 1984. The subpart only contains requirements for particulate matter emissions and does not regulate VOC emissions. Therefore, no further analysis for this subpart is required.

2.4. Other Control Technology Conclusion

As presented above, existing permitting units for container glass manufacturing facilities have VOC emission limits that are slightly lower than the current Rule 4354 container glass VOC emission limit of 0.25 lb/ton. However, glass furnaces do not operate with specific devices/technologies for controlling VOC emissions. VOC emissions are reduced due to the high operating temperature of a glass melting furnace (~ 2,000 °F) and the residence time of the exhaust gases within the furnace prior to being emitted to the atmosphere.

No other potential retrofit control technology/emission limits have been identified that are more stringent than the control technology/emission limits options identified in District Rule 4354 for VOC emissions.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4354 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement for VOC emissions and therefore meets BARCT requirements for this class and category of source. No further evaluation is necessary.

Appendix C-3

Rule 4408, Glycol Dehydration Systems

2018 AB 617 BARCT Rule Control Measure Analysis

Rule 4408
Glycol Dehydration Systems

Engineer: **Richard Edgehill**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[4], Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[4] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY - GLYCOL DEHYDRATION UNITS

1. RULE SURVEY

1.1. District Rule(s)

SJVAPCD Rule 4408 *(Adopted December 19, 2002)*

	SJVAPCD
Applicability	This rule applies to any glycol dehydration system with a glycol dehydration vent that is subject to permitting requirements pursuant to Regulation II (Permits).
Requirements	Requires vapors from glycol dehydrator vents be directed to: • vapor recovery system, fuel system, or sales gas systems, or • flare, incinerator, reboiler, or thermal oxidizer, or • other system that reduces emissions by 95% or to no more than 1.7 lb VOC per MMscf of gas throughput.

1.2. Bay Area AQMD Rule(s)

BAAQMD does not have any rules for this source category.

1.3. South Coast AQMD Rule(s)

SCAQMD does not have any rules for this source category.

1.4. Sacramento Metropolitan AQMD Rule(s)

SMAQMD does not have any rules for this source category.

1.5. Ventura County APCD Rule(s)

VCAPCD Rule 71.5 – Glycol Dehydrators *(Adopted December 13, 1994)*

	SJVAPCD	VCAPCD	Conclusion
Applicability	This rule applies to any glycol dehydration system with a glycol dehydration vent that is subject to permitting requirements pursuant to Regulation II (Permits).	This rule is applicable to glycol dehydrators anywhere natural gas is dehydrated.	Applicability is the same.
Requirements	Requires vapors from glycol dehydrator vent be directed to: • vapor recovery system, fuel system, or sales gas systems, or • flare, incinerator, reboiler, or thermal oxidizer, or • other system that reduces emissions by 95% or to no more than 1.7 lb VOC per MMscf of gas throughput. Exempts units operating less than 200 hr/yr or processing less than 5 MMscf/yr.	Requires vapors from glycol dehydrator vent be directed to: • vapor recovery system, fuel system, or sales gas systems, or • flare, incinerator, reboiler, or thermal oxidizer, or • other system that reduces emissions by 95% or to no more than 1.7 lb VOC per MMscf of gas throughput. Exempts units operating less than 200 hr/yr.	The requirements are the same as SJVAPCD. While the exemptions in the VCAPCD rule are slightly different, both rules have exemptions that apply to low use glycol dehydrators.

1.6. Rule Survey Conclusion

As presented above, District Rule 4408 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

The majority of the District's permitted units are for glycol dehydrators where the glycol vent vapors are directed to the glycol reboiler or are recycled to a point upstream of the glycol reboiler or into a gas collection system with a 95 percent control efficiency. New units subject to the rule have complied with the vapor control requirements for glycol vents as well.

2.2. State Regulations – ATCMs

No state regulations were found that are applicable to glycol dehydrators.

2.3. Federal Regulations – CFRs

40 CFR 63 Subpart HH National Emission Standards for Hazardous Air Pollutants from Oil and Gas Production Facilities

Key definitions are:

Glycol dehydration unit means a device in which a liquid glycol (including, but not limited to, ethylene glycol, diethylene glycol, or triethylene glycol) absorbent directly contacts a natural gas stream and absorbs water in a contact tower or absorption column (absorber). The glycol contacts and absorbs water vapor and other gas stream constituents from the natural gas and becomes "rich" glycol. This glycol is then regenerated in the glycol dehydration unit reboiler. The "lean" glycol is then recycled.

Glycol dehydration unit process vent means the glycol dehydration unit reboiler vent and the vent from the GCG separator (flash tank), if present.

Control device means any equipment used for recovering or oxidizing HAP or volatile organic compound (VOC) vapors. Such equipment includes, but is not limited to, absorbers, carbon absorbers, condensers, incinerators, flares, boilers, and process heaters. For the purposes of this subpart, if gas or vapor from regulated equipment is used, reused (i.e., injected into the flame zone of an enclosed combustion device), returned back to the process, or sold, then the recovery system used, including piping, connections, and flow inducing devices, is not considered to be a control device or a closed-vent system.

See table below for requirements and comments.

40 CFR 63 Subpart HHH National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities

The requirements are the same as 40 CFR 63 Subpart HH except BTEX limits for small existing and new glycol dehydrator vents, calculated using Equations 1 and 2, from 40 CFR 63 Subpart HHH are lower than the Subpart HH limits.

