

ENGINEERING EVALUATION
Valero Refining Company - California
Plant No. 12626
Banking Application No. 24330

INTRODUCTION

Banking Application No. 24330 is a request by Valero Refining Company - California (Valero) to bank emission reduction credits (ERCs) generated by the permanent shutdown of the following equipment at Valero's Benicia refinery (Plant No. 12626):

- S-3 Process Furnace, Crude Preheat (F-101), 529 MMBtu/hr refinery and CO fuel gases**
- S-4 Process Furnace, Reduced Crude Preheat (F-102), 259 MMBtu/hr refinery and CO fuel gases**

Valero has applied to bank the emission reductions from the shutdown of these furnaces pursuant to District Regulation 2, Rule 4 (Emissions Banking), which establishes the procedures for application for and issuance of banking credits, and District Regulation 2, Rule 2 (New Source Review), which defines the type of emission reductions that are eligible for banking and specifies the calculation procedures for determining amount of bankable reductions.

This evaluation report evaluates the bankable ERCs associated with the permanent shutdown of Furnaces S-3 and S-4 at Plant No. 12626 and discusses the compliance of the project with applicable rules and regulations. As explained below, Valero is entitled to bank 2433.37 tons per year (tpy) of SO₂ ERCs under this banking application. The District is therefore proposing to issue a banking certificate in the amount **2433.37 tpy SO₂**, pending consideration of any comments that may be received during the public comment period for this Application. Information on how to submit comments is provided below.

BACKGROUND

Valero has applied to bank the emission reductions associated with the shutdown of Furnaces S-3 and S-4, which were permanently shut down on Dec 31, 2010. The pollutants for which Valero has requested to bank the emission reductions are nitrogen oxides (NO_x), precursor organic compounds (POC), sulfur dioxide (SO₂), and particulate matter (PM₁₀). All of these pollutants are discussed on the District's web site at www.baaqmd.gov.

During active operation, exhaust emissions from S-3 and S-4 were vented through a common stack, Main Stack (ST-101), which the two sources shared with another furnace, S-7 Process Furnace (F-103, Jet Fuel Hydrofining, 53 MMBtu/hr). The Main Stack was equipped with a Continuous Emissions Monitoring System (CEMS) for nitrogen oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO₂). Emissions data for S-3 and S-4 can be obtained from the Main Stack CEMS by subtracting out the contribution from S-7. These calculations are discussed in more detail below.

Valero shut down Furnaces S-3 and S-4 as part of a project called the "Valero Improvement Project", or "VIP". Valero undertook the VIP project in order to comply with a Consent Decree Valero entered into with the United States Environmental Protection Agency (USEPA) in order to address a number of air quality violations, including illegal NO_x and SO₂ emissions, among others.¹ The VIP project included a number of elements to comply with this Consent Decree. The project included shutting down Furnaces S-3 and S-4 and replacing them with two new pipe still furnaces with the same capacities, S-1059 and S-1060.

Some of the emission reductions from the shutdown of S-3 and S-4 were used to offset the emissions increases associated with the permitting of the new pipe still furnaces that took their place, S-1059 and S-1060. District

¹ See Consent Decree, *United States of America et al. v. Valero Refining Co. et al.*, Case No. SA05CA0569 (W. Dist. Tex.), filed June 16, 2005.

regulations prohibit emissions reductions from being used twice to offset two different emission increases. The amount of emission reduction credits from S-3 and S-4 that were used to offset the emission increases from S-1059 and S-1060 must therefore be deducted from any bankable emission reductions that can be credited in this banking application. The deduction of these previously-used emission reduction credits is discussed in more detail below.

In addition, Valero's Consent Decree with USEPA contains a number of restrictions on how Valero can generate and use emission reduction credits from the VIP project. Any use of banking certificates issued under Application No. 24330 will need to comply with these restrictions. These requirements are also addressed in more detail below.

EMISSION REDUCTION CREDITS ANALYSIS

Summary of Applicable Regulations

The District's ERC banking rule is Regulation 2, Rule 4. The ERC banking rule also refers to and incorporates provisions of the District's New Source Review (NSR) Rule, which is Regulation 2, Rule 2.

