# Technical Support Attachment

At the request of the Santa Barbara County Air Pollution Control District (District), the California Air Resources Board (CARB) staff evaluated the claims raised in the Petition for Review (Petition) of Authority to Construct (ATC) permits Issued to Central Coast Wine Services (CCWS) filed by the Wine Institute with the Santa Barbara County Air Pollution Control District Hearing Board. In its Petition, the Wine Institute disputes the District's findings that the performance standard and control technologies determined to be Best Available Control Technology (BACT) for wine fermentation storage tanks are "achieved-in-practice" and claims, in part, that the District's achieved-in-practice determination is premature because the technology is not yet proven to be reliable.

The District provided copies of the administrative record on the permit decision to CARB. In January 2018, the District provided a copy of the Wine Institute's opening brief (Opening Brief). CARB staff reviewed the provided documents, and, in summary, CARB staff agrees with the District's findings: the performance standard and the control technologies are properly designated as achieved-in-practice BACT for control of reactive organic compounds (ROC) from wine fermentation tanks. The achieved-in-practice BACT determination is consistent with the relevant legal requirements, and the permit conditions have been carefully designed to ensure emissions limits are consistent with technology performance. The control technologies employed are common types of ROC controls, used successfully in a variety of different types of industries, including, for example, the Terravant Wine Company in Buellton, California, which has used a water scrubber to control ethanol emissions from fermentation since 2008. CCWS also operates the required control technologies identified as achieved-in-practice BACT. Indeed, CCWS has accepted the requirements without concern. Based upon a careful review of the District's BACT analysis and resulting determination, CARB staff believes the Wine Institute's Petition should be denied by the Hearing Board.

## I. Background

*CARB's Oversight Role*

Rigorous permitting practices for new, modified, and existing sources are fundamental to achieving state and federal air quality requirements to protect the public. As the California Legislature found with regard to the federally-required permitting programs for major sources, which are closely related to the program at hand, "[r]equiring controls .. for new and modified sources ensures that industrial growth does not result in unacceptable levels of air pollution....[w]ithout these limits, air quality would degrade over time, and industrial growth, critical to the economic health of the state, would be foreclosed." (Health and Safety Code (H&SC), section 42501(b)). Rigorous implementation of this program by districts including Santa Barbara has paid major

public dividends, including, per the Legislature, the ability to "improve air quality despite increases in population, industrial output, and motor vehicle use." (H&SC, § 42502(g)).

CARB has an oversight role to ensure that California's programs operate with rigor to ensure continued efforts to attain and maintain compliance with state and federal standards succeed. (*See, e.g.*, H&SC, §§ 39600, 39602 (federal standards), 40924-40925 (state standards), 42360-42363 (variances and district permitting)). CARB has therefore developed expertise in stationary source matters, and maintains a database of district BACT determinations. For the reasons discussed throughout this letter, CARB has added the District's achieved-in-practice determination in this matter to its database and will maintain that database entry based on its own expert judgment.

*California BACT Permitting Requirements and District Rule 802*

Health and Safety Code section 42300 authorizes delegation of stationary source permitting authority from the state to local air pollution control districts. Local air pollution control districts require the application of the lowest achievable emission rate, also known as California BACT, to achieve necessary level of emission control from new or modified sources. (H&SC, § 42502(d)). Each district has its own set of definitions and rules. The District's definition of BACT is found in District Rule 802, New Source Review, section D.2:

> For any stationary source subject to a nonattainment pollutant Best Available Control Technology requirement, Best Available Control Technology shall be the more stringent of:
>
> a. The most effective emission control device, emission limit, or technique which has been achieved in practice for the type of equipment comprising such stationary source; or
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> b. The most stringent limitation contained in any State Implementation Plan; or
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> c. Any other emission control device or technique determined after public hearing to be technologically feasible and cost-effective by the Control Officer.

The central issue raised in the Wine Institute's Petition is the District's understanding of the term "achieved-in-practice" in District Rule 802 Section D.2.a. The term "achieved-in-practice" is not explicitly defined in federal, State or District rules or regulations and should be should be interpreted consistent with the purposes of the governing statutes and regulations. [1]

[1] Health and Safety Code section 40405 defines BACT as the "most stringent emission limitation that is contained in the state implementation plan for the particular class or category of source, unless the owner or operator of the source demonstrates that the limitation is not achievable" or the "most stringent emission limitation that is achieved in practice by that class or category or source." California's definition

As the California Legislature declared, the "people of the State of California have a primary interest in safeguarding the air quality in the state from degradation and in ensuring the enhancement of the air quality of the state" and "emissions from nonvehicular sources are a significant contributing factor to unhealthful levels of air pollution in California" which "must be controlled to protect public health and the environment." (H&SC, § 42502 (a&b)). This central legislative purpose, embraced by the U.S. Congress and the California Legislature, of ensuring rigorous controls to serve public health, informs CARB's efforts, and appears appropriately to have informed the District's approach as well. Consistent with general principles of statutory and regulatory interpretations, it should also inform the Board's understanding of the term "achieved-in-practice" at issue in this matter.

In this regard, the California Supreme Court has determined that while California BACT is not as technology-forcing as the "best available retrofit control technology" (BARCT) requirements for existing sources in nonattainment areas, BACT is also rigorous and ensures that "extant technology" is employed at new and modified sources to reflect top-flight emissions controls. (*See American Coatings Ass'n v. South Coast Air Quality Dist.*, 54 Cal.4th 446, 467 (2012)). This understanding militates against an unduly narrow approach to "achieved in practice" determinations. BACT determinations, by their nature, are intended to protect public health by ensuring available technologies are deployed; concerns over specific control levels at which a given technology is to perform at a particular source are obviated because, while limitations must be at least as consistent as what has been achieved in the past, BACT requirements are shaped for each source "on a case-by-case basis." (*Id.*) The District determined its achieved in practice requirements (including a seasonal averaging period) in this regard, as we discuss below.