	SJVAPCD	40 CFR Subparts HH and HHH	Conclusion
Applicability	This rule applies to any glycol dehydration system with a glycol dehydration vent that is subject to permitting requirements pursuant to Regulation II (Permits).	The subparts are applicable to glycol dehydrator process vents at Major HAPs sources. Note that glycol dehydration unit process vent means glycol dehydration unit reboiler vent and the vent from the GCG separator (flash tank), if present.	Applicability is the same.
Requirements	Requires vapors from glycol dehydrator vent be directed to: • vapor recovery system, fuel system, or sales gas systems, or • flare, incinerator, reboiler, or thermal oxidizer, or • other system that reduces emissions by 95% or to no more than 1.7 lb VOC per MMscf of gas throughput. Exempts units operating less than 200 hr/yr or processing less than 5 MMscf/yr.	Requires control of process vent emissions from large glycol dehydrators, i.e. with an actual annual average natural gas flowrate equal to or greater than 283.0 thousand standard cubic meters per day (~10 MMscf/day) and actual annual average benzene emissions equal to or greater than 0.90 Mg/yr (0.9 metric tons), to achieve benzene outlet emissions of 90 megragrams (90 metric tons) per year. Unit must be connected through closed vent system to control device meeting the requirements of 40 CFR 63.771 i.e.95% control of either TOC or HAP, or TOC or HAP outlet concentration of 20 ppmv @ 3% O2, or operate ≥ 760 deg C if shown that temperature is an indicator of destruction efficiency. Limit BTEX from process vents from existing and new small glycol dehydration units to emissions rates in megagrams/yr (metric tons/yr) limits calculated using Equations 1 and 2 of 40 CFR 63.1275, respectively. As alternative to above, process vent can be connected to natural gas line, and 95%	Rule 4408 requirements are similar to those in Subparts HH and HHH. However, Rule 4408 applies to a wider range of units. As such Rule 4408 is more stringent.

		control of HAPs from large glycol dehydrators. Flash tank vent control not required if facility complies with above standards for control efficiency (95% of total emissions from glycol vent) and benzene (large units) and BTX (small unit).	

2.4. Other Control Technology Conclusion

As presented above, no other potential retrofit control technology/emission limit has been identified that is more stringent than the control technology/emission limits options identified in District Rule 4408.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4408 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement and therefore meets BARCT requirements for this class and category of source. No further evaluation is necessary.

Appendix C-4

Rule 4453, Refinery Vacuum Producing Devices Or Systems

2018 AB 617 BARCT Rule Control Measure Analysis

Rule 4453
Refinery Vacuum Producing Devices or Systems

Engineer: **Robert Rinaldi**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[5], Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[5] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY - Refinery Vacuum Producing Devices Including Hot Wells and Accumulators Installed in a Refinery Operation

District Rule 4453 applies to the following source categories:

- Refinery vacuum producing devices including hot wells and
- accumulators installed in a refinery operation

Description of process:

In some refinery processes a vacuum must be present on a process vessel for the desired reaction to occur. Often the vacuum is generated by passing steam through a venturi to create a vacuum. Hot wells and accumulators are used to hold the liquids condensed from the vacuum stream.

1. RULE SURVEY

1.1. District Rule

SJVAPCD Rule 4453 *(Last Amended December 17, 1992)*

	SJVAPCD
Applicability	Any vacuum producing device or system, including hot wells and accumulators installed in a refinery operation
Requirements	Hot wells and accumulators shall be covered. The vapors from the vacuum producing device or system including hot wells and accumulators shall either be: collected, compressed, and added to refinery gas; controlled and combusted in an appropriate firebox or incinerator with at least 90 percent VOC control efficiency; or controlled by a method that is equivalent to Section 3.2.1 or 3.2.2 and approved by the APCO.

1.2. Bay Area AQMD Rule(s)

BAAQMD Regulation 8, Rule 9 - Vacuum Producing Systems *(Adopted July 20, 1983)*

	SJVAPCD	BAAQMD	Conclusion
Applicability	Any vacuum producing device or system, including hot wells and accumulators installed in a refinery operation.	The purpose of this Rule is to limit emission of precursor organic compounds from vacuum producing systems.	Same Applicability
Requirements	Hot wells and accumulators shall be covered. The vapors from the vacuum producing device or system including hot wells and accumulators shall either be: collected, compressed, and added to refinery gas; controlled and combusted in an appropriate firebox or incinerator with at least 90 percent VOC control efficiency; or controlled by a method that is equivalent to Section 3.2.1 or 3.2.2 and approved by the APCO.	Vacuum Producing Systems: The control of precursor organic compound emissions from vacuum producing systems at petroleum refineries and chemical plants shall be accomplished by employing the following equipment and/or strategies: 301.1 Non-Condensable precursor organic emissions from vacuum producing systems must either be controlled and piped to an appropriate firebox or incinerator for combustion, or be collected, compressed, and added to the fuel gas system, or be contained and treated so as to prevent their emission into the atmosphere. 301.2 Hot wells and/or accumulators associated with vacuum system condensers must be covered and the precursor organic vapors must either be incinerated or contained and treated so as to prevent their emission into the atmosphere.	SJVAPCD requirements as stringent or more stringent

1.3. South Coast AQMD Rule(s)

SCAQMD Rule 465 - Refinery Vacuum-Producing Devices or Systems
(Last Amended August 13, 1999)