Sections 2-4-201 and 2-2-201 require that the emission reductions from the shutdown of S-3 and S-4 satisfy the requirements that the reductions be real, permanent, quantifiable, enforceable, and surplus (i.e., in excess of reductions that are otherwise required by applicable regulations) in order to be credited as Emission Reduction Credits under District Regulations.

For emission reductions that satisfy these requirements, the amount of the reduction that can be banked is determined by the calculation procedure set forth in District Regulation 2-2-605 (Emission Calculation Procedures – Emission Reduction Credits), which applies for emissions banking purposes pursuant to Section 2-4-601. The calculation procedure under Regulation 2-2-605 first requires determining the "baseline" emissions of the source being shut down. The baseline emissions are then adjusted to comply with the most stringent of RACT, BARCT, and District's rules and regulations in effect or contained in the most recently adopted Clean Air Plan. The amount of ERCs that can be credited is the reduction in emissions that has been achieved relative to the adjusted baseline emissions (less any amount that has been used previously).

The application of these regulatory requirements to Application 24430 is outlined in the following paragraphs.

Eligibility of Emission Reductions From Shutdown of S-3 and S-4 For Emissions Banking

Under Sections 2-4-201 and 2-2-201, the emission reductions from the shutdown of S-3 and S-4 must be real, permanent, quantifiable, enforceable, and surplus in order to be credited as Emission Reduction Credits under District Regulations. The emission reductions from the shutdown of S-3 and S-4 satisfy these requirements as follows.

The emission reductions are real because they are based on actual emissions that Sources S-3 and S-4 were emitting into the atmosphere before they were shut down. These were real emissions that are no longer being added to the atmosphere as a result of the shutdowns.

The emission reductions are permanent because they were generated by the permanent shutdown and removal of furnaces S-3 and S-4. These furnaces have been dismantled and removed from the site, and so they will never have any emissions in the future.

The emission reductions are quantifiable because the District has data on the actual amount of air pollutants that furnaces S-3 and S-4 were emitting prior to being shut down. This data comes from the CEMS that was installed on the Main Stack through which the emissions from S-3 and S-4 were exhausted, as well as from source testing data.

The emission reductions are enforceable because the furnaces S-3 and S-4 can no longer emit any air pollutants under District regulations. These sources have been shut down and removed, and rebuilding or reinstalling them is

prohibited by District Regulations 2-1-301 and 2-1-302 (no person shall install or operate any source without a permit).

The emission reductions are surplus because they are in excess of emission reductions otherwise required by applicable regulations. This requirement is addressed in more detail below in connection with the “surplus adjustment” (also called the “RACT adjustment”) required under Section 2-2-605.5.

Amount of Bankable Emission Reductions

The amount of emission reductions that are available for banking is determined in accordance with Section 2-2-605 (Emission Calculation Procedures, Emission Reduction Credits). The Section 2-2-605 calculation has four principal steps. First, the “baseline emission rate” against which the reductions are calculated must be determined as set forth in subsections 605.1 through 605.3. The baseline emission rate is the source’s actual average annual rate of emissions (tpy) during the 3-year “baseline period” immediately preceding the date the complete banking application is submitted. Second, the baseline emission rate must be adjusted downwards as provided in Section 605.5 to reflect the most stringent emissions limitations currently in effect to ensure that any emission reductions that are credited are “surplus”. This adjustment to the baseline is called the “surplus” adjustment or “RACT” adjustment.² Third, the amount of creditable reductions is then calculated based on the difference between the adjusted baseline emission rate and the new emission rate once the reduction is achieved as provided for in subsection 605.6. For a source that is shut down, the new emission rate is by definition zero, and the amount of creditable reduction is the full amount of the adjusted baseline emission rate. Fourth, any emission reductions previously used up in connection with prior permitting of other projects must be subtracted out, in order to ensure that the same reductions are not used multiple times. The District has applied this calculation methodology under Section 2-2-605 as set forth below.

