

**SOAH DOCKET NO. 582-23-14975
TCEQ DOCKET NO. 2023-0203-AIR**

APPLICATION OF VALERO	§	
REFINING-TEXAS, L.P. FOR	§	BEFORE THE STATE OFFICE
MODIFICATION TO STATE AND	§	
PREVENTION OF SIGNIFICANT	§	OF
DETERIORATION AIR QUALITY	§	
PERMIT NOs. 38754 AND	§	ADMINISTRATIVE HEARINGS
PSDTX324M15	§	

**APPLICANT VALERO REFINING-TEXAS, L.P.'S
BRIEF AND EXCEPTIONS TO THE PROPOSAL FOR DECISION AND ORDER**

TO THE HONORABLE COMMISSIONERS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY:

Applicant Valero Refining-Texas L.P. (“Valero”) respectfully urges the Texas Commission on Environmental Quality (the “Commission or “TCEQ”) to grant these exceptions to the Proposed Order recommended by Administrative Law Judges (“ALJs”) Amy Davis and Holly Vandrovec, which are required under applicable law and the record in this Senate Bill (“SB”) 709 permitting matter.

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I. INTRODUCTION

Valero seeks authorization to modify its existing Heavy Oil Cracker (“HOC”) to optimize the production of higher-value petroleum products such as light olefins, accommodating an important, first-of-its kind evolution of refining capabilities at its Corpus Christi West Refinery (the “West Refinery”).¹ Valero designed the project without *any* increase in annual nitrogen oxide (“NOx”) emissions above levels currently authorized for the HOC, notwithstanding the addition of a new secondary riser reactor. Still, the Administrative Law Judges (“ALJs”) presiding over the contested case hearing recommended outright denial of the Application, based on a fundamental misunderstanding of the legal standard for demonstrating Tier III Best Available Control Technology (“BACT”) in Texas. While Valero appreciates the ALJs’ careful consideration and acceptance of its Tier I BACT determination for particulate matter (“PM”) emissions from the HOC, Valero excepts to the ALJs’ recommendations as to Tier III BACT for NOx emissions because they are based on inappropriate comparisons to South Coast Air Quality Management District’s (“SCAQMD”) cap-and-trade programs and ignore the requirement of “achievability” subsumed in the definition of BACT. The ALJs further err in recommending denial of the Application, which is not a legal remedy available to the Commission for a permit amendment under Section § 382.0518 of the Texas Clean Air Act.

In its Tier III BACT analysis for the modified HOC, Valero demonstrated that the use of add-on controls to further reduce NOx emissions from the HOC would not be cost effective and therefore not required by law. Valero’s calculations show that use of LoTOx technology would cost \$38,264.00 per ton of NOx removed, and use of Selective Catalytic Reduction (“SCR”) technology would cost \$88,660.41 per ton NOx removed. These costs far exceed those already

¹ See Application to amend Air Quality Permit Nos. 38754 and PSDTX324M14 and to issue GHGPSDTX211 (the “Application”), identified in the record as App. Ex. D, AR Tab D at VAL_000009.

rejected by TCEQ in recent BACT determinations as not economically reasonable. Accordingly, Valero and the Executive Director (“ED”) of the TCEQ concluded that BACT is a NO_x emission limit of 37 parts per million (“ppm”), and that the use of add-on technologies such as LoTO_x or SCR to further reduce NO_x emissions is not economically reasonable.

The ALJs have wrongly recommended otherwise. First, the ALJs rejected Valero’s site-specific Tier III BACT cost effectiveness analyses, which were calculated in full compliance with TCEQ rules and guidance, in favor of inapposite estimates from SCAQMD’s “RECLAIM Report,” which uses inconsistent assumptions and non-standard accounting methodologies to estimate the costs of NO_x controls as a reference point for cap-and-trade programs. The RECLAIM Report has no relevance to BACT determinations—no facility ultimately accepted or rejected a control technology based on the estimates included therein. Rather, the RECLAIM Report results from California’s unbounded efforts to address air quality in urban areas that bear the unfortunate title of having the nation’s most contaminated air. California implemented these programs to bring “extreme” ozone nonattainment areas into attainment by requiring NO_x emissions reductions *in the aggregate*. See Pro. Ex. 14 at CFEJ_0888 (RECLAIM Report).² Despite the ALJs’ conclusion, with respect to PM BACT, that “it is inappropriate to recommend that an applicant meet a limit that [] was not the product of a BACT analysis,” the ALJs base their NO_x BACT recommendations entirely on the estimates included in the RECLAIM Report. PFD at 29. The Proposal for Decision (“PFD”) and Proposed Order are therefore in error: the RECLAIM Report is not relevant under TCEQ’s rules and guidance for case-by-case BACT determinations in an ozone attainment area like Nueces County, where the Valero West Refinery is located.

² “RECLAIM was designed to provide equivalent emission reduction in the aggregate for the facilities in the program, with flexibility for each facility to find the most cost-effective approach.”