	SJVAPCD	SCAQMD	Conclusion
Applicability	Any vacuum producing device or system, including hot wells and accumulators installed in a refinery operation.	The rule applies to all volatile organic compound emissions and sulfur compound emissions from any petroleum refinery vacuum-producing devices or systems, including hot wells and accumulators.	Same Applicability
Requirements	Hot wells and accumulators shall be covered. The vapors from the vacuum producing device or system including hot wells and accumulators shall either be: collected, compressed, and added to refinery gas; controlled and combusted in an appropriate firebox or incinerator with at least 90 percent VOC control efficiency; or controlled by a method that is equivalent to Section 3.2.1 or 3.2.2 and approved by the APCO.	(1) Hot wells and accumulators shall be equipped with covers. (2) Exhaust gases from vacuum-producing devices or systems, including hot wells and accumulators, shall be continuously collected and added to a fuel gas system or combustion device that has been approved and issued a permit by the Executive Officer in accordance with all applicable District rules applicable to such a device.	SJVAPCD requirements as stringent or more stringent

1.4. Sacramento Metropolitan AQMD Rule(s)

No equivalent rule to SJVAPCD Rule 4453 exists in the SMAQMD rules.

1.5. Ventura County APCD Rule(s)

VCAPCD Rule 67 - Vacuum Producing Devices *(Last Amended July 5, 1983)*

	SJVAPCD	VCAPCD	Conclusion
Applicability	Any vacuum producing device or system, including hot wells and accumulators installed in a refinery operation.	Vacuum Producing Devices	Same Applicability
Requirements	Hot wells and accumulators shall be covered. The vapors from the vacuum producing device or system including hot wells and accumulators shall either be: collected, compressed, and added to refinery gas; controlled and combusted in an appropriate firebox or incinerator with at least 90 percent VOC control efficiency; or controlled by a method that is equivalent to Section 3.2.1 or 3.2.2 and approved by the APCO.	A person shall not discharge into the atmosphere more than three (3) pounds of reactive organic compounds in any one hour from any vacuum producing devices or systems including hot wells and accumulators, unless said discharge has been reduced by at least 90 percent.	SJVAPCD requirements as stringent or more stringent

1.6. Rule Survey Conclusion

As presented above, District Rule 4453 currently has in place equivalent or the most stringent control measures/emission limits feasible to retrofit and implement based on this rule survey.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

All of the permitted refineries within the District include vacuum producing devices as part of the refining process. These refineries all comply with the Requirements of Rule 4453 and maintain a minimum VOC control efficiency of 90 percent.

It is important to note that refineries are also subject to VOC leak detection and repair requirements in Rule 4455 – Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants. This rule essentially prohibits the direct discharge from process vessels of VOC containing vapors to the atmosphere.

2.2. State Regulations – ATCMs or other regulations

No state regulations are applicable for this source category.

2.3. Federal Regulations – CFRs

40 CFR Part 60, Subpart Ja - Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007

This subpart does not have any requirements for vacuum producing devices.

40 CFR Part 63, Subpart UUU - National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

This subpart does not have any requirements for vacuum producing devices.

40 CFR Part 60, Subpart GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

This subpart does not have any requirements for vacuum producing devices.

40 CFR 60 Subpart QQQ - Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems

This subpart does not have any requirements for vacuum producing devices.

2.4. Other Control Technology Conclusion

As presented above, no other potential retrofit control technology/emission limit has been identified that is more stringent than the control technology/emission limits options identified in District Rule 4453.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4453 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement and therefore meets BARCT requirements for this class and category of source.

Additionally, equipment subject to Rule 4453 is also subject to the leak detection and repair requirements of Rule 4455.

No further evaluation is necessary.

Appendix C-5

Rule 4612, Motor Vehicle And Mobile Equipment Coating Operations

2018 AB 617 BARCT Rule Control Measure Analysis

District Rule 4612
Motor Vehicle and Mobile Equipment Coating Operations

Engineer: **Thom Maslowski**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[6], Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[6] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY - Motor Vehicle Coating Operation

1. RULE SURVEY

1.1. District Rule

SJVAPCD Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations *(Last amended October 21, 2010)*

	SJVAPCD
Applicability	This rule is applicable to any person who supplies, sells, offers for sale, manufacturers, or distributes any automotive coating for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating within the District.
VOC Regulatory Limits	VOC Regulatory Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)
Most Restrictive VOC Limit	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest applicable VOC content limit in the Coating Limits Table shall apply.
Application	Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used: 1. Brush, dip, or roller; 2. Electrostatic spray 3. High-volume low-pressure (HVLP) spray equipment 4. Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. 5. Any other coating application method that is capable of achieving at least 65 percent transfer efficiency, as determined per Section 6.8.8.

1.2. Bay Area AQMD Rule

BAAQMD Regulation 8, Rule 45 - Motor Vehicle and Mobile Equipment Coating Operations *(Last Amended December 3, 2008)*

	SJVAPCD	BAAQMD	Conclusion
Applicability	This rule is applicable to any person who supplies, sells, offers for sale, manufacturers, or distributes any automotive coating for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating within the District.	No person shall finish or refinish any vehicles, mobile equipment or their parts and components using any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (or pounds per gallon) of coating applied, excluding water and exempt solvents, in excess of the following limits unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an overall control efficiency of at least 85% and which meets the requirements of Regulation 2, Rule 1.	Same Applicability
VOC Regulatory Limits	VOC Regulatory Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6)	VOC Content Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5)	SJVAPCD requirements as stringent or more stringent

	- Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)	- Any Other Coating Type 250 (2.1)	
Most Restrictive VOC Limit	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest applicable VOC content limit in the Coating Limits Table shall apply.	If anywhere on the container or any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a person, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest VOC content	SJVAPCD requirements as stringent or more stringent
Application	Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used: 1. Brush, dip, or roller; 2. Electrostatic spray 3. High-volume low-pressure (HVLP) spray equipment 4. Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. 5. Any other coating application method that is capable of achieving at least 65 percent	A person shall not apply any coating to any motor vehicles or mobile equipment or their parts and components with spray application equipment unless one of the following methods is used: 1. Electrostatic application equipment; or 2. High-Volume Low-Pressure (HVLP) spray equipment; or 3. Any alternative coating application method that achieves a transfer efficiency equivalent to, or higher than, the application methods listed above.	SJVAPCD requirements as stringent or more stringent

	transfer efficiency, as determined per Section 6.8.8.		
Organic Solvent Requirements	For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material. For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under Consumer Products. A person shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.	Any person using an organic solvent for surface preparation and cleanup or mixing, using or disposing of coating or stripper containing organic solvent: 1. Shall close containers used for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup. 2. Shall close containers of fresh or spent solvent, coating, catalyst, thinner, or reducer when not in use. 3. Shall not use organic compounds for the cleanup of spray equipment, including paint lines, unless equipment for collecting the organic compounds and minimizing their evaporation to the atmosphere is used. 4. The VOC content of surface preparation solvent shall not exceed 25 g/l (0.2 lb/gal). This limit shall not apply to surface preparation solvent used as bug and tar remover provided that the VOC content of such solvent does not exceed 350 g/l (2.9 lb/gal). Usage of solvent used as bug and tar remover is limited as follows: i. 20 gallons in any consecutive 12-month period for facilities and operations with 400 gallons or more of coating usage per year; ii. 15 gallons in any consecutive 12-month period for facilities and	SJVAPCD requirements as stringent or more stringent

		operations with 150 gallons or more of coating usage per year; and iii. 10 gallons in any consecutive 12-month period for facilities and operations with less than 150 gallons of coating usage per year.	

1.3. South Coast AQMD Rule

SCAQMD Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations *(Last Amended September 5, 2014)*

	SJVAPCD	SCAQMD	Conclusion
Applicability	This rule is applicable to any person who supplies, sells, offers for sale, manufacturers, or distributes any automotive coating for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating within the District.	This rule is applicable to any person who supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses or distributes any automotive coating or associated solvent for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating or associated solvent within the District	Same Applicability
VOC Regulatory Limits	VOC Regulatory Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1)	VOC Content Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Coating Category - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1)	SJVAPCD requirements as stringent or more stringent

	- Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)	- Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)	
Most Restrictive VOC Limit	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest applicable VOC content limit in the Coating Limits Table shall apply.	If any representation or information on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature that indicates that the automotive coating meets the definition of or is recommended for use for more than one of the automotive coating categories listed in VOC Content Limit table, then the lowest VOC content shall apply.	SJVAPCD requirements as stringent or more stringent
Application	Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used: 1. Brush, dip, or roller; 2. Electrostatic spray 3. High-volume low-pressure (HVLP) spray equipment	A person shall not apply any coating to any motor vehicles or mobile equipment or their parts and components with spray application equipment unless one of the following methods is used: 1. Electrostatic application equipment, operated in accordance with the manufacturer's recommendations; or 2. High-Volume Low-Pressure (HVLP) spray equipment, operated in accordance with the	SJVAPCD requirements as stringent or more stringent

	4. Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. 5. Any other coating application method that is capable of achieving at least 65 percent transfer efficiency, as determined per Section 6.8.8.	manufacturer's recommendations; or 3. Any alternative coating application method that achieves a transfer efficiency equivalent to, or higher than, the application methods listed above.	
Organic Solvent Requirements	For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material. For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under Consumer Products. A person shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.	Solvent Cleaning, Storage and Disposal of VOC-Containing Materials Solvent cleaning of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC-containing materials used in cleaning operations shall be carried out pursuant to SCAQMD Rule 1171 – Solvent Cleaning Operations.	SJVAPCD requirements as stringent or more stringent

1.4. Sacramento Metropolitan AQMD Rule

SMAQMD Rule 459 - Automotive, Mobile Equipment, and Associated Parts and Components Coating Operations *(Last Amended August 25, 2011)*

	SJVAPCD	SMAQMD	Conclusion
Applicability	This rule is applicable to any person who supplies, sells, offers for sale, manufacturers, or distributes any automotive coating for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating within the District.	The provisions of this rule shall apply to any person who supplies, sells, offers for sale, manufactures, or distributes any automotive coating or associated solvent for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating or associated solvent within the District	Same Applicability
VOC Regulatory Limits	VOC Regulatory Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)	VOC Regulatory Limit as Applied g/l (lbs/gal) - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating: - Mobile equipment driven or drawn on rails and its associated parts and components 520 (4.3) - Any other mobile equipment or motor vehicle and its associated parts and components 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer/Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 200 (1.7) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5)	SJVAPCD requirements as stringent or more stringent