- Baseline Emission Rate

Regulation 2-2-605.1 defines the baseline period used in determining the baseline emission rate. It provides that “[t]he baseline period consists of the 3-year period immediately preceding the date that the application is complete” Application No. 24430 was complete as of May 15, 2012. The baseline period for this application is therefore the 3-year period from May 15, 2009 through May 14, 2012.

As noted above, emissions from S-3 and S-4 were vented through a common Main Stack, which they shared with a third source, S-7, Process Furnace F-103. The District has derived emissions data for S-3 and S-4 by subtracting the contribution of S-7 from Main Stack emissions measurements. Valero has provided daily emissions data as well as Main Stack flow rate and temperature data for the May 15, 2009 – May 14, 2012 baseline period. The detailed data can be found in the application folder. Table 1 summarizes the baseline emissions calculations for S-3 and S-4, showing the Main Stack (S-3, S-4, S-7) emissions of NO_x, POC, PM₁₀, and SO₂ during the baseline period less F-103 (S-7) contribution.³

² Subsection 605.4 provides a different procedure for establishing the baseline emissions rate for “fully offset” sources, which is not applicable here.

³ F-103 emissions are based on the calculations provided by Valero for this application, which were conservatively based on maximum allowable emissions for S-7 (except for NO_x emissions, which are based on source test results as noted below). Specifically, SO₂ emissions were based on an assumption of 45 ppmvd in the fuel gas burned in S-7; PM₁₀ emissions were based on an assumed emissions rate of 0.0025 lb/MMBtu; POC emissions were based on an assumed emissions rate of 0.0023 lb/MMBtu; and CO emissions were based on an assumed emissions concentration of 30 ppmvd at 3% O₂.

Table 1. Baseline Emission Rates for Sources S-3 and S-4

	Average Emissions, TPY			
	NOx	SO ₂	PM ₁₀	POC
Total Main Stack Emissions (S-3, S-4, and S-7)	552.70	2,856.01	19.35	8.14
Contribution from Furnace F-103 (S-7)	37.76	1.51	0.58	0.53
S-3 & S-4 Emissions:	514.93	2,854.50	18.77	7.61

The following information provides further details for each individual pollutant reviewed:

NOx: The NOx emission rates are based on the actual daily CEMS data for the pollutant averaged over the baseline period. The average 3-year NOx emissions at the Main Stack is 552.7 TPY. To calculate the NOx emissions from S-3 and S-4, the NOx emission contribution from S-7 was deducted from the NOx emissions at the Main Stack. NOx emissions from S-7 are based on results of five source tests (dated Nov 3, 2009, May 1, 2010, Oct 25, 2010, Jun 16, 2011, and Nov 14, 2011) conducted during 3-year baseline period.

POC: The POC emission rates were calculated using a POC emission factor of 0.0039 lb/hr per kacfm derived from source tests. There were no available source tests conducted during the baseline period, and so the 23 most recent source tests from before the baseline period (from 2002, 2005, 2006, 2007, and 2008) were used. Multiplying the actual daily Main Stack flow rate data provided by Valero by this emission factor yields actual daily POC emission data, which are then averaged over the baseline period. The average 3-year POC emissions at the Main Stack are 8.1 TPY. To calculate the POC emissions from S-3 and S-4, the POC emission contribution from S-7 is deducted from the POC emissions at the Main Stack.

PM₁₀: The PM₁₀ emission rates were calculated using the average emission factor, in lb/hr per kdscfm, of two source tests at the Main Stack during the baseline period (dated September 22, 2009, and June 4, 2010). The average PM₁₀ emission factor is 0.0190 lb/hr per kdscfm. Multiplying the actual daily Main Stack flow rate data provided by Valero by this emission factor yields actual daily PM₁₀ emission data, which are then averaged over the baseline period for this banking application. The average 3-year PM₁₀ emissions at the Main Stack are 19.35 TPY. To calculate the PM₁₀ emissions from S-3 and S-4, the PM₁₀ emission contribution from S-7 is deducted from the PM₁₀ emissions at the Main Stack.

SO₂: The SO₂ emission rates are based on the actual daily CEMS data for the pollutant averaged over the baseline period. The average annual SO₂ emission rate during the baseline period at the Main Stack is 2,856.0 TPY. To calculate the SO₂ emissions from S-3 and S-4, the SO₂ emission contribution from S-7 is deducted from the SO₂ emissions at the Main Stack.