Consistent with this approach, in discussing BACT and BARCT standards to emphasize the critical nature of the BARCT standards, the Court also explicitly rejected a "'false dichotomy' between 'existing technology' and merely 'conceivable technology'." As the Court explained, "[r]egulatory agencies often have to make predictions about setting environmental regulations, and such predictions are subject to the restraints of reasonableness." (*Id.* at 468 (internal citation omitted)). Thus, with regard to the "extant" (which is to say "existing") technology at issue in California BACT determinations, the ultimate test is whether the District has been "reasonabl[e]" in extrapolating from past

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of BACT adopts the federal Lowest Achievable Emission Rate (LAER) standard (*see* H&SC, § 40405). Section 171(3), 42 U.S.C. § 7501(3), of the federal Clean Air Act defines LAER, to include, in part, "the most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent." Although discussed in this document, the project did not trigger federal source and federal permitting requirements.

experience with the technology as it made its "case-by-case" determination as appropriate emissions limitations for a particular source.[2,3]

Consistent with the law's emphasis on district discretion and public health protection, District BACT Policy and Procedure No. 6100.064.2017 defines achieved-in-practice as a "proven 'track-record' of reliability." To determine if a control device has a proven track-record of reliability, the District evaluates the historical operations of the equipment. The analysis includes the frequency and duration of equipment operation, as well as the track-record of the equipment to successfully achieve its intended purpose (i.e. control ethanol emissions from wine fermentation). It is also important to note that the guidance in District Policy and Procedure No. 6100.064.2017 only considers whether an emission control technology has been operated successfully at a

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[2] It is important to note that the Legislature has provided an explicit test to determine when a technology is *not* "achievable" for California BACT purposes. This test's rigor is consistent with the approach we have described, which reasonably and consistently holds new and modified sources to the limits achieved in practice by similar sources in the past, and does so with stringency to protect public health. Other aspects of the code further demonstrate that a district's judgment as to achievability is to be broadly accepted if it is reasonable. For instance, according to H&SC, § 40723, when a district has established California BACT as "achievable" based on "vendor representations" – a less certain basis than past emissions data from achieved in practice controls – those controls are still to be applied unless an individual source and demonstrate complete a rigorous exemption test. Unless that source can show, for instance, that they had an "express warranty" of performance, made reasonable efforts to secure performance, and that the equipment failed, among other requirements, the BACT determination stands. (*See* H&SC, § 40723).

This rigorous test upholds district determinations made solely on the basis of vender requirements unless specific conditions are met. A district that has based its achievability determination specifically on past results from actual control cases (as has happened here) should receive even greater solicitude, consistent with the rigorous public health protections embedded in the California BACT concept.

[3] We note that this "reasonableness" standard is also how federal courts have approached a similar "achieved-in-practice" standard used to set federal limitations for toxic air pollutant control technologies. (The federal standard in that context is referred to as "maximum achievable control technology" or "MACT"). In that related context, U.S. EPA must consider what existing sources have achieved in practice and apply limits derived from this performance to other sources, much as the District did here. The courts have been clear that the task is not unrealistic rigor – there is no need to set a limit that imposes a "perfect mirror[ ]" of the past source onto all sources – but instead to construct a "reasonable estimate" to support emission limitations. (*Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 871-72 (2001); *see also Medical Waste Institute et al. v. EPA*, 645 F.3d 420, 426 (2011) (agency must offer a "reasonable explanation" for its limits and set limits that "reliably approximate" achieved in practice performance levels."). The same core reasonableness standard applies with regard to *federal* BACT (which is less stringent than California BACT); there, the U.S. EPA's Environmental Appeals Board has explained that "BACT review inherently requires a judgment regarding what can reasonably be expected in the future", which includes reasonably extrapolating emissions reductions achieved in practice to the particular context of a new facility. (*See, e.g., In re: Newmont Nevada Energy Investment, LLC, TS Power Plant*, EAB, 2005 WL 4905114, *12 (2005)).

source for a reasonable period of time.[4] This policy does not require a technology to have been installed to meet an NSR BACT requirement in order to be defined as achieved in practice.

California, and related federal law, establishes that the emission control decisions are to be rigorous, may be based on a reasonable extrapolation from controls that have already been achieved-in-practice, and are intended to be health protective. CARB has reviewed this permitting record in light of these principles. As we discuss below, this review has led us to conclude that the District has fully complied with the law. The District correctly observed that controls similar to those installed at this source have been in use successfully in many different sources, calibrated emissions limitations appropriately to this source (and the source does not dispute this), and developed a permit that protects public health consistent with California law.

With these principles in mind, we turn to the particular permit at issue. In April 2017, CCWS submitted an ATC permit application (ATC 15044) to remove operational restrictions and authorize the fermentation of red and white wines in all of their previously installed 400 series tanks. Because the permitting project at CCWS had the potential to exceed the District's NSR BACT thresholds, the BACT requirements were triggered. CCWS proposed to install chiller-condenser emission control system and a passive wet scrubber emission control system to control ethanol emissions, a reactive organic compound, to the atmosphere during the wine fermentation process. The District determined that the chiller-condenser and passive wet scrubber emission are achieved-in-practice emission control technologies for wine fermentation operations in conjunction with its issuance of ATC permits 15044 and 15044-1 in August and September of 2017.[5] The District determined the BACT performance standard for the wine fermentation tanks to be at least 67 percent capture and control of ROC through the use of a water scrubber or glycol chiller condenser. Compliance with this performance standard is demonstrated at the end of a fermentation season by comparing the entire season's ROC emissions controlled by the scrubber and condenser – which are measured at the end of each operating day – to the calculated uncontrolled emissions for the entire season. The District determined the performance

[4] This requirement is broadly consistent with a statutory provision that applies narrowly to the South Coast Air District alone, which provides that achieved-in-practice controls should be in use "on a comparable commercial operation for at least one year" or throughout a longer reasonable "operating cycle" if needed. (H&SC § 40440.11). That provision does not apply to this District, and would not be entirely consistent, if viewed as a single source requirement, with the operation of a seasonal source like a winery, in which emissions do not occur evenly over a year. Nonetheless, the emphasis on an "operating cycle" supports the general understanding of California BACT we have described, in which achievability conditions turn substantially on the particular nature of a source. As we discuss below, controls similar to those which the District has described have been operating for decades on similar commercial sources.

[5] At the request of CCWS, the District issued ATC 15044-1 in September of 2017 as an amendment to ATC 15044 to broaden the compliance period from a 30-day rolling average to an entire fermentation season.

standard and the control technologies were achieved-in-practice because the wet scrubber has been used to achieve comparable reductions in ROC at CCWS since 2013 and the glycol chiller condenser since 2015.

## II. CARB's evaluation and characterization of Ethanol Emission from Wineries

CARB's analysis of this permit is informed by decades of work on characterizing ethanol emissions and evaluating control technologies. Far from being novel, the basic types of controls the District has required have been studied and used for more than thirty years. Since 1982, CARB has conducted several studies to characterize and evaluate ethanol emissions and potential controls from wineries. Such efforts lead to the development of CARB's emission factors which are used by CARB to inform its emissions inventory and by many districts, including in the San Joaquin Valley Air Pollution Control District's Rule 4694. Rule 4694 includes a calculation method for assessing fermentation emission reductions (section 3.16) that is similar to the Santa Barbara County Air Pollution Control District's calculation method used to demonstrate compliance with its BACT performance standard. The Santa Barbara County Air Pollution Control District also used the emission factors to develop the BACT performance standard. The following information provides some brief history on some of CARB's efforts.

### a. July 19, 1982, Characterization of Ethanol Emissions from Wineries. EAL Corporation submitted to Research Division, California Air Resources Board (contracted study, CARB Agreement No. AO-071-31).