		- Any Other Coating Type, Excluding - Materials Listed In Section 302: 250 (2.1)	
Most Restrictive VOC Limit	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest applicable VOC content limit in the Coating Limits Table shall apply.	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a person, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Section 301, then the lowest VOC content limit shall apply.	SJVAPCD requirements as stringent or more stringent
Application	Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used: 1. Brush, dip, or roller; 2. Electrostatic spray 3. High-volume low-pressure (HVLP) spray equipment 4. Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. 5. Any other coating application method that is capable of achieving at least 65 percent	A person shall not apply any coating unless one of the following application methods is used: a. Electrostatic application equipment. b. High-Volume Low-Pressure spray equipment. The spray gun shall meet one of the following: 1. The spray gun shall be permanently labeled as HVLP; or 2. If the spray gun is not permanently labeled as a HVLP, then the end user shall demonstrate that the spray gun meets the HVLP definition in Section 224 in design and use. A satisfactory demonstration shall be based on the manufacturer's published technical material on the design of the gun and by a demonstration of the	SJVAPCD requirements as stringent or more stringent

	transfer efficiency, as determined per Section 6.8.8.	operation of the gun using an air pressure tip gauge from the manufacturer of the gun. c. Low-Volume Low-Pressure spray equipment. d. Brush or roll coating, dip coat, or flow coat. e. Any other application method that achieves a transfer efficiency equivalent to, or higher than, the application methods listed in Sections 305.1 (a)-(d) as determined by the methods specified on Section 504.9. Written approval from the Air Pollution Control Officer shall be obtained for each alternative application method prior to use.	
Organic Solvent Requirements	For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material. For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under Consumer Products. A person shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.	Any person subject to this rule shall comply with the following requirements: a. Closed containers shall be used for the disposal of cloth, sponges, or paper used for solvent cleaning operations and coating removal. b. Volatile organic compound-containing materials shall be stored in closed, vapor-tight containers, when not in use except while adding to or removing them from the containers. c. A person shall not perform cleaning operations using a solvent with a volatile organic compound content in excess of 25 grams per liter (0.21 pounds per gallon), as determined pursuant to Section 409. d. For bug and tar removal a person shall not use any	SJVAPCD requirements as stringent or more stringent

		solvent other than bug and tar remover regulated under the Consumer Products Regulation or a solvent with a volatile organic compound content of no more than 25 grams per liter. A person shall not perform coating removal with a material containing volatile organic compounds in excess of 200 grams per liter (1.7 pounds per gallon).	

1.5. Ventura County APCD Rule

VCAPCD Rule 74.18 - Motor Vehicle and Mobile Equipment Coating Operations *(Last Amended November 11, 2008)*

	SJVAPCD	VCAPCD	Conclusion
Applicability	This rule is applicable to any person who supplies, sells, offers for sale, manufacturers, or distributes any automotive coating for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating within the District.	This rule apply to any person who manufactures, distributes, supplies, sells, offers for sale, applies or solicits the use of, automotive coatings for motor vehicles, mobile equipment, and their parts or components. The purpose of this rule is to limit reactive organic compound (ROC) emissions from coatings and solvents used in production, repair, refinish, or maintenance operations where motor vehicles, mobile equipment, and associated parts and components are coated.	Same Applicability
VOC Regulatory Limits	VOC Regulatory Limit as Applied g/l (lbs/gal): - Adhesion Promoter 540 (4.5) - Clear Coating 250 (2.1) - Color Coating 420 (3.5) - Multi-Color Coating 680 (5.7) - Pretreatment Coating 660 (5.5) - Primer 250 (2.1) - Primer Sealer 250 (2.1) - Single-Stage Coating 340 (2.8) - Temporary Protective Coating 60 (0.5) - Truck Bed Liner Coating 310 (2.6) - Underbody Coating 430 (3.6) - Uniform Finish Coating 540 (4.5) - Any Other Coating Type 250 (2.1)	- Adhesion Promoter 540 - Clear Coating 250 - Color Coating 420 - Multi-Color Coating 680 - Pretreatment Coating 660 - Primer 250 - Primer Sealer 250 - Single-Stage Coating - Nonmetallic/Noniridescent 340 - Single Stage Metallic/Iridescent Coating 340 - Temporary Protective Coating 60 - Truck Bed Liner Coating 310 - Underbody Coating 430 - Uniform Finish Coating 540 - Water-Reducible Electrophoretic Brake Component Coating 440 - Any other coating type (default) 250	SJVAPCD requirements as stringent or more stringent

Most Restrictive VOC Limit	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Coating Limits table, then the lowest applicable VOC content limit in the Coating Limits Table shall apply.	If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a person, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Subsection B.1, then the lowest ROC content limit shall apply.	SJVAPCD requirements as stringent or more stringent
Application	Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used: 1. Brush, dip, or roller; 2. Electrostatic spray 3. High-volume low-pressure (HVLP) spray equipment 4. Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. 5. Any other coating application method that is capable of achieving at least 65 percent transfer efficiency, as determined per Section 6.8.8.	No person shall apply any coating to any motor vehicle or mobile equipment or their associated parts and components unless one of the following methods is properly used: 1. Hand application methods including, but not limited to: brush, dip or roller 2. Electrophoretic dip coating 3. Electrostatic application, operated at a minimum of 60 KV 4. High-Volume, Low-Pressure (HVLP) spray equipment: If a spray gun is used, the end user shall demonstrate that the spray gun meets the definition of HVLP in design and use. A satisfactory demonstration shall be based on the manufacturer's published technical material on the design of the gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the spray gun manufacturer. 5. Alternative Application Method: Any other alternative method	SJVAPCD requirements as stringent or more stringent

		that achieves a transfer efficiency equivalent to, or higher than, one of the application methods listed above.	
Organic Solvent Requirements	For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material. For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under Consumer Products. A person shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.	Effective January 1, 2010, no person shall use a solvent for any cleaning operation that has an ROC content exceeding 25 grams per liter of material.	SJVAPCD requirements as stringent or more stringent

1.6. Rule Survey Conclusion

As presented above, District Rule 4612 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

Following the last revision to District Rule 4612 on October 21, 2010, the District updated all existing permits authorizing motor vehicle and mobile equipment coating operations. Any permitted sources that may have lower emission limits based on product specific coatings are not representative of the source category as a whole; therefore, the rule contains the most stringent limits for the source category.