Note that the baseline emission rate reflects periods after the sources were shut down, during which time their emissions were zero. These periods of zero emissions in the baseline bring down the overall average reflected in the baseline emission rate. The inclusion of these periods of zero emissions is required by the baseline period rule in Section 2-2-605.1, which establishes the baseline period is the 3-year period immediately preceding the date of the banking application. Valero did not submit its application to bank the reductions at the time it shut down Sources S-3 and S-4 in December of 2010, but instead waited until May of 2012 to apply to bank the reductions. As a result this delay, there are a number of months of zero emissions in the baseline period, which brings down the overall baseline emission rate.

- Adjusted Baseline Emission Rate

Once the baseline emissions rate is determined for S-3 and S-4, it must be adjusted downward as necessary under Section 605.5 to reflect the most stringent emissions limitations currently in effect. The District has reviewed all

applicable emissions limitations in District regulations and has not found any such limitations that are more stringent than the emissions rates on which the sources' baseline emissions were calculated. In particular, the average 3-year NOx concentration at the Main Stack is 40.9 ppmv at 3% O₂, which is below the limit of 150 ppmv at 3% O₂ of Regulation 9-10 for CO boilers. Therefore, the NOx emission rates from S-3 and S-4 do not need to be adjusted downward to comply with the RACT concentration limit in Regulation 9-10.

As there is no downward adjustment required under Section 2-2-605.5, the adjusted baseline emission rates for S-3 and S-4 are the same as the baseline emission rates set forth in Table 1 above.

- Total Available Emission Reduction Credits

Under Section 2-2-605.6, the total amount of emission reduction credits is the difference between (i) the sources' adjusted baseline emission rate and (ii) the sources' federally enforceable emission rate after the shutdown. Sources S-3 and S-4 will not have any emissions because they have been shut down and removed from service, and so their emission rate is zero. The amount of emission reduction credits is therefore the full amount of the adjusted baseline emission rate. The total amount of creditable emission reductions resulting from the shutdown of S-3 and S-4 is summarized in Table 2 below:

Table 2. Bankable Emission Reductions From S-3 and S-4

NOx	SO ₂	PM ₁₀	POC
514.93	2,854.50	18.77	7.61

- Deduction of Emission Reduction Credits Previously Relied On

Finally, the amount of available credits from the shutdown of S-3 and S-4 must be reduced by the amount of any credits that have already been used in connection with permitting of other sources. As noted above, the installation of sources S-1059 and S-1060 used credits from the shutdown of S-3 and S-4, and so these previously-used credits are not available for banking. The amount of previously-used credits is summarized in Table 3 below.⁴

Table 3: Previously-Used Emission Reduction Credits From Shutdown of S-3 & S-4

NOx	SO ₂	PM ₁₀	POC
635.93	421.13	114.81	12.88

- Total Credits Available for Banking

The total amount of emission reduction credits that can be banked is therefore the bankable emission reduction credits from S-3 and S-4 as set forth in Table 2, minus the amount of credits already used as set forth in Table 3. Comparing the amounts in Table 2 and Table 3 shows that there are no creditable emission reductions remaining for NOx, PM₁₀ and POC. For SO₂, there are 2433.37 tpy of creditable emission reductions remaining. This is the amount of credits to which Valero is entitled under Application 24330.

⁴ See Engineering Evaluation Report, Valero Improvement Project Amendments (December 12, 2008, as revised May 1, 2009), Table II, pp. 20-21. The amount of emission increases associated with the Valero Improvement Project Amendments for which emission reduction credits were provided is listed in the bottom row of Table II ("Total") in that Report, and it includes emissions from sources S-1059, S-1060, and S-1061, as well as fugitive emissions and a small amount of diesel PM. These are the emissions increases for which emission reduction credits from the shutdown of S-3 and S-4 were provided. Note also that for PM₁₀ and POC, an additional 10.73 and 14.46 tpy of credits, respectively, were needed above what was available from the shutdown of S-3 and S-4. The amount of previously-used PM₁₀ and POC credits listed in Table 3 above reflects the fact that these additional credits came from other sources, not from S-3 and S-4.