The purpose of the study was to measure ethanol emissions from wine fermentation and other wine making processes such as racking, blending, and storage because CARB had determined that ethanol emissions from wineries may contribute to ozone formation.

| Wine Fermentation Emissions Summary | | | | | | |
|---|---|---|---|---|---|---|
| Wine type/process | Location | Juice Volume (gal) | Tank capacity (gal) | Temperature (°F) | Initial Sugar (°Brix) | Emission Factor (lb-ethanol/$10^3$ gal juice) |
| White wine fermentation | United Vintners Madera | 280,000 | 350,110 | 57 | 23 | 2.6 |
| White wine fermentation | Robert Mondavi Oakville | 5,800 | 5,955 | 63 | 22.4 | 1.4 |
| Red wine fermentation | United Vintners Madera | 44,000 | 128,000 | 84 | 23 | 7.8 |
| Red wine fermentation | United Vintners Oakville | 8,100 | 9,000 | 72 | 23.5 | 10.5 |

**b. October 1986, A Suggested Control Measure for Control of Ethanol Emissions from Winery Fermentation Tanks, a Technical Support Document Prepared by the Energy Section, Stationary Source Division, ARB, California.**

CARB produced a technical support document entitled "A Suggested Control Measure [SCM] for Control of Ethanol Emissions from Winery Fermentation Tanks." The SCM included estimated emission factors for white and red wine fermentation (Table V-1 in the SCM) from an article published in the American Journal of Enology and Viticulture, "Modeling and Prediction of Evaporative Ethanol Loss During Wine Fermentations."[6]

| Wine Fermentation SCM Emissions Factors | | | |
|---|---|---|---|
| Wine type | Temperature (°F) | Average °Brix (among a range of types) | Emission Factor (lb-ethanol/$10^3$ gal juice) |
| White | 58 | 20.4 | 2.5 |
| Red | 78 | 21.8 | 6.2 |

The article contained a graph showing the dependence of ethanol emissions on degree Brix[7] and fermentation temperature. CARB staff used this graph (fig. 8 in the article) to

[6] L.A. Williams & R. Boulton, Modeling and Prediction of Evaporative Ethanol Loss during Wine Fermentation, American Journal of Enology and Viticulture, 32:234-242, (1983).

[7] Degree Brix is a measurement of the sugar (sucrose) content of grapes, must and wine. 1 degree Brix = 1 g sucrose/100 g solution. However, as degree Brix is determined by solution density, to the extent the juice contains other solutes, the degree Brix will only approximate the sugar content. The loss of ethanol is proportional to the square of sugar utilization, i.e. the decrease in degree Brix. The dependence of ethanol loss on fermentation temperature is more complex, i.e. logarithm of the total ethanol lost is linearly proportional to the reciprocal absolute temperature. Reference footnote 5.

estimate the emission factors. The emission factors increase with initial degree Brix and fermentation temperature.

The SCM included proposed requirements for 90 percent control of ethanol emissions from wine fermentation tanks having capacities of 50,000 gallons or more. The report concluded there were "several commercially available, cost-effective control technologies capable of achieving reductions of 90 to 99 percent" [p. 63]. Note that these recommended control levels are substantially more rigorous than the controls that the Wine Institute now claims are novel, thirty-two years later. The SCM also proposed a demonstration period that wineries could voluntarily enroll in to determine the effect of the controls on wine quality and to verify the 90 percent control efficiency was achievable. The reason cited for exempting tanks less than 50,000 gallons from the SCM was cost-effectiveness.

**c. April 1988, "Ethanol Emissions and Control for Wine Fermentation Tanks," Engineering Evaluation Branch Test Report (C-87-041), California Air Resources Board**

As a follow up to the SCM, CARB conducted an emissions study, "Ethanol Emissions and Control for Wine Fermentation Tanks," in which the ethanol control efficiency from catalytic incineration, carbon absorption, and water scrubbing technologies were measured on two 1,400 gallon white wine and two 1,400 gallon red wine fermentation tanks. The ethanol control efficiency measured for water scrubbing, a technology similar to the system used at CCWS, measured between 82 and 99 percent.

This control study does illustrate why conventional inlet/outlet source testing of wine fermentation tanks may not be the best indicator of control efficiency since the water scrubber showed between 0 and 100 percent control of ethanol depending on when the measurement was taken in the fermentation cycle. For example, white wine tank 1 showed one data point at 0 percent control, 5 data points between 30 and 90 percent control, and 16 data points above 90 percent control over a 200 hour fermentation cycle. Conventional inlet/outlet source testing is generally conducted over a narrow range of time, which when applied to a variable emitting process like wine fermentation would lead one to different and perhaps erroneous conclusions about the overall effectiveness of the controls.

**d. December 15, 2005, Rule 4694, <u>Wine Fermentation and Storage Tanks</u>, San Joaquin Valley Air Pollution Control District**

The San Joaquin Valley Air Pollution Control District adopted Rule 4694 in December of 2005. Rule 4694 uses the emission factors from the 1986 CARB SCM and includes a calculation method for assessing fermentation emission reductions (section 3.16) that is similar to Santa Barbara County Air Pollution Control District's calculation method used to demonstrate compliance with its BACT performance standard.

The following paragraph is from the December 15, 2005, San Joaquin Valley Air Pollution Control District Governing Board meeting minutes during which the rule was adopted:

> *Dave Farabee, Wine Institute, stated we have been working with ARB staff for almost twenty years on developing analysis on fermentation emissions and have been working with the District staff on this particular rule for roughly two years. Mr. Caraby* [sic] *requested the Board adopt this rule as recommended.*

## III. CARB Staff evaluation of Wine Institute's Petition and Opening Brief

While the District is providing a complete response to the Petition and Opening Brief filed by the Wine Institute, CARB was requested to evaluate the claims raised. CARB has found that the claims raised by the Wine Institute do not demonstrate that the District's decision was improperly made. Comments raised in the Petition and Opening Brief are summarized and identified in italics. CARB staff's evaluation of the comment is provided in response.

Wine Institute Comment (III. A.)

*"An 'Achieved in Practice' Determination Requires A Track Record Showing That the Technology Works, Not an Expectation That It Will Work."*

CARB Evaluation of Comment (III. A.)

The technologies (i.e. wet scrubber and chiller-condenser) identified in the achieved-in-practice determination are common types of volatile/reactive organic compound (VOC/ROC) controls, used successfully in a variety of different types of industries. U.S. EPA through their Clean Air Technology Center (CATC) publishes Air Pollution Control Technology Fact Sheets on commonly used control technologies that have extensive track records. One of those Fact Sheets (EPA-452/F-03-015) addresses wet scrubbers, which is referred to in the Fact Sheet as an absorption technology:

> *Absorption is widely used as a raw material and/or product recovery technique in separation and purification of gaseous streams containing high concentrations of VOC,* ***especially water-soluble compounds such as*** *methanol,* ***ethanol,*** *isopropanol, butanol, acetone, and formaldehyde ...*[8]

U.S. EPA further notes that the typical efficiency of a wet scrubber for VOC control is between 70 to 99 percent.