2.2. State Regulations – ATCMs

Title 17, Section 93112 – Airborne Toxic Control Measure (ATCM) for Emissions of Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings

This regulation prohibits the sale and supply of motor vehicle and/or mobile equipment coatings manufactured on or after January 1, 2003 that contain hexavalent chromium or cadmium. These compounds are not VOCs. Therefore, this regulation does not contain requirements to reduce VOC emissions and no further discussion is required as a part of this analysis.

2.3. Federal Regulations – CFRs

40 CFR 63, Subpart HHHHHH – National Emission Standards for Hazardous Air Pollutants for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

This subpart applies to each facility that is considered an area source of hazardous air pollutant (HAP) emissions and that performs spray application of coatings to motor vehicles and mobile equipment. However, this subpart only contains requirements that limit or control HAP compounds of chromium, lead, manganese, nickel, or cadmium. These HAP compounds are not VOCs. Therefore, this subpart does not regulate VOC emissions and no further discussion is required as a part of this analysis.

2.4. Other Control Technology Conclusion

As presented above, no other potential retrofit control technology/emission limit has been identified that is more stringent than the control technology/emission limits options identified in District Rule 4612.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4612 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement and therefore meets BARCT requirements for this class and category of source. No further evaluation is necessary.

Appendix C-6

Rule 4622, Gasoline Transfer Into Motor Vehicle Fuel Tanks

2018 AB 617 BARCT Rule Control Measure Analysis

District Rule 4622
Gasoline Transfer into Motor Vehicle Fuel Tanks

Engineer: **Sajjad Ahmad**
Date: **November 1, 2018**

Introduction

In September of 2017, the California State Legislature and Governor passed Assembly Bill 617 (AB 617)[7], Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. AB 617 requires the California Air Resources Board (ARB) and air districts to develop and implement additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in impacted communities. One requirement of AB617 is for air districts located in non-attainment areas to perform a Best Available Retrofit Control Technology (BARCT) analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules that are found to not meet BARCT requirements.

Existing stationary sources in non-attainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s, although some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406 defines BARCT as follows:

> Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.

[7] AB 617, Garcia, C., Chapter 136, Statutes of 2017.

SOURCE CATEGORY – Gasoline Transfer from Stationary Gasoline Storage Containers into Motor Vehicle Fuel Tanks

District Rule 4622 applies to the following source categories:

- Gasoline transfer from stationary gasoline storage containers (USTs or ASTs) into motor vehicle fuel tanks with a capacity greater than 5 gallons
- Gasoline transfer from mobile fuelers with a capacity greater than 120 gallons into motor vehicle fuel tanks with a capacity greater than 5 gallons

As discussed above, this BARCT analysis only applies to facilities subject to the Cap and Trade requirements. Currently the District does not have any permit units for District Rule 4621 that are subject to Cap and Trade requirements for the following source category:

- Gasoline transfer from mobile fuelers with a capacity greater than 120 gallons into motor vehicle fuel tanks with a capacity greater than 5 gallons

Therefore, the above listed source category from District Rule 4622 will not be evaluated under this BARCT analysis for AB 617 purposes.

The following analysis only applies to the following source category subject to District Rule 4622:

- Gasoline transfer from stationary gasoline storage containers (USTs or ASTs) into motor vehicle fuel tanks with a capacity greater than 5 gallons

1. RULE SURVEY

1.1. District Rule

SJVAPCD Rule 4622 *(Last Amended on December 19, 2013)*

	SJVAPCD
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.
Requirements	ARB certified Phase II vapor recovery system maintained without leaks.

1.2. Bay Area AQMD Rule(s)

BAAQMD Regulation 8, Rule 7 - Gasoline Dispending Facilities *(Last Amended November 6, 2002)*

	SJVAPCD	BAAQMD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	The purpose of this rule is to limit emissions of organic compounds from gasoline dispensing facilities. A gasoline dispensing facility is defined in the rule as a stationary operation which dispenses gasoline directly into the fuel tanks of motor vehicles.	Same Applicability
Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system maintained without leaks.	SJVAPCD requirements as stringent or more stringent

1.3. South Coast AQMD Rule(s)

SCAQMD Rule 461 - Gasoline Transfer and Dispensing *(Last Amended April 6, 2012)*

	SJVAPCD	SCAQMD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	This rule applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler, and from any stationary storage tank or mobile fueler into any mobile fueler or motor vehicle fuel tank.	Same applicability for gasoline transfer from stationary gasoline containers to motor vehicle fuel tanks.
Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system as capable of recovering or processing displaced gasoline vapors by at least 95%, or having an emission factor not exceeding 0.38 pounds per 1,000 gallons, as applicable.	Although District rule 4622 does not specifically states the control efficiency and emission factor, it refers to ARB certified Phase II vapor recovery systems, which are certified to meet these standards. Therefore, the rule is as stringent as SCAQMD rule.