CONSENT DECREE LIMITATION ON SO₂ CREDITS

Valero is also subject to certain restrictions on any ERCs that it can claim from the shutdown of S-3 and S-4 under the terms of the Consent Decree that it entered into with USEPA.⁵ These restrictions include a restriction that the ERCs can be used only at the facility where they were created; a limitation on the percentage of total emission reductions that can be used as credits; and a restriction on the types of projects for which the credits can be used. Valero will be subject to these restrictions in any use of banking certificates issued under the banking application. The District is proposing to include Condition No. 25737 in any banking certificate issued under this application restricting the use of the credits accordingly, as discussed below.

SMALL FACILITY BANK AND BANKING ACCOUNT

Valero is a major facility and has never qualified for offsets from the Small Facility Banking Account (SFBA). Therefore, no such emission offsets are required to be repaid to the SFBA as per Regulation 2-4-303.5.

EMISSIONS IMPACTS AND OTHER ENVIRONMENTAL IMPACTS

Emissions banking does not authorize or result in any physical or operational changes at the facility, any air emissions, or any impacts to the environment. Physical and/or operational changes and related air emissions and other environmental impacts can occur in connection with the *use* of banking certificates (i.e., when banking certificates are used to offset emissions increases from new or modified sources). But any such impacts will result from the permitting of the new or modified source for which the banking certificates are used, and the evaluation of any such impacts will be undertaken in connection with that permitting at the time of use. Thus, emissions banking by itself is not subject to any other regulatory requirements beyond the banking rules in Regulation 2, Rules 2 and 4.

Similarly, emissions banking is not a “project” as that term is used in the California Environmental Quality Act (CEQA), because it does not involve a “physical change in the environment.” (*See* Pub. Res. Code § 21065.) Moreover, even if the issuance of a banking certificate were considered to be a “physical change in the environment,” it can be seen with certainty that the mere issuance of the certificate, without more, will not have any significant environmental impacts because simply issuing a certificate does not authorize any emissions. (*See* CEQA Guidelines, 14 Cal. Code Regs. 15061(b)(3).) Accordingly, no CEQA environmental document is required at the time of issuance of a banking certificate. Any environmental impacts associated with a project that will use a banking certificate for offsets purposes will be evaluated, as appropriate, at the time the certificate is used.

CONSIDERATION OF VALERO’S ARGUMENTS REGARDING EMISSIONS BASELINE CALCULATION

During the District’s evaluation of this application, Valero requested that the District use a different baseline period than the one required by Section 2-2-605.1. Instead of using the 3-year period immediately preceding the date of this application (Application No. 24430), as required by Section 2-2-605.1, Valero stated that the District should use the 3-year period preceding the date of a prior permit application, Application No. 16937, which was Valero’s application for the Authority to Construct for the VIP Amendments project referred to above. Valero made this request because it did not want to include the periods of zero emissions after the shutdown of S-3 and S-4 in the baseline (see baseline emission rate discussion above). Using an earlier baseline period would exclude these periods of zero emissions, which would allow Valero to calculate a higher baseline emissions rate and therefore claim credit for a larger amount of ERCs. Valero presented its reasons for this request in a letter dated Aug 8, 2013, as well as in other verbal and email communications with District staff.

The District considered Valero’s request in connection with this banking application. The District’s rules do not allow for the use of such a baseline, however. To the contrary, the District’s regulations provide that the baseline

⁵ *See* Consent Decree Section XV, ¶¶ 295-305, pp. 141-148.

period used in a banking application is the 3-year period immediately preceding *that application*, not a period tied to any other application. The District evaluated all of the points Valero raised regarding this issue, but based on a thorough analysis of the applicable regulations, the District has concluded that its interpretation of how to apply the baseline rule in this case is the correct one. The reasons for this conclusion include the following:

- The plain language of the relevant regulation establishing the baseline period – Regulation 2-2-605.1 – indicates that the baseline period applicable to Application No. 24430 is the date that Application No. 24430 was complete.
- The regulatory context in which this provision arises similarly indicates that references to “application” in the baseline calculation rules mean the *banking* application when they are applied in the *banking* context.
- The regulatory history of the provision is clear that the District always intended that the baseline calculation should be applied this way, and that the District clearly communicated this intention to the regulated community in connection with the adoption of the current baseline rules.