U.S. EPA also has a technical bulletin on Refrigerated Condensers for Control of Organic Air Emissions[9] which indicates a control efficiency of 50 to 99+ percent is

[8] https://www3.epa.gov/ttn/catc/dir1/fpack.pdf
[9] https://www3.epa.gov/ttn/catc/dir1/refrigeratedcondensers.pdf

achievable depending on the type of condenser used and the gas stream characteristics. Thus, the application of wet scrubbers and chiller-condensers as ethanol control technologies are not novel.

Beyond being identified in control guidance documents, these technologies have been used successfully at CCWS for a number of years. Prior to issuing Authority to Construct permits 15044 and 15044-1, the District reviewed three operating seasons' data from 2013 - 2016 to establish the control technologies' efficacy.

In addition to the District's review, as noted in 2016 correspondence between U.S. EPA and the San Joaquin Valley Air Pollution Control District (SJVAPCD), U.S. EPA stated:

> *EPA has reviewed the records from CCWS regarding their wine fermentation operations and using mass balance calculations have determined that the use of add-on controls during portions of the fermentation process have resulted in emission reductions of 76.6%. The* ***demonstrated*** *use of add-on controls to reduce emissions by 76.6% represents the lowest achievable emission rate for wine fermentation operations.*[10]

U.S. EPA determined that the records from CCWS demonstrated that the control technologies meet federal Lowest Achievable Emission Reduction requirements, which is equivalent to achieved-in-practice BACT.

The District received the ATC application from CCWS after U.S. EPA's correspondence to SJVAPCD cited above. At the time of ATC application submittal, CCWS had accumulated an additional season of operating data demonstrating that the control technologies captured and collected ethanol vapors in sufficient quantities to justify a 67 percent performance standard. Given U.S. EPA's findings after two seasons of operating data and the additional season of operating data without any reported problems, the District had both an authoritative position from U.S. EPA and ample data from CCWS demonstrating that the control technologies had a proven track record and were achieved-in-practice BACT.

With regard to its citations of the District's BACT policy (6100.064.2017), the Wine Institute's Petition does not consider the sections of the District's BACT policy that address "BACT during non-standard operations," (section 8.2) or "Source Testing and BACT" (section 8.4). Those sections of the District BACT Policy allow the use of flexibility in the District's formulation of a BACT performance standard and compliance methodology. These sections of the BACT policy recognize that the District may have to tailor a performance standard or compliance method to accommodate unique characteristics of a source class and category.

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[10] September 30, 2016 letter from Gerardo Rios, Chief, Permits Office, Air Division, U.S. EPA Region 9 to Arnaud Marjollet, Director of Permit Services, San Joaquin Valley Air Pollution Control District.

Wine Institute Comment (III. B.) *The Emissions Control Systems Do Not Have a Proven Track Record. This comment has six sub-parts.*

Wine Institute Comment (III.B.1) *The emission controls have not been used on the 400-series tanks or during red wine fermentation. Achieved-in-practice means, at the very least, that the control system has been used with success not just that the district expects it to be successful.*

CARB Evaluation of Comment (III. B.1)

District Policy and Procedure No. 6100.064.2017 defines achieved in practice as a "proven 'track-record' of reliability." To determine if a control device has a proven track-record of reliability, the District evaluates the historical operations of the equipment. This analysis includes the frequency and duration of equipment operation, as well as the track-record of the equipment to successfully achieve its intended purpose (i.e. control ethanol emissions from wine fermentation). However, this does not mean that in order to determine that control technology is achieved in practice there must be a demonstration of a control on every kind of tank, every tank size, and every kind of wine before a control could be considered achieved-in-practice for that type and size of tank and wine

The Wine Institute's assertion would require demonstration of a control on every kind of tank, every tank size, and every kind of wine before a control could be considered achieved-in-practice for that type and size of tank and wine. This requirement is not reasonable, and is not consistent with the principles of law discussed above, which allow for a reasonable extrapolation of existing controls to new circumstances. This is not required for achieved-in-practice and would not be consistent with other BACT determinations for other classes and categories.

Note that in CARB's 1988 study on controls of wine fermentation tanks, the controls, which included a wet scrubber, showed no difference in control efficiency attributable to wine type. The Wine Institute does not provide an explanation why the emission control devices would not work or be as effective on the larger tanks fermenting red wine. The same gas stream, ethanol, carbon dioxide, and water vapor, is emitted from red wine fermentation as white, so the basic physical principles at work in the control of emissions – the solubility of ethanol in water (in the case of the water scrubber), or the condensation of ethanol vapor into liquid (in the case of the chiller-condenser) – are the same. More ethanol is emitted during red wine fermentation than white wine fermentation; however, there has been no indication that the water scrubber or the condenser would not be able to control the increased amounts of ethanol received from red wine fermentation.

In electronic correspondence with the District, EcoPAS has stated that their chiller-condenser has been in operation during fermentation of the following red wine varieties at CCWS: Pinot Noir, Syrah, Gamay, Malbec, and Cabernet Sauvignon. While this list

is by no means exhaustive of all red wine varieties, it is contrary to the Wine Institute's assertion.

Wine Institute Comment (III.B.2) *The emission controls have not been used for a full fermentation cycle from start to finish on a tank, as required by the ATC. The emission control systems are not guaranteed to work outside of normal operating parameters.*

CARB Evaluation of Comment (III. B.2)

According to EcoPAS, the manufacturer of the chiller-condenser, the chiller-condenser has been used over the entire fermentation cycles on specific tanks. Regardless of that fact, however, CCWS's permit prior to the modification did not require that they document the connection of a tank over the whole fermentation cycle, so that data is not part of CCWS's compliance record. The purpose of CCWS operating the controls from 2013 – 2016 was to ensure its facility-wide emissions remain below the offset threshold for ROC.

Thus, CCWS only connected the control devices beginning on the first day of the fermentation season where their projected daily uncontrolled ROC emissions would exceed the offset threshold. The controls then remain continuously in place until the projected daily uncontrolled ROC emissions drop below the offset threshold. Since the record shows this block of time far exceeds the longest fermentation cycle any one tank could have experienced, it is certainly the case that the controls must have been connected over the entire fermentation cycle on numerous tanks.

As to EcoPAS carefully stipulating the flows and the portion of the fermentation cycle its device will meet the 67 percent performance standard or that the device will not meet the performance standard during the first quarter of a fermentation cycle, the Wine Institute is taking EcoPAS' statements out of context. Those stipulations were made when EcoPAS believed that compliance with the performance standard could be measured over a 3-day period, not the entire season as ATC 15044-1 eventually specified. The shorter the compliance period, the more difficult it can be to meet a performance standard, particularly if measured during a low emitting phase of the fermentation cycle.