1.4. Sacramento Metropolitan AQMD Rule(s)

SMAQMD Rule 449 - Transfer of Gasoline into Vehicle Fuel Tanks *(Last Amended February 26, 2009)*

	SJVAPCD	SMAQMD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	This rule applies to the transfer of gasoline from any stationary storage tank or delivery vessel into any motor vehicle fuel tank.	Same Applicability
Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system with a vapor control efficiency of at least 95% by weight and a mass emission factor not exceeding 0.38 pounds of gasoline vapors per 1,000 gallons of gasoline dispensed (both for summer and winter fuels). In addition, rule also requires to maintain Phase II vapor recovery system without leaks.	Although District rule 4622 does not specifically states the control efficiency and emission factor, it refers to ARB certified Phase II vapor recovery systems, which are certified to meet these standards. Therefore, the rule is as stringent as SMAQMD rule.

1.5. Ventura County APCD Rule(s)

VCAPCD Rule 70 - Storage and Transfer of Gasoline *(Last Amended March 10, 2009)*

	SJVAPCD	VCAPCD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	This rule applies to the storage and transfer of gasoline (includes transfer of gasoline into motor vehicle fuel tanks).	Same Applicability

Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system with 95% vapor control efficiency. Rule also requires to maintain Phase II vapor recovery system in a leak-free condition.	Although District rule does not specifically states the control efficiency of Phase II vapor recovery system, it refers to ARB certification. Since Phase II systems are certified for a minimum control efficiency of 95%, the District Rule is as stringent as VCAPCD rule.

1.6. *San Diego APCD Rule 61.4 - Transfer of Volatile Organic Compounds into Vehicle Fuel Tanks* *(Last Amended March 26, 2008)*

	SJVAPCD	San Diego APCD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	Except as otherwise exempted by Section (b), this rule is applicable to the transfer of volatile organic compounds (VOC's) into any motor vehicle tank with a capacity greater than 5 gallons (18.9 liters) at the following fuel dispensing facilities: (1) Any retail service station, as defined in Rule 61.0 where VOC's are dispensed into motor vehicle tanks from any stationary storage tank with a capacity of 250 gallons (946 liters) or more, and (2) Any facility that is not a retail service station where: (i) VOC's are dispensed into motor vehicle tanks from any stationary storage tank with a capacity greater than 550 gallons (2080 liters), and (ii) Where more than 2000 gallons (7570 liters) of VOC's are transferred into motor vehicle tanks in any calendar month on the parcel of land where the facility is located.	San Diego APCD Rule 61.4 specifies VOC and not gasoline. However, as defined in San Diego Rule 61.0, gasoline meets the definition of VOCs. Thus, both rules have same applicability.

Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system to be at least 95% effective.	Since all ARB Phase II vapor recovery systems are certified to be at least 95% effective, both rules have same requirement.

1.7. San Diego APCD Rule 61.4.1 - Transfer of Gasoline from Stationary Underground Storage Tanks into Vehicle Fuel Tanks (Last Amended March 26, 2008)

	SJVAPCD	San Diego APCD	Conclusion
Applicability	This rule applies to any gasoline storage and dispensing operation or mobile fueler from which gasoline is transferred into motor vehicle fuel tanks, except for exempt categories specified in Section 4.0.	Except as otherwise exempted in Section (b), this rule is applicable at the following gasoline dispensing facilities where gasoline is transferred from stationary USTs into any motor vehicle fuel tank with a capacity greater than 5 gallons (18.9 liters): (1) Any retail gasoline dispensing facility where gasoline is dispensed into motor vehicle fuel tanks from any stationary underground storage tank with a capacity of 250 gallons (946 liters) or more, and (2) Any non-retail gasoline dispensing facility where: (i) Gasoline is dispensed into motor vehicle fuel tanks from any stationary underground storage tank with a capacity greater than 550 gallons (2,080 liters), and (ii) (ii) More than 2,000 gallons (7,570 liters) of gasoline are transferred into motor vehicle fuel tanks in any calendar month on the parcel of land where the gasoline dispensing facility is located. This parcel of land includes any adjoining parcels of land under common ownership or entitlement to use.	Same Applicability for USTs

Requirements	ARB certified Phase II vapor recovery system maintained without leaks.	ARB certified Phase II vapor recovery system maintained without leaks.	SJVAPCD requirements as stringent or more stringent

1.8. Rule Survey Conclusion

As presented above, District Rule 4622 currently requires ARB certified Phase II vapor recovery system for gasoline dispensing operations. Since all ARB certified Phase II vapor recovery systems consist of certified parts that can be retrofitted to existing gasoline dispensing operations subject to those requirements, District Rule 4622 has in place the most stringent control measures/emission limits feasible to retrofit and implement.

2. OTHER POTENTIAL RETROFIT CONTROL TECHNOLOGIES/EMISSION LIMITS

2.1. District Permitted Sources

Conducting a survey was not necessary for the current active permits for the gasoline dispensing operations located in the SJVAPCD, as all compliant permits refer to installing ARB certified Phase II vapor recovery system.

2.2. State Regulations –

ARB CP-201, *Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities (Underground Storage Tanks)*

ARB's CP-201 requirements are applicable to motor vehicle gasoline storage and dispensing operations with USTs and are summarized in the following table:

Agency Rule/Regulation	Requirements
ARB CP-201 - USTs	ARB certified Phase II vapor recovery system: Summer Fuel: 95% Efficiency and HC ≤ 0.38 pounds/1,000 gallons dispensed Winter Fuel: 95% Efficiency or HC ≤ 0.38 pounds/1,000 gallons dispensed

CP-201 is the certification standard to which all ARB's EVR vapor recovery systems are certified. As noted previously, although District Rule 4622 does not specify ARB certified Phase II EVR vapor recovery system with control efficiency or emission factor, instead Rule 4622 refers to ARB certified Phase II vapor recovery system, which includes EVR, if applicable. Therefore, Rule 4622 is as stringent as ARB's CP-201.