The District’s full evaluation of and response to the points that Valero raised on this issue are set forth in the District’s response to Valero’s August 8, 2013, letter.⁶ The District relied on that analysis in evaluating this banking application, and the full discussion set forth in that letter is incorporated by reference herein as part of the basis for the District’s determination with respect to Banking Application No. 24430.

STATEMENT OF COMPLIANCE

The proposed issuance of a banking certificate in the amount of 2433.37 tpy of SO₂ is subject to and expected to comply with the standards of District Regulation 2, Rule 4.

The emission reductions from the shutdown of S-3 and S-4 satisfy the requirements that the reductions be real, permanent, quantifiable, enforceable, and surplus in order to be credited as ERCs under District Regulations. The emission reductions Valero seeks to bank here satisfy these requirements as explained above.

The ERC calculations were performed in accordance with the methodology outlined in District Regulation 2-2-605. ERCs from the shutdown of S-3 and S-4 are calculated based on the following data during the 3-year baseline period from May 15, 2009 through May 14, 2012: (1) Main Stack actual flow rate and temperature data, (2) CEMS data for NO_x and SO₂, and (3) source test results for NO_x and PM₁₀.

CONDITIONS

Pursuant to Section 2-4-407, the District is proposing to include a condition (Condition No. 25737) in any banking certificate issued under this application stating: “Any use of this Banking Certificate must satisfy the requirements of the Consent Decree entered into between Valero Refining Co. and the United States Environmental Protection Agency in the case of *United States of America et al. v. Valero Refining Co. et al.*, United States District Court for the Western District of Texas Case No. SA05CA0569, filed June 16, 2005. THIS RESTRICTION WILL APPLY TO THE ORIGINAL HOLDER OF THIS CERTIFICATE, VALERO REFINING COMPANY–CALIFORNIA, AS WELL AS TO ANY SUBSEQUENT HOLDER, OWNER OR TRANSFEREE.”

PROPOSAL FOR ISSUANCE OF SO₂ BANKING CERTIFICATES

The District is proposing to issue a banking certificate in the amount of 2433.37 tpy of SO₂ banked emission reduction credits to Valero pursuant to Application No. 24430. The use of these banking certificates will be subject to the restrictions imposed by Valero’s Consent Decree with EPA. The District will provide notice of this proposed issuance to Valero and to the public and will invite all interested parties to submit comments on this proposal during

⁶ See Letter from A. Crockett, Assistant Counsel, BAAQMD, to D. Farabee, Pillsbury Winthrop Shaw Pittman LLP, Counsel to Valero, being transmitted to Valero concurrently with this Engineering Evaluation.

a 30-day public comment period. The District will make a final determination on Application No. 24430 after consideration of any comments received during the public comment period.

PUBLIC NOTICE AND OPPORTUNITY TO COMMENT

The bankable ERCs from the shutdown of S-3 and S-4 exceed 40 TPY for SO₂, and the application is therefore subject to Publication, Public Comment and Inspection of District Regulation 2-4-405. The District is providing notice by newspaper and web publication, as well as by mailing to Valero, the California Air Resources Board, USEPA, and adjacent air districts. The District is also making available for public review and inspection at District headquarters Valero's application and supporting materials, this Engineering Evaluation, and all other materials in the permitting file for Application No. 24430. The District invites all interested members of the public to review the District's proposal to issue these banking certificates and submit any comments on the proposal. The District will review and consider all comments received before making a final determination on this Application.

Comments from members of the public, as well as any questions or requests for further information, should be submitted to Kevin Oei, Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-8434, koei@baaqmd.gov. **Para obtener información en español, comuníquese con Brenda Cabral en la sede del Distrito, (415) 749-4686, bcabral@baaqmd.gov.**

By: _____
Kevin Oei, Air Quality Engineer

Date: _____