Finally, compliance with the permit conditions and the BACT performance standard do not require continuous effectiveness of the controls over the entire fermentation cycle for valid technical reasons.[11]

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[11] From ATC 15044:

(Condition 2. c.) Except as allowed by Condition 2.n, all tanks subject to this permit shall be closed and vented to a capture and control system during fermentation activities. The NoMoVo and/or EcoPAS control systems shall be operational at all times during fermentation operations in any tanks connected to the control equipment.

During the fermentation process, CCWS must open the tanks to the atmosphere for visual inspections, red wine cap break-ups, pump-overs, etc. Opening the tanks to the atmosphere interrupts the vapor-tight connection to the emission control devices. The permit specifies the activities where the connection to the emission control devices can be interrupted in this way. For any given tank, the amount of uncontrolled emissions lost to the atmosphere will depend, among other variables, on what point in the fermentation cycle it is opened to the atmosphere and for how long it is opened, as well as the number times this operation is repeated. A certain amount of variability in the amount of ROC captured by the emission control devices would be expected with such an operation, which has been accounted for in the District's BACT determination. Thus, a performance standard based on an average ROC control percentage across a season is appropriate.

Wine Institute Comment (III.B.3)

*The permit's performance standard of 67 percent capture [and control] efficiency is speculative; it's based on a calculation by CCWS's consultant to remain below the emission level at which an air quality impact analysis would be required. The performance standard has not been demonstrated through emissions testing. The manufacturers' guarantees are not sufficient to establish the performance standard as achieved-in-practice.*

Wine Institute Comment (III.B.4)

*There is no data to support a finding that CCWS could or would meet the 67 percent performance standard. BACT will not be achievable during non-standard operations. The applicant requested the District show flexibility since this is a "first generation BACT determination."*

*"In short, the Emissions Control Systems have not been used on all tanks at CCWS, have not been used over a full fermentation cycle, and their performance efficiency is unknown. On this record, there is simply no reasonable basis for determining that the Emissions Control Systems have been "achieved in practice," have a "proven track record of reliability," or have been demonstrated to be "effective overall [sic] operating ranges," as required by the District's BACT Policy."*

CARB Evaluation of Comments (III. B.3 and III.B.4)

Comments III.B.3 and III.B.4 are combined because the responses to them are similar.

CARB staff finds the District has sufficient operational data as well as manufacturers' guarantees to support its performance standard. Based on the three seasons of data

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(Condition 2. n.) Any fermentation tank undergoing active fermentation shall only be open to the atmosphere during the following non-standard operations: visual inspections, tank pumpovers, red wine cap breakups, delastage (rack and return), and wine additions. The time to perform these non-standard operations shall be minimized to the maximum extent possible.

collected from 2014 - 2016, the control devices have shown between 50 to 59 percent capture and control of ROC emissions compared to the calculated total facility-wide uncontrolled fermentation ROC emissions. Since an unknown fraction of fermentation tanks were operated with the control devices during the three seasons in which the 50 to 59 percent capture and control was demonstrated, it is reasonable to expect the capture and control percentage to increase with the requirement for all fermentation tanks to be controlled. Also, CCWS had no incentive under the prior permit to maximize the amount of ethanol collected. They only needed to collect enough ethanol to demonstrate they were below the daily ROC offset threshold.

The manufacturers' guarantee together with the three seasons' control data and the obvious inference that more tanks controlled should result in more reductions is a reasonable basis to establish the 67 percent capture and control performance standard.

The Wine Institute also commented that the 67 percent performance standard was set so CCWS could avoid an air quality impact analysis, implying the manufacturers' guarantee conveniently coincided with the applicant's desire to avoid a rule requirement. Review of the technical data provided by the District and its reasoning for the achieved-in-practice determination leads CARB staff to believe this claim to be baseless.

The District has formulated a performance standard that does not require verification by conventional inlet/outlet stack source testing. Compliance with the performance standard is verified by a mass balance approach. This is accomplished by measuring the amount of ROC (ethanol) collected each day by the scrubber and/or condenser, and comparing the sum of each day's collected ROC over an entire fermentation season to the calculated ROC emitted by all the wine fermented at the facility.

Conventional inlet/outlet stack source testing of the control devices in this case may not be the best indicator of the ROC control effectiveness in this application for two reasons: (1) fermentation is a batch process that has variable emissions over the fermentation cycle, and (2) during the fermentation process, CCWS must open the tanks to the atmosphere for visual inspections, red wine cap break-ups, pump-overs, etc... Opening the tanks to the atmosphere interrupts the vapor-tight connection to the emission control devices. For any given tank, the amount of uncontrolled emissions lost to the atmosphere will depend, among other variables, on what point in the fermentation cycle it is opened to the atmosphere and for how long it is opened, as well as the number times this operation is repeated. A certain amount of variability in the amount of ROC captured by the emission control devices would be expected with such an operation.[12] Thus, a performance standard based on an average ROC control

[12] CARB 1988 emission control study of a water scrubber on white and red wine fermentation tanks at California State University Fresno showed between 0 and 100 percent control of ethanol depending on when the measurement was taken in the fermentation cycle. For example, white wine tank 1 showed one data point at 0 percent control, 5 data points between 30 and 90 percent control, 16 data points above 90 percent control over a 200 hour fermentation cycle. The study reported an overall control efficiency between 82 to 99 percent for each tank (two white and two red wine fermentation tanks); however, only

percentage across a season is appropriate. As stated previously, the District structured the performance standard and compliance methodology to account for the way the tanks are operated.

Wine Institute Comment (III.B.5)

*The District's achieved-in-practice BACT determination violates its own procedures, which first requires use of a device under technological feasibility and cost effectiveness standards, then after verification through testing, the control is considered achieved-in-practice.*

CARB Evaluation of Comment (III. B.5)

The District's BACT policy does not require the use of a device under technological feasibility and cost effectiveness standards. The Wine Institute's misreading of District BACT policy is based on a January 21, 2016 letter from Michael Goldman, Engineering Manager at SBCAPCD to Patrick Thompson, EcoPAS [Exhibit 25]. At the time of the letter, the EcoPAS chiller had completed one season of operation at CCWS and had not been evaluated by the District for BACT purposes. Thus, the timing of the letter indicates that Michael Goldman is describing the approach the District would take with a hypothetical BACT option that was still regarded as technologically feasible but not yet achieved-in-practice.

Three significant milestones had been passed in the time between Mr. Goldman's letter to EcoPAS and the District's achieved-in-practice BACT determination: (1) U.S. EPA issued an opinion that the emission reductions achieved at CCWS were LAER[13], (2) both the chiller-condenser and the water scrubber completed another operating season, and (3) the District had an ATC application from CCWS that triggered BACT, requiring a formal and specific BACT determination for the project.