Second, the ALJs err in concluding that Valero should have used an “outlet” concentration lower than Tier I BACT to estimate the cost effectiveness of LoTOx and SCR, ignoring EPA guidance indicating that the outlet concentration must represent an achievable, enforceable permit limit. Instead, the ALJs based their recommendation on the unsupported notion that the outlet concentration must be tied to the “actual control efficiency” of the technology at issue in a Tier III BACT calculation, regardless of whether that emissions limit has met the requirement of achievability subsumed in the definition of BACT. But even if Valero did use a lower outlet concentration, the evidence shows that additional NOx controls would not be economically reasonable for the Valero West Refinery. When Valero calculated the costs of controlling NOx emissions using LoTOx and SCR to a hypothetical “beyond BACT” level of 8-10 ppm, the analyses still showed that the use of either technology would cost at least \$22,092.68 to \$24,092.68 per ton of NOx removed, which also meets or exceeds levels found to be economically unreasonable in recent BACT determinations.

This case is not about whether TCEQ has discretion to use a numerical threshold of \$10,000 per ton to make economic reasonableness determinations. Comparable BACT cost effectiveness estimates in the record more than double this threshold, and Valero’s own cost effectiveness estimates still far exceed those comparable values. Still, EPA guidance and judicial precedent confirm that the ultimate determination of economic reasonableness should be left to the state agency’s specialized expertise and discretion. *See* Pro. Ex. 1 at CFEJ_0124 (EPA’s NSR Manual) (“The final decision regarding the reasonableness of calculated cost effectiveness values will be made by the review authority considering previous regulatory decisions.”); *Town of Weymouth, Massachusetts v. Massachusetts Dep’t of Env’tl. Prot.*, 961 F.3d 34, 44 (1st Cir. 2020), on reh’g, 973 F.3d 143 (1st Cir. 2020) (accepting Massachusetts DEP guidance stating that technologies

falling in (or below) the range of \$11,000 to \$13,000 per ton of NO_x removed will be considered “cost feasible.”).

Nor is this case about whether Valero provided average or incremental cost effectiveness estimates. For add-on control technologies, average and incremental cost effectiveness estimates are derived from same formula and reach the same result. *Id.* at 49 (“Petitioners miss the point...It matters not whether Algonquin called this “average” or “incremental” cost effectiveness.”). There is no question that Valero provided average, annualized cost effectiveness estimates for both LoTO_x and SCR, which demonstrated that neither control is economically reasonable.

The evidence in the record is clear and the issues are straightforward. The proposed NO_x BACT emissions limit of 37 ppm in the Draft Permit complies with all legal and technical requirements. Applicant’s Exhibit D, Administrative Record (“AR”) Tab C at 000001-000076 (the “Draft Permit”). The costs of additional controls to reduce NO_x emissions from the HOC to a Tier I BACT level of 20 ppm—the lowest permitted NO_x BACT emission rate for a similar unit—are not economically reasonable. Valero’s cost effectiveness analyses are highly accurate, albeit conservative, and unrebutted under the applicable burden of proof. If the Commission were to disagree with that finding—notwithstanding the overwhelming support in the administrative record and substantive review by credible experts during the hearing—the Commission should establish an alternative BACT limit for NO_x that complies with all legal and technical requirements, or otherwise follow the requirements of Section § 382.0518 and set out in a report its specific objections.

Valero urges the Commissioners to review the substantive record and properly apply relevant law and guidance to provide a reasoned and appropriate assessment in support of Valero’s new source review (“NSR”) Application. Unless corrected by the Commission, the ALJs’

unsupported recommendations will unnecessarily prolong Valero's efforts to implement this first-of-its-kind evolution in refining capabilities at the Valero West Refinery and discourage others from doing business in Texas. For these reasons, and because Texas law and the record before the Commission does not support the ALJs' recommendations, Valero submits these exceptions.

II. STANDARD OF REVIEW

The Commission has express authority to amend a proposal for decision, including any finding of fact ("FOF"), provided that such amendment is based solely on the record made before the Judge and is accompanied by an explanation of the basis for the amendment. TEX. GOV'T. CODE § 2003.047(m). The Commission also has the express authority to ask the Judges to reconsider the evidence and make additional findings of fact or conclusions of law ("COL"). *Id.* Valero respectfully files these exceptions based on abundant evidence admitted to support issuance of the Application and Draft Permit *without* revisions to emissions controls and limits for PM emissions from the HOC.

III. BACT FOR NO_x EMISSIONS FROM THE HEAVY OIL CRACKER

Given the SB 709 presumption and the weight of the evidence in the record, Citizens for Environmental Justice ("CFEJ") focused its challenge to the Draft Permit to one issue: whether Valero and the ED properly applied BACT requirements for two pollutants to be emitted from the modified HOC. The ALJs concluded that the Application and the ED's Draft Permit adequately assessed BACT for PM emissions from the HOC, but not for NO_x emissions. The PFD and Proposed Order thus recommend that the Application be denied outright, which oversteps the authority granted to SOAH by statute. As addressed herein, the PFD and Proposed Order proceed to misapply TCEQ rules and guidance at every step of the BACT analysis for NO_x emissions from the HOC. The ALJs' misunderstanding of the applicable legal standards and the bounds of its role

in this contested case hearing is troubling and requires that the Commission review the record and provide an assessment that properly applies the law.