Since all Phase II vapor recovery components, including EVR if applicable, are designed to retrofit to existing USTs, the District Rule 4622 essentially addresses the most stringent retrofit control requirements for existing USTs.

State Regulations – ARB CP-206, *Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks*

ARB's CP-206 requirements are applicable to motor vehicle gasoline storage and dispensing operations with ASTs and are summarized in the following table:

Agency Rule/Regulation	Requirements
ARB CP-206 - ASTs	ARB certified Phase II vapor recovery system: Summer Fuel: 95% Efficiency and HC ≤ 0.38 pounds/1,000 gallons dispensed Winter Fuel: 95% Efficiency or HC ≤ 0.38 pounds/1,000 gallons dispensed

CP-206 is the certification standard to which all ARB's EVR vapor recovery systems are certified. As noted previously, although District Rule 4622 does not specify ARB certified Phase II EVR vapor recovery system with control efficiency or emission factor, instead Rule 4622 refers to ARB certified Phase II vapor recovery system, which includes EVR, if applicable. Therefore, Rule 4622 is as stringent as ARB's CP-201.

Since all Phase II vapor recovery components, including EVR if applicable, are designed to retrofit to existing ASTs, the District Rule 4622 essentially addresses the most stringent retrofit control requirements for existing ASTs.

2.3. Federal Regulations – CFRs

40 CFR NESHAP Part 63 Subpart CCCCCC – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

The requirements of this subpart are applicable to motor vehicle gasoline storage and dispensing operations and are summarized in the following table:

Section	Monthly Gasoline Throughput (gal/month)	Requirements
63.11115 (a) and (b)	Applicable to all sources subject to this subpart	General duties to minimize emissions by safe and good air pollution control practices.
63.11116	< 10,000	Handling in a manner to minimize spills, cleanup spills, cover all gasoline containers.
63.11117	≥ 10,000 and ≤ 100,000	Handling + submerged fill pipe
63.11118	> 100,000	Handling + submerged fill pipe + Phase II with minimum vapor control efficiency of 90%

A review of the above summarized requirements indicates that CARB certified vapor recovery requirements are generally far more stringent than 40 CFR NESHAP Subpart CCCCCC requirements. Similarly, reporting and recordkeeping requirements of District Rule 4622 are more stringent than reporting and recordkeeping requirements of Subpart CCCCCC. Therefore, the requirements of this subpart will not be considered further in this analysis.

2.4. Other Control Technology Conclusion

As presented above, no other potential retrofit control technology/emission limit has been identified that is more stringent than the control technology/emission limits options identified in District Rule 4622.

3. OVERALL ANALYSIS CONCLUSION

District Rule 4622 currently has in place the most stringent control measures/emission limits feasible to retrofit and implement and therefore meets BARCT requirements for this class and category of source. No further evaluation is necessary.

Appendix D

Prioritization Table of the 16 Rules Requiring Further BARCT Analysis

District Rule Number	Rule Name	Pollutants Controlled	BARCT Implementation Schedule Prioritization Criteria					Priority	BARCT Analysis Timeframe
			Last Rule Amendment	Selected Community		NOx Rule	# of Affected Units		
				SC Fresno	Shafter				
4454	Refinery Process Unit Turnaround	VOC	**12/17/1992**	No	No	No	**43**	1	2019
4641	Cutback, Slow Cure, And Emulsified Asphalt, Paving And Maintenance Operations	VOC	**12/17/1992**	No	No	No	**4**	2	2019
4104	Reduction of Animal Matter	Air Contaminants	**12/17/1992**	No	No	No	**3**	3	2019
4409	Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities	VOC	**04/20/2005**	No	**Yes**	No	133	4	2019
4455	Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants	VOC	**04/20/2005**	No	No	No	**164**	5	2019
4623	Storage of Organic Liquids	VOC	**05/19/2005**	No	**Yes**	No	1845	6	2020
4694	Wine Fermentation and Storage Tanks	VOC	**12/15/2005**	No	No	No	**261**	7	2020
4624	Transfer of Organic Liquid	VOC	**12/20/2007**	No	No	No	**75**	8	2020

District Rule Number	Rule Name	Pollutants Controlled	BARCT Implementation Schedule Prioritization Criteria					Priority	BARCT Analysis Timeframe
			Last Rule Amendment	Selected Community		NOx Rule	# of Affected Units		
				SC Fresno	Shafter				
4603	Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts	VOC	**09/17/2009**	No	No	No	2	9	2020
4601	Architectural Coatings	VOC	**12/17/2009**	No	No	No	66	10	2020
4401	Steam-Enhanced Crude Oil Production Wells	VOC	**05/16/2011**	No	No	No	219	11	2021
4566	Organic Material Composting Operations	VOC	**08/18/2011**	No	No	No	2	12	2021
4625	Wastewater Separators	VOC	**12/15/2011**	No	No	No	7	13	2021
4702	Internal Combustion Engines (VOC only)	NOx, CO, SOx, VOC	**11/14/2013**	No	No	No	419	14	2020 *
4621	Gasoline Transfer Into Stationary Storage Containers, Delivery Vessels, and Bulk Plant	VOC	**12/19/2013**	No	No	No	21	15	2021
4402	Crude Oil Production Sumps	VOC	12/15/2011	No	No	No	**0**	16	2021

Note (*): The BARCT analysis time frame for Rule 4702 has been adjusted to 2020, consistent with PM2.5 Plan Rule amendment schedule.