Wine Institute Comment (C)

*The Proposed Performance Standard is Based on a Theoretical Estimate (of the uncontrolled emissions).*

*The emission factors used by the District to establish the uncontrolled emissions from the fermentation tanks were developed by CARB for the purpose of estimating district-*

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between 51 to 81 percent of the fermentation emissions were "covered," which presumably means the remainder were uncontrolled. (*Ethanol Emissions and Control for Wine Fermentation Tanks*, Engineering Evaluation Branch Test Report, C-87-041, California Air Resources Board, April 11, 1988).

[13] In a September 30, 2016 letter to San Joaquin Valley Air Pollution Control District, U.S. EPA refers to the controls in use at CCWS as having demonstrated reductions of 76.6 percent, and that this performance standard should be considered LAER for wine fermentation tanks, i.e. achieved-in-practice BACT. U.S. EPA also discounted the fact that the controls at CCWS were not being operated as a result of a BACT (technological feasibility and cost effectiveness) requirement. According to U.S. EPA, the pertinent facts were that the devices were permitted and being used to reduce emissions from wine fermentation.

*wide emissions from wineries as part of region-wide planning efforts. The emission factors do not reflect the specific types of wine, sugar content or temperatures at CCWS, and therefore may not accurately reflect emissions from CCWS's facility.*

*"The lack of reliable data to support a performance standard may seem like a technicality (because the systems do capture some ethanol), but it is in fact very significant, for two reasons. First, the reason that District policy requires BACT conditions to be stated as a performance standard is because the law does not require regulated parties to use the exact same technology that has been found to be "achieved in practice" BACT. If a regulated party can achieve the same emissions reductions with a different technology, then the law allows it to do so. In other words, the law is technology neutral, and stays out of the business of telling regulated parties exactly what controls they have to buy and from whom. But the law can only remain technology neutral if there is a documented and supported performance standard that regulated parties must meet. A guess, or an unsupported estimate, is not sufficient, and is not acceptable as BACT."*

CARB Evaluation of Comment (C)

The District has provided three seasons of reliable data to support the 67 percent reduction performance standard. As to the reliability of the emission factors that are used as the baseline for the performance standard, the District is using what have been generally accepted emission factors to represent the emissions from wine fermentation. These emission factors were proposed by CARB staff in its 1986 Suggested Control Measure for Control of Ethanol Emissions from Winery Fermentation Tanks and have been used by air regulators for more than a decade.

| Wine Fermentation SCM Emissions Factors | | | |
|---|---|---|---|
| Wine type | Temperature (°F) | Average °Brix (among a range of types) | Emission Factor (lb-ethanol/$10^3$ gal juice) |
| White | 58 | 20.4 | 2.5 |
| Red | 78 | 21.8 | 6.2 |

San Joaquin Valley Air Pollution Control District's (SJVAPCD) Rule 4694, Wine Fermentation and Storage Tanks, uses the same emission factors and a similar procedure to assess "Fermentation Emission Reductions." Rule 4694 was adopted in 2005 with support from the Wine Institute and is included in the State Implementation Plan.

As with any generally accepted emission factor, the wine fermentation emission factors may not perfectly represent actual emissions from the source to the extent the wines fermented have different Brix values and fermentation temperatures than those assumed for the emission factors.

If the actual emissions were suspected of deviating sufficiently from those predicted from the generally accepted emission factors, then, in such a case, it would be

appropriate to establish facility-specific emission factors through testing. As a matter of practice if not policy, local air districts will allow the use of site-specific emission factors if the source elects to conduct site-specific testing provided approved test methods and protocols are used. More commonly, the cost if not the practicality of such testing is prohibitive for the facility; therefore, in the absence of site-specific emission factors, the facility will propose and the districts will use generally accepted emission factors for many sources (e.g. composting, dairies, sources of fugitive ROC or particulate matter).

As to the emission factors being "theoretical," they are consistent with previous empirical determinations, as shown in the table below.

| Wine Fermentation Emission Factors[14] | | |
|---|---|---|
| Reference | White Wine (lb-ROC/1,000 gal) | Red Wine (lb-ROC/1,000 gal) |
| CARB SCM[15] | 2.5 | 6.2 |
| CARB/EAL (1982)[16] | 1.4 – 2.6 | 7.8 – 10.5 |
| EPA AP-42, (1995)[17] | 1.8 | 4.6 |
| EPA AP-42, controlled with wet scrubber (1995)[18] | 0.083 | 0.056 |

Regarding the relationship between technology neutrality and the performance standard, although districts routinely indicate the type of technology used to meet a given performance standard in their guidelines, the touchstone is always the performance standard, so that any technology that can meet the performance standard would be acceptable. CARB staff does not find that the District is excluding any technologies in its achieved-in-practice determination.

Wine Institute Comment (D)

*The emission control system has not been tested over a sufficient period of time. According to U.S. EPA guidance (i.e. the David Howekamp letter referenced in footnote*

[14] Emission factors represent uncontrolled emission unless otherwise noted.
[15] L.A. Williams & R. Boulton, Modeling and Prediction of Evaporative Ethanol Loss during Wine Fermentation, American Journal of Enology and Viticulture, 32:234-242, (1983).
Air Resources Board, A Suggested Control Measure for Control of Ethanol Emissions from Winery Fermentation Tanks, a Technical Support Document Prepared by the Energy Section, Stationary Source Division, ARB, California, (October 1986).
[16] Characterization of Ethanol Emissions from Wineries submitted to Research Division, California Air Resources Board on July 19, 1982 by EAL Corporation
[17] AP-42, Table 9.12.2-1, Emission Factors for Wine Fermentation
[18] The AP-42 includes emission factors for wine fermentation controlled by a wet scrubber demonstrating greater than 96 percent control on both white and red wine fermentation tanks (the NoMoVo system uses the same technology). The U.S. EPA controlled emission factors agree in a percentage basis with the CARB study performed in 1988 (see Background section part c.)

*1) and South Coast Air Quality Management District (SCAQMD), the minimum time for a successful operation should be six months or 183 cumulative days, which neither the NoMoVo nor EcoPAS system have meet.*

CARB Evaluation of Comment (D)

As illustrated in previous response to comments in this document, wet scrubbers and chiller-condensers are not new technologies; therefore, the six-month demonstration period indicated in the David Howekamp letter would not apply. Even if one were to construe the technologies as innovative for use in ethanol recovery in wine fermentation, the six-month demonstration period suggested in the David Howekamp letter cannot be cited as the position of U.S. EPA in this matter because, as cited previously, U.S. EPA has commented specifically on the controls at CCWS being LAER (i.e. achieved-in-practice BACT) (see footnote 2). Whatever contradiction there might be in the opinions, surely the more recent opinion and the opinion tailored to the specific issue at hand must be considered paramount.