A. The ALJs Erred in Their Recommendations.

The PFD and Proposed Order are based on the ALJs' acceptance of grossly generalized cost effectiveness estimates extrapolated by the SCAQMD in creating a cap-and-trade system to address the nation's most polluted air,³ *in lieu* of Valero's site-specific, detailed analyses that properly apply TCEQ rules and guidance. Furthermore, the PFD and Proposed Order show that the ALJs relied too heavily on EPA's NSR Manual in evaluating Valero's Tier III cost effectiveness analysis for NOx emissions from the HOC and misstated the applicable BACT definition. These errors suggest that the ALJs' recommendations are based on the wrong legal standards. Accordingly, Valero urges the Commission, based on a thorough review of the record, to correct the ALJs' errors, as explained further in the following subsections.

i. The RECLAIM Report Is Not a Reliable Basis of Comparison.

The ultimate recommendation in the PFD and Proposed Order with respect to Valero's cost effectiveness analyses for NOx relies almost entirely on the California SCAQMD's 2015 RECLAIM Report, concluding that Valero's cost effectiveness estimates are "within the range of" and "close to" the average cost effectiveness estimates for other LoTOx and SCR applications described therein. PFD at 49-50, FOF No. 93. The ALJs acknowledged that the RECLAIM Report is "designed for a nonattainment area, utilizes an 'unusual cost accounting methodology,' and is not meant to impose hard permit limits." *Id.* at 48. Still, the ALJs concluded that "[w]hile these statements may be true, they do not diminish the fact that there are refineries that are achieving

³ See Pro. Ex. 14 at CFEJ_0897 (RECLAIM Report) ("Under the RECLAIM program, facilities are issued SOx and NOx annual allocations, also known as facility caps. The facility caps decline annually to reflect the levels of BARCT that were envisioned to be in place at the RECLAIM facilities. To meet their annual declining allocations, RECLAIM facilities have the flexibility of installing pollution control equipment, changing operations, or purchasing RECLAIM Trading Credits.").

much lower NOx emissions than what Valero seeks in its own permit.” *Id.* This inconsistent logic results in unreliable recommendations derived from legal error.

Setting aside the fact that there is no evidence in the record that any of the unnamed entities in the RECLAIM Report have actually “achieved” NOx emissions of 8-10 ppm, and the acknowledgement by CFEJ that the lowest permitted NOx BACT emissions rate for a fluid catalytic cracking unit (“FCCU”) is 20 ppm⁴—the ALJs failed to appreciate the incongruity in comparing two estimates that are based on substantially different accounting methodologies and different inlet concentrations.

First, the “unusual” accounting methodology used by SCAQMD in the RECLAIM Report results in *quantifiable differences* in cost effectiveness estimates when compared to estimates that are based on the cost accounting methodology endorsed by TCEQ and EPA. As Dr. Lovegren explained, “[i]f TCEQ used SCAQMD’s cost methodologies, its thresholds for economic reasonableness would be much lower than they are.” App. Ex. 200 at 49:34-35 (J. Lovegren). This is because “SCAQMD’s methodology effectively amortizes the capital investment equally over the life of the equipment (i.e., at zero interest), and assumes that annual operating costs will stay flat (such that future years’ operating costs become cheaper in real terms).” *Id.* at 49:29-32. EPA’s cost accounting methodology, which is endorsed by TCEQ, estimates cost effectiveness as the ratio of the total annual cost (both direct and indirect annual costs), divided by the amount of emissions reduced annually. *Id.* at 49:19-21. By contrast, SCAQMD’s unique cost accounting methodology estimates cost effectiveness as the ratio of the “present worth value” of the investment in controls, divided by the total tonnage of emissions reductions over the life of the

⁴ Dr. Sahu testified that the lowest permitted NOx emission rate for an FCCU is 20 ppm. Pro. Ex. A at 47 (R. Sahu); HOTM Tr. at 102:5-9, 105:9-13 (R. Sahu); *see* App. Ex. 219 at VAL_008444 (Marathon Texas City Permit Special Conditions). This point will be addressed in further detail in Section III.B.i.1, below.

pollution control equipment. *Id.* at 49:16-19. **In other words, SCAQMD’s non-standard cost accounting methodology results in lower cost effectiveness estimates than the BACT methodology endorsed by TCEQ guidance.** Yet, the ALJs’ ultimate recommendation is still based on a comparison of cost effectiveness estimates derived from the two fundamentally different methodologies for two entirely different regulatory programs: case-by-case BACT analysis for PSD permitting and a cap-and-trade program. Although the ALJs appear to acknowledge the difference, they offer no explanation as to why this difference should be disregarded in making such an inapt comparison.

Second, the cost effectiveness estimates in the RECLAIM Report are based on much higher inlet concentrations than that used by Valero to calculate the cost effectiveness of LoTOx and SCR. The PFD acknowledges this argument but asserts in a footnote that Valero did not cite to “any record evidence” to support it. PFD at 48, fn 208. This is plainly wrong—Valero’s Reply Brief states, in part that:

the cost effectiveness values included in the RECLAIM Report are based on much higher “baseline,” or “inlet” concentrations than that used for Valero’s Tier III analysis, which was 37 ppm. App. Ex. D, AR Tab D at VAL_000063 (Application). The cost effectiveness values for FCCUs that CFEJ identifies and relies on to argue that the cost of installing LoTOx to control NOx emissions ranges from \$10,631 to \$29,502 per ton NOx removed are based on inlet concentrations ranging from 70-200 ppm. Pro. Ex. 14 at CFEJ_0932 (RECLAIM Report). The nameless facility that CFEJ alleges demonstrates a NOx emission rate of 2 ppm using SCR ranges as high as 80 ppm. *Id.* at CFEJ_0926.

Valero Reply Brief at 19-20. Valero cited to its Application for the fact that it used an inlet concentration of 37 ppm to calculate its cost effectiveness estimates. *See* App. Ex. D, AR Tab D at VAL_000063 (Application).⁵ Valero then cited to a table in the RECLAIM Report, which

⁵ This fact is also repeated in Dr. Lovegren’s direct testimony. App. Ex. 200 at 47:25-29 (J. Lovegren) (“Therefore, to get the denominator of the cost effectiveness figure in the cost-effectiveness calculation (i.e., the tonnage of emissions reduced), **I took the difference between realistic upper-bound emission rates before controls (taking**

shows that the cost effectiveness estimates included therein are based on inlet concentrations ranging from 70-200 ppm. *See* Pro. Ex. 14 at CFEJ_0932 (RECLAIM Report). *The ALJs copied this same table from the RECLAIM Report and pasted it into the PFD.* PFD at 33. The Proposed Order acknowledges that adjustments to the inlet concentration have the effect of increasing or decreasing the resulting estimate:

84. The cost-effectiveness evaluation also requires determination of an appropriate outlet (after control) and inlet (before control) concentration of NO_x to determine the potential emissions reduction (tons per year), which is the difference between controlled emissions and uncontrolled emissions for the emission reduction option.

85. An inlet concentration in a cost calculation should be a baseline emissions rate without additional pollution controls. Baseline emissions may be assumed to be the emissions from the lower polluting process itself.

Proposed Order at 12. The Proposed Order itself thus supports the argument that the cost effectiveness estimates in the RECLAIM Report are skewed lower because they use higher inlet concentrations. No party has alleged that Valero used the wrong inlet concentration in its cost effectiveness estimates, and as will be discussed in further detail in Section III.B.i.2, there is no evidence that would support such an argument. To the extent the ALJs based their ultimate recommendation on this lapse in logic, the Proposed Order is in error.

Finally, the PFD acknowledges Dr. Lovegren's testimony that the RECLAIM Report was prepared for purposes of setting allocation levels for a cap-and-trade program "as opposed to enforceable permit limits," but again disregarded this evidence without explanation. PFD at 40. The RECLAIM Report uses generalized data to extrapolate hypothetical, superficial cost effectiveness figures for FCCUs in Texas, Arkansas, Louisiana, and other states, which are not subject to the RECLAIM program, to use as a reference point for its own regulated entities. **The**

account of lower-emitting processes), which was based on 37 ppm, and upper-bound limitations that would apply if the controls were required in a permit, which was based on 20 ppm.) (emphasis added).

unnamed facilities identified in the RECLAIM Report did not ultimately accept a control technology as BACT based on these extrapolated, hypothetical cost effectiveness estimates.

The cost effectiveness estimates were not provided to SCAQMD based on the facilities' site-specific cost data. For SCR, SCAQMD used the "total installed costs, ammonia costs, and catalysts replacement costs" at one unnamed refinery as the basis to estimate the cost effectiveness of SCR for three other unnamed refineries. Pro. Ex. 14 at CFEJ_0934 (RECLAIM Report) ("Costs for the SCRs at Refineries 5, 6 and 7 were derived based on Refinery 1's data."). SCAQMD also estimated the costs for all the refineries using Refinery 1's operating costs. *Id.* at CFEJ_0935. Similarly, the cost effectiveness estimates for LoTOx were not based on any site-specific data, but rather derived from a manufacturer's estimates. *Id.* ("Process data for these three refineries' FCCUs were provided to a manufacturer, and the manufacturer provided estimates for the total installed costs and annual operating costs.").

With respect to PM BACT, the ALJs concluded that "it is inappropriate to recommend that an applicant meet a limit that [] was not the product of a BACT analysis." PFD at 29. That same standard should be applied equally to Valero's NOx BACT determination. Valero provided detailed cost effectiveness estimates based on the best data available in compliance with applicable rules and guidance—comparing these detailed estimates to the range of costs listed in the RECLAIM Report is inconsistent and inappropriate. Instead, the ALJs should have considered the evidence of other cost effectiveness estimates in the record intended to set BACT based on EPA's cost accounting methodology, including for Marathon Garyville and Port Arthur LNG.⁶ The RECLAIM program was developed by SCAQMD to address the "extreme" nonattainment status that is unique to that state and region, and the incentives driving the SCAQMD's RECLAIM

⁶ These comparisons will be addressed further in Section III.D.i.