The Opening Brief (Exhibit 23) includes a memorandum from the San Joaquin Valley Air Pollution Control District (SJVAPCD) entitled "Achieved in Practice Analysis for Emission Control Technologies Used to Control VOC Emissions from Wine Fermentation Tanks." With regard to the appropriate duration to assess a technology or performance standard as achieved-in-practice, the memorandum states the following:

> *For wine fermentation tanks, the District [SJVAPCD] has taken the position that successful operation of a control device for one full fermentation season is satisfactory for qualifying a control as achieved in practice (p. 3).*

Finally, the Santa Barbara County Air Pollution Control District's BACT policy calls for an achieved-in-practice determination after a "reasonable time period" (sec. 5.1 (a)). For a seasonal source, a reasonable time period is generally regarded as one operating season.

Wine Institute Comment (E)

*The emissions control systems cannot be achieved-in-practice because there is no evidence that CCWS has paid the actual fair-market cost of acquiring and operating the emissions control systems. Cost effectiveness calculations are presented in Exhibit 45 by Marianne F. Strange and Associates showing neither the chiller-condenser nor the water scrubber are cost effective controls.*

CARB Evaluation of Comment (E)

The Wine Institute implies that the vendors of the control technologies have provided their devices at below market cost to gain the achieved-in-practice designation, after

which they would increase prices when cost effectiveness would not be available as a protection to other wineries. The control technologies used to achieve the performance standard – a wet scrubber and a chiller-condenser - are common controls. Other companies with versions of these technologies are potential competitors.

Nevertheless, some California air districts' NSR rules allow for the consideration of costs even for achieved-in-practice BACT. For those districts, the cost effectiveness calculations performed by Marianne F. Strange and Associates (MSA) in Exhibit 45 cannot be accepted because of two serious flaws that significantly overstate costs:

(1) The cost effectiveness calculation deviates from the U.S. EPA Office of Air Quality Planning and Standards Cost Manual by assuming a 10-year cost horizon for amortization of initial capital costs, not 15 years as recommended in the Cost Manual both for refrigerated condensers[19] and wet scrubbers. By amortizing the initial capital costs over a more realistic 15-year lifetime, the control equipment becomes more cost effective compared to a 10-year lifetime.

(2) MSA assumes a perpetual annual lease rate for the control equipment, which, in their side by side comparison with the Gallo Livingston facility, is far more costly than purchase of the equipment. Even if CCWS is choosing to lease the control equipment as a business decision, the cost effectiveness calculation should be based on the least costly of the available options.

Wine Institute Comment (F)

*The control systems cannot be achieved-in-practice because the District did not examine the effect of the controls on wine quality.*

CARB Evaluation of Comment (F)

CCWS voluntarily adopted and operated the controls for many seasons before the District's achieved-in-practice BACT determination. It is not logical to assume that CCWS would purposefully expend the resources to voluntarily install equipment that would degrade their product. Additionally, the permitting record shows no evidence of any deleterious effects on wine quality at CCWS.

Wine Institute Comment (G)

*The District's BACT policy requires source testing to determine BACT, but no source testing was performed.*

CARB Evaluation of Comment (G)

[19] Section 3 – VOC Recapture Controls, Chapter 2 – Refrigerated Condensers, November 2017.

The Wine Institute is mistaken about the District's BACT policy. From the District's BACT policy:

> *"Source testing may not be applicable in some BACT determinations and other means of compliance may be used" (8.4 Source Testing and BACT).*

Consistent with its policy, the District has formulated a performance standard that does not require verification by source testing. Compliance with the performance standard is verified by measuring the ROC (ethanol) collected each day by the scrubber and/or condenser, and comparing the sum of each days collected ROC over an entire fermentation season to the calculated ROC emitted by all the wine fermented at the facility.

Conventional inlet/outlet source testing of the control devices in this case may not be the best indicator of the ROC control effectiveness for two reasons: (1) fermentation is a batch process that has variable emissions over the fermentation cycle, which may last two weeks, and (2) during the fermentation process, CCWS must open the tanks to the atmosphere for visual inspections, red wine cap break-ups, pump-overs, etc… Opening the tanks to the atmosphere interrupts the vapor-tight connection to the emission control devices. For any given tank, the amount of uncontrolled emissions lost to the atmosphere will depend, among other variables, on what point in the fermentation cycle it is opened to the atmosphere and for how long it is opened, as well as the number times this operation is repeated. A certain amount of variability in the amount of ROC captured by the emission control devices would be expected with such an operation.[20] Thus, a performance standard based on an average ROC control percentage across a season is appropriate. The District structured the performance standard and compliance methodology to account for the way the tanks are operated.

Wine Institute Comment (IV)

*Though not directly applicable to the case before the Hearing Board, federal Maximum Achievable Control Technology (MACT) standards show that a high bar should be met before the District makes an achieved-in-practice determination. The District's determination is based on a theoretical projection about how the control systems will perform.*

CARB Evaluation of Comment (IV)

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[20] CARB 1988 emission control study of a water scrubber on white and red wine fermentation tanks at California State University Fresno showed between 0 and 100 percent control of ethanol depending on when the measurement was taken in the fermentation cycle. For example, white wine tank 1 showed one data point at 0 percent control, 5 data points between 30 and 90 percent control, and 16 data points above 90 percent control over a 200 hour fermentation cycle. The study reported an overall control efficiency between 82 to 99 percent for each tank (two white and two red wine fermentation tanks); however, only between 51 to 81 percent of the fermentation emissions were "covered," which presumably means the remainder were uncontrolled. (*Ethanol Emissions and Control for Wine Fermentation Tanks*, Engineering Evaluation Branch Test Report, C-87-041, California Air Resources Board, April 11, 1988).

The District made a BACT determination, not a MACT determination.[21]

As to the Wine Institute's claim that the District's BACT determination does not meet a "high bar" because the performance standard is not supported by "actual, real world data," that is simply false. The District's achieved-in-practice BACT performance standard is based on three seasons of control data from CCWS and the emission control manufacturers' guarantees. The gap between what the controls demonstrated as of the date the ATC's were issued (50 - 59 percent reduction) and what the manufacturers' have guaranteed is bridged by a more than reasonable inference that more tanks controlled will result in greater reductions. Therefore, CARB staff does not agree that the District's determination is based on an unsupported, theoretical projection.

Wine Institute Comment (V)

*The San Joaquin Valley Air Pollution Control District (SJVAPCD) conducted the only statewide review of the emission control systems and concluded that they are not achieved-in-practice.*

*Specifically, they cite from SJVAPCD the following reasons:*

1. *The CCWS permit did not require continuous operation of the emission control systems.*
2. *The effectiveness of the emission control systems has only been estimated using a theoretical calculation. Inlet and outlet testing has not been performed.*
3. *The overall effectiveness of the control system including ethanol re-emitted into the atmosphere during disposal has yet to be demonstrated.*
4. *The control technology has not been demonstrated to operate in a manner that would be required by BACT.*

CARB Evaluation of Comment (V)

CARB staff will address each point separately:

[21] While case law discussing MACT achieved-in-practice determinations is not applicable to the District's BACT achieved-in-practice determination, the Wine Institute's comment shows a misunderstanding of the case law concerning achieved-in-practice determinations for MACT standards. As discussed previously, federal courts have supported a reasonableness rule for evaluating achieved-in-practice technologies for MACT standards. In that related context, U.S. EPA must consider what existing sources have achieved in practice and apply limits derived from this performance to other sources, much as the District did here. The courts have been clear that the task is not unrealistic rigor – there is no need to set a limit that imposes a "perfect mirror [ ]" of the past source onto all sources – but instead to construct a "reasonable estimate" to support emission limitations. (*Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 871-72 (2001); *see also Medical Waste Institute et al. v. EPA*, 645 F.3d 420, 426 (2011) (agency must offer a "reasonable explanation" for its limits and set limits that "reliably approximate" achieved in practice performance levels.").