Report are therefore not applicable to Nueces County, where ambient ozone concentrations are in attainment of national standards. Pro. Ex. 14 at CFEJ_0888-89 (RECLAIM Report)⁷; App. Ex. 200 at 52:8-12 (J. Lovegren). The Commissioners should reject the ALJs' recommendation to anchor TCEQ's BACT determinations to the California SCAQMD's efforts to bring its own air quality out of "extreme" nonattainment. Valero accordingly urges the Commissioners to strike findings of fact 87⁸, 92⁹, and 93¹⁰.

ii. The Proposed Order Misstates the Applicable BACT Definition and Guidance.

When prevention of significant deterioration ("PSD") review is triggered, as it is here for NOx emissions from the HOC, TCEQ must apply EPA's definition of BACT, which is incorporated in TCEQ's regulations.¹¹ But the Proposed Order includes only the minor source definition of BACT, rejecting Valero's request to include the applicable PSD definition without explanation. See PFD at COL No. 20 (citing 30 TEX. ADMIN. CODE § 116.10(1)). Although the two definitions share a common emphasis on emissions reductions that are both cost effective and technically appropriate, the Proposed Order's reliance on the minor source definition is in error.

⁷ "On May 21, 2012, the EPA classified two areas in the country, the South Coast and the San Joaquin Valley, as "Extreme" non-attainment areas with respect to the 2008 8-hour ozone standard...NOx is a precursor for ozone... Reduction of NOx emissions is necessary for the Basin to attain the ozone ambient air quality standards in 2024 and 2032."

⁸ "Based on cost information from LoTOx and SCR manufacturers, a level of 10 ppm NOx or less is feasible and cost-effective for FCCUs."

⁹ "The cost effectiveness for LoTOx ranges from \$13,840 per ton NOx remove to \$38,407 per ton of NOx removed, with an average cost effectiveness of \$19,689."

¹⁰ "Valero's stated cost effectiveness for using LoTOx to reach a level of 8 ppm to 10 ppm of \$22,092.68 to \$24,092.68 is within the range of cost effectiveness and close to the average cost effectiveness of installing LoTOx at other refineries."

¹¹ 40 CFR § 51.165(a)(1)(xl), as incorporated in 30 TAC § 116.160 ("an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant."); App. Ex. 200 at 11:32-12:17 (J. Lovegren); Ex. ED-1 at 21:42-46 (C. Hill).

Valero urges the Commissioners to correct this error by amending COL No. 20 to include the federal definition of BACT. Proposed Order at 12.

The Proposed Order also implies that TCEQ Tier III cost effectiveness analyses are controlled by EPA guidance, which is not accurate. *See* FOF No. 59 (“Economic reasonableness or cost effectiveness is based on the cost per ton of emissions removed. TCEQ follows standard EPA methodology in evaluating cost effectiveness.”). The Fifth Circuit has confirmed that EPA’s NSR Manual, which the PFD and Proposed Order repeatedly cite as CFEJ’s Ex. 1, **does not establish binding legal requirements.** *Port Arthur Community Action Network v. Texas Commission on Environmental Quality*, No. 22-60556 (5th Cir. 2023).¹² TCEQ’s BACT Guidance directs TCEQ to refer to portions EPA’s Control Cost Manual for estimating *capital and operational costs* as part of a Tier III analysis—but this document, dated 2002, is not part of EPA’s NSR Manual. *See* ED-4 at 000130 (TCEQ BACT Guidance). No part of TCEQ’s BACT Guidance indicates that “TCEQ follows standard EPA methodology in evaluating cost effectiveness,” as stated in FOF No. 59. The inclusion of this sentence in the Proposed Order indicates that the ALJs relied too heavily on EPA’s NSR Manual in evaluating Valero’s Tier III cost effectiveness analysis for NO_x emissions from the HOC. Valero accordingly urges the Commissioners to strike this sentence and review the record and provide an assessment that properly applies the law.

B. The Cost Effectiveness Analyses in the Record Show that LoTOx and SCR Are Not Economically Reasonable According to TCEQ Rules and Guidance.

- i. Valero Provided Detailed Cost Effectiveness Estimates for LoTOx and SCR Using Proper Inlet and Outlet Concentrations.*

¹² “As to the NSR Manual, EPA itself has explained that Texas is not ‘required to follow EPA’s interpretations and guidance issued under the Act in the sense that those pronouncements have independent status as enforceable provisions of the Texas PSD SIP, such that mere failure to follow such pronouncements, standing alone, would constitute a violation of the Act.’” (quoting 57 Fed. Reg. 28,095 (June 24, 1992)).

Valero's Application included a detailed Tier III analysis demonstrating that the installation of LoTOx to lower NOx emissions from 37 ppm to 20 ppm would cost an estimated \$38,264.00 per ton of NOx removed,¹³ which the ED staff agreed was not cost effective based on expertise developed through years of experience in reviewing Tier III analyses. App. Ex. D, AR Tab C at 000105-106 (Preliminary Determination Summary); App. Ex. D, AR Tab C at 000153 (Response to Public Comment). And despite Dr. Sahu's agreement that the capital costs of installing SCR would be even higher,¹⁴ Valero hired a third party to provide a detailed engineering cost estimate for the installation of SCR to control NOx. See App. Ex. 221 (SCR Cost Estimate Basis). Relying on that estimate, Valero demonstrated that the installation of SCR to lower NOx emissions from the HOC from 37 ppm to 20 ppm would cost an estimated \$88,660.41 per ton of NOx removed—a **figure multiple times higher than other cost estimates in Texas and Louisiana that were not considered economically reasonable**. App. Ex. 220 (SCR Cost Estimate); App. Ex. 214 at VAL_008252-53 (Marathon Garyville Permit).

This evidence is clearly laid out in the record, and the PFD and Proposed Order explicitly acknowledge it.¹⁵ Still, the ALJs concluded that “Valero omitted **any** cost analysis for SCR.” COL No. 27 (emphasis added). This logic would imply that (1) Valero's reliance on its knowledge that SCR would be even less cost effective than LoTOx was insufficient to demonstrate that SCR should be eliminated from further analysis; and (2) evidence presented in a SB 709 contested case hearing pursuant to TEX. GOV'T. CODE § 2003.047(i-3) is somehow irrelevant to the applicant's

¹³ App. Ex. D, AR Tab D at 000059-64 (Application).

¹⁴ HOTM Tr. at 109:6-8 (R. Sahu) (“It's my opinion that the cost of implementing SCR would be higher, just from a capital cost standpoint.”).

¹⁵ PFD at 42 (“Dr. Lovegren also testified that he ultimately conducted a cost-effectiveness calculation for the installation of SCR to control NOx emissions from the HOC unit, and he determined the cost effectiveness value to be \$88,660.41 per ton of NOx removed. (citing to “Valero Ex. 200 (Lovegren Direct) at 54; see also Valero Ex. 220 (SCR Cost Estimate).”).

ultimate burden of proof. The PFD and Proposed Order are in direct conflict with state law and Valero therefore urges the Commissioners to correct these legal errors.

First, Valero's decision to rely on the Tier III analysis for LoTOx in its Application based on the knowledge that SCR would cost more than LoTOx was legally sound,¹⁶ and the basis for this decision has since been proven true. Second, the relevant state statute explicitly requires applicants to introduce "additional evidence to support the draft permit" where a party has successfully rebutted the *prima facie* demonstration that "the draft permit meets all state and federal legal and technical requirements; and a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property." TEX. GOV'T. CODE § 2003.047(i-1)-(i-3). Valero maintains that CFEJ failed to present evidence that demonstrates Valero's Tier III BACT analysis violates a state or federal legal requirement.¹⁷ But Valero and the ED nevertheless offered additional evidence in support of its cost effectiveness analyses, which the ALJs are compelled by Texas law to consider in making its recommendations. The record is clear and supports findings and conclusions that Valero demonstrated Tier III BACT for NOx. TEX. GOV'T. CODE § 2003.047(i-3); 30 TAC §§ 80.17(c)(3), .117(c)(3).

The PFD and Proposed Order ultimately conclude that Valero's cost effectiveness analyses for LoTOx and SCR are "not based on reasonable assumptions about the actual control efficiency" of either technology.¹⁸ In other words, the ALJs agreed with CFEJ's argument that Valero should

¹⁶ See Pro. Ex. 3 at CFEJ_0390 (Dec. 1978 EPA Memo) ("Duplicative analyses will not be required in preparing the BACT permit application.").

¹⁷ See Valero's Closing Brief at 10 ("Dr. Sahu did not bother perform a BACT analysis for PM or NOx, which he suggested was required to support any opinion that lower emission limits from the HOC are BACT."); see also Valero's Reply Brief at 11 ("Confronted with questions as to the credibility of its only expert witness in this proceeding, CFEJ now attempts to form new, unsupported rebuttal points in its Closing Arguments. These new arguments do not cure its failure to present evidence that rebuts the *prima facie* demonstration with respect to BACT for NOx emissions from the HOC.").

¹⁸ See FOF No. 90 ("Valero's cost analysis of using LoTOx to control NOx is not based on reasonable assumptions about the actual control efficiency of LoTOx."); FOF No. 100 ("Valero's cost analysis of using SCR to control NOx is not based on reasonable assumptions about its actual control efficiency."); COL No. 27 ("Valero's BACT

have used an “outlet” concentration lower than 20 ppm to estimate the cost effectiveness of LoTOx and SCR. This argument is based on the wholly unsupported notion that the outlet concentration in a Tier III BACT calculation must be tied to the “actual control efficiency” of the technology at issue, regardless of whether that emissions limit has been demonstrated to be an achievable, enforceable permit limit. Reliance on this legal fiction is in error and not supported under the applicable rules or guidance. Furthermore, as mentioned above, no party has contended that Valero used the wrong “inlet” concentration, but the ambiguity in the Proposed Order necessitates that Valero address this issue as well. The following subsections accordingly establish that Valero’s cost effectiveness estimates were calculated based on applicable rules and guidance and are therefore based on reasonable assumptions.

1. Valero used the appropriate “outlet” concentration to estimate the cost effectiveness of LoTOx and SCR.

The PFD and Proposed Order do not analyze the relative merits of the parties’ underlying disagreement as to the legal standard for determining what the appropriate “outlet” concentration in a Tier III cost effectiveness calculation should be in Texas, but instead simply accepts CFEJ’s unsupported argument that the outlet concentration should reflect the lowest NOx emissions rate identifiable in literature, and not an enforceable BACT limit that has been demonstrated to be achievable. The PFD concludes that “Valero’s attempts to minimize the actual pollution control capabilities of LoTOx by focusing on prior permitted limits are unpersuasive.” PFD at 45-46. As will be addressed in detail in Section III.C, Valero had no incentive to manipulate the calculation variables because even if it used a lower outlet concentration, LoTOx and SCR are still not economically reasonable control technologies for the HOC at the Valero West Refinery.

determination for NOx is deficient because Valero...did not utilize reasonable assumptions about the control efficiency of LoTOx.”).

Regardless, the ALJs err in their recommendations for two additional reasons: (1) TCEQ derives the appropriate outlet concentration from recently issued permits and RBLC data; and (2) the NO_x emissions limits in the RECLAIM Report have not been demonstrated to be “achievable,” as that term is applied in the context of PSD permitting.

The PFD repeatedly ties the “outlet” concentration to be applied in a Tier III cost effectiveness calculation with the NO_x emissions recorded in the RECLAIM Report, without evaluating the parties’ underlying disagreement over the legal standard. *See e.g.*, PFD at 46 (“the preponderance of the evidence demonstrated that FCCUs using LoTO_x achieve outlet concentrations ranging from 8 to 10 ppm.”) (citing CFEJ Ex. 14 (RECLAIM Report)). The evidence in the record shows that “[t]he outlet concentration should be the realistic upper-bound performance level (*i.e.*, anticipated permit limit) for that control option,” or in other words, “directly proportional to the **allowable emission rate.**” App. Ex. 200 at 51:9-12 (J. Lovegren) (emphasis added). The ED’s expert witness, Ms. Cara Hill, agreed that the outlet concentration should be derived from “recently issued permits and RBLC data,” and confirmed that TCEQ permit reviewers look to anticipated permit limits for a representative outlet concentration. HOTM Tr. At 205:17-207:5 (C. Hill). The PFD does not mention the ED’s testimony, raising questions as to whether it was overlooked or dismissed. Nor does the PFD acknowledge EPA’s guidance, which states:

It is not the EPA's intention to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. **Rather, the applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases.**

Pro. Ex. 1 at CFEJ_0103 (EPA’s NSR Manual) (emphasis added). The PFD also ignores Valero’s argument that because the “inlet” concentration is “a realistic scenario of upper boundary

uncontrolled emissions for the source,” *i.e.* **the outlet concentration should be the realistic upper-bound performance level of controlled emissions**, not the lowest level identified by an equipment manufacturer to be possible. *See* Pro. Ex. 1 at CFEJ_0117 (NSR Workshop Manual); Valero’s Closing Brief at 27-28.¹⁹ By contrast, CFEJ cites to no authority to support Dr. Sahu’s opinion that a Tier III cost effectiveness calculation should be based on a comparison between the *upper-boundary* of uncontrolled emissions to the *lower-boundary* of controlled emissions. The PFD and Proposed Order’s unexplained rejection of the ED’s expert testimony and EPA guidance, in favor of Dr. Sahu’s unsupported opinion, is in error.

The ALJs’ interpretation of the appropriate outlet concentration also ignores the requirement of “achievability” subsumed in the definition of BACT.²⁰ The Eighth Circuit Court of Appeals recently rejected such an interpretation, affirming the lower court’s explanation that “...step four of the BACT process is not a search for the most cost-effective controls; nor is it a cost-benefit analysis. Rather, **cost considerations are measured by what is achievable.**” *United States v. Ameren Missouri*, 421 F. Supp. 3d 729, 753 (E.D. Mo. 2019), *aff’d in part, rev’d in part and remanded*, 9 F.4th 989 (8th Cir. 2021) (emphasis added). Achievability, in the context of establishing BACT for a particular facility, means that “the limit under consideration can be met continuously by that facility, under all operating conditions and under a range of worst-case conditions, for the life of the facility.” App. Ex. 200 at 20:29-35 (J. Lovegren). Dr. Sahu agreed that achievability necessitates a compliance margin in an enforceable permit limit. HOTM Tr. at 52:24-53:17 (R. Sahu) (“I agree that a BACT limit should be set to account for that inherent

¹⁹ “By arguing instead that the comparison should be between the realistic upper-bound emissions rate and the lowest controlled emissions rate identified in literature, no matter how short the duration, Dr. Sahu is not making an apples-to-apples comparison.”

²⁰ 40 CFR § 51.21(b)(12), as incorporated in 30 TAC § 116.160 (“an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant...which the reviewing authority...**determines is achievable for such source or modification.**”) (emphasis added).

variability and be set at a level such that the source is not put into an impossible situation...”). The PFD reduces the evidence supporting the requirement of a compliance margin to a single footnote, citing Dr. Lovegren’s testimony for “the need for an unspecified compliance margin.” PFD at 45, fn 199. However, as Dr. Lovegren explained, the compliance margin is *designed to be unspecified*:

This is a case-specific determination that depends on many factors, including expected fuel variability, operating variability, maintenance intervals, experience, equipment design, field results from similar installations, manufacturer’s data and commercial warranties, engineering judgment, variability in continuous emission monitoring systems (“CEMs”) and stack test data, review by third-party engineers, etc. In the case of the Project, the proposed BACT limitations were selected to be as low as possible while still maintaining an adequate compliance margin.

App. Ex. 200 at 21:21-27 (J. Lovegren).

Ultimately, the ALJs’ acceptance of CFEJ’s argument that the outlet concentration should be derived from the lowest NOx emissions rate identifiable is rooted in CFEJ’s attempt to equate BACT with Lowest Achievable Emissions Rate (“LAER”), which applies only in nonattainment areas like those regulated by SCAQMD. As Ms. Hill explained, “LAER involves looking for the lowest number and then that is what has to be achieved. BACT involves looking at what most facilities can do, not—not going to find the lowest number.” HOTM Tr. At 229:23-230:8 (C. Hill). But again, the ALJs applied the legal standard inconsistently between its recommendations for PM BACT and for NOx BACT. For PM BACT, the ALJs rejected a similar argument:

The ALJs conclude that the existence of a lower permitted limit does not alone make that limit BACT...The ALJs do not agree with CFEJ’s contention that because a Valero witness testified that it was “possible” to achieve lower a PM limit by re-building the HOC’s wet scrubber, Valero must have conducted an economic analysis of the cost to do so in order to satisfy BACT.

PFD at 29. It is unclear why this same logic was not applied in the analysis of Valero’s Tier III BACT analysis for NOx.

The evidence in the record demonstrates that the lowest permitted NOx BACT emissions limit for an FCCU is 20 ppm, and the Proposed Order accepts this fact. FOF No. 77. The

RECLAIM Report identifies one facility that has “achieved” NOx emissions of 8 ppm—but as Valero has emphasized, this reference is to the Marathon Texas City refinery, which **has a permitted NOx emissions limit of 20 ppm.** Pro. Ex. A at 47 (R. Sahu); App. Ex. 219 at VAL_008444 (Marathon Texas City Permit Special Conditions). This evidence indicates that a NOx limit of 8 ppm was not thought to be achievable in practice with a reasonable margin of compliance for permitting purposes. App. Ex. 200 at 52:17-23 (J. Lovegren). Indeed, Valero knows the capabilities of LoTOx technology to control NOx emissions from FCCUs better than anyone, having used the technology at its St. Charles and Texas City refineries for years. *See* App. Ex. 200 at 50:14-17 (J. Lovegren).

The ALJs’ acceptance that the unnamed facilities listed in the RECLAIM Report have “achieved” NOx emissions of 8-10 ppm may have resulted from the ALJs’ misunderstanding of a statement included in the ED’s Reply Brief. The PFD states that the “ED concedes that if Valero were able to achieve the lower NOx emissions using the LoTOx technology as demonstrated in the literature, then it would be considered cost effective.” PFD at 44. The ALJs cite to a single sentence from the ED’s Reply Brief for this purported concession, but when that sentence is placed in proper context by the sentences that come before and after it, it is clear that the ALJs misunderstood and misrepresented the ED’s argument. The ED’s Reply Brief states:

The EPA cost manual instructs applicants on what costs to include and how to evaluate costs, so the demonstration is always comparing like to like. Should Valero be able to reach those low numbers, then the LoTox would be considered cost effective. However, the Executive Director reviewed Valero’s cost analysis and determined it to be sufficient based off the quantitative cost analysis in the EPA Cost Manual.

ED’s Reply Brief at 5 (internal citations omitted). While the ALJs apparently interpreted the phrase “these low numbers” as *the lower NOx emissions from the RECLAIM Report*, the ED’s reference was actually to *low cost effectiveness numbers*, as evidenced by the prior reference to

EPA's Control Cost Manual and the ED's ultimate conclusion that Valero's cost information was deemed sufficient to reject further add on controls for NOx. In other words, the ED was noting a hypothetical scenario that assumed Valero's *capital and operating costs* for installing LoTOx were lower in the cost analysis equation, and