1. Neither the Wine Institute nor SJVAPCD provide reasons or data showing why requiring the controls to be connected over the whole fermentation cycle would represent an undemonstrated use of the controls compared to how they have been used.

   The purpose of CCWS operating the controls from 2013 – 2016 was to ensure its facility-wide daily emissions remain below the offset threshold for ROC. CCWS's permit prior to the modification did not require that they document the connection of a tank over the whole fermentation cycle, so that data is not part of the compliance record. CCWS only connected the control devices beginning on the first day of the fermentation season where their projected daily uncontrolled ROC emissions would exceed the offset threshold. The controls then remain continuously in place until the projected daily uncontrolled ROC emissions drop below the offset threshold. Since the record shows this block of time far exceeds the longest fermentation cycle any one tank could have, it is certainly the case that the controls must have been connected over the entire fermentation cycle on numerous tanks.

2. San Joaquin Valley Air Pollution Control District's (SJVAPCD) Rule 4694, Wine Fermentation and Storage Tanks, uses the same emission factors and a similar "theoretical" procedure to assess "Fermentation Emission Reductions." Rule 4694 was adopted in 2005 with support from the Wine Institute and is included in the State Implementation Plan.

   Conventional inlet/outlet source testing of the control devices in this case is not the best indicator of the ROC control effectiveness for two reasons: (1) fermentation is a batch process that has variable emissions over the fermentation cycle, which may last two weeks, and (2) during the fermentation process, CCWS must open the tanks to the atmosphere for visual inspections, red wine cap break-ups, pump-overs, etc... Opening the tanks to the atmosphere interrupts the vapor-tight connection to the emission control devices. For any given tank, the amount of uncontrolled emissions lost to the atmosphere will depend, among other variables, on what point in the fermentation cycle it is opened to the atmosphere and for how long it is opened, as well as the number times this operation is repeated. A certain amount of variability in the amount of ROC captured by the emission control devices would be expected with such an operation.

   CARB's 1988 emission control study of a water scrubber on white and red wine fermentation tanks at California State University Fresno showed this predicted variability (see II. Background section c.). Between 0 and 100 percent control of ethanol depending on when the measurement was taken in the fermentation cycle. For example, white wine tank 1 showed one data point at 0 percent control, 5 data points between 30 and 90 percent control, 16 data points above 90 percent control over a 200 hour fermentation cycle. The study reported an overall control efficiency between 82 to 99 percent for each tank.

Thus, a performance standard based on an average ROC control percentage across a season is a valid approach to measuring the overall effectiveness of the controls. The District structured the performance standard and compliance methodology to account for the way the tanks are operated.

3. As noted above, the District's compliance methodology is a superior method of assessing the overall effectiveness of the controls than inlet/outlet source testing.

   The ATC has conditions requiring CCWS use a district-approved method for disposal and keep records to demonstrate compliance.

4. The District is not requiring the control technologies to perform in a novel manner. The ATC requiring the control technologies remain connected to the fermentation tanks over the whole fermentation cycle is reasonable and follows District's rules and policies. As described in the response to 1 above, the reasons the tanks have not been connected over the whole fermentation cycle have nothing to do with technical or operational feasibility.

   Wine Institute Comment (VI)

   *U.S. EPA views regarding the emission controls are not conclusive and do not represent policy. U.S. EPA is not the permitting authority nor does it have any oversight role in the case of CCWS.*

   CARB Evaluation of Comment (VI)

   CARB staff notes that U.S. EPA's detailed and well-reasoned opinion regarding the emission controls representing LAER and achieved-in-practice BACT has been expressed since 2013 over the course of six letters addressed to SJVAPCD. The opinion expressed in its September 30, 2016 letter to SJVAPCD included a warning that U.S. EPA would issue a formal objection should SJVAPCD submit the ATCs in question for U.S. EPA review as part of the process for incorporating NSR permit modifications into their title V permits. The threat of an objection indicates a serious deficiency with SJVAPCD's determination.

   U.S. EPA's opinion on this matter is significant because California achieved-in-practice BACT (HSC 40405) is by definition similar to federal LAER, and BACT determinations have potential nation-wide implications.

   That U.S. EPA's opinion is not codified in a policy document is not pertinent. BACT is a case-by-case finding for a particular class and category of source and is continually advancing. A letter is the more appropriate form to communicate an opinion that is date dependent and transitional as the performance standard continues to evolve.

## Conclusion

As discussed above, California, and related federal law, establishes that the emission control decisions are to be rigorous, may be based on a reasonable extrapolation from controls that have already been achieved-in-practice, and are intended to be health protective. CARB has reviewed this permitting record in light of these principles. CARB staff agrees with the District's findings: the performance standard and the control technologies are properly designated as achieved-in-practice BACT for control of ROC from wine fermentation tanks. The District correctly observed that controls similar to those installed at CCWS were in use in many different sources including at the Terravant Wine Company in Buellton, California, calibrated emissions limitations appropriately to this source (and CCWS does not dispute this), and developed a permit that protects public health consistent with California law. Based upon a careful review of the District's BACT analysis and resulting determination, CARB staff recommends that the District's Hearing Board uphold the achieved-in-practice BACT determination in its entirety without modification or reservation and deny the Wine Institute's Petition.

| List of Exhibits | |
|---|---|
| Exhibit # | Exhibit Title |
| 1 | *Characterization of Ethanol Emissions from Wineries.* EAL Corporation submitted to Research Division, California Air Resources Board (contracted study, CARB Agreement No. AO-071-31) |
| 2 | *A Suggested Control Measure for Control of Ethanol Emissions from Winery Fermentation Tanks*, a Technical Support Document Prepared by the Energy Section, Stationary Source Division, ARB, California. |
| 3 | *Ethanol Emissions and Control for Wine Fermentation Tanks*, Engineering Evaluation Branch Test Report (C-87-041), California Air Resources Board |
| 4 | *Rule 4694, Wine Fermentation and Storage Tanks*, San Joaquin Valley Air Pollution Control District |
| 5 | U.S. EPA Letter to San Joaquin Valley Air Pollution Control District, September 30, 2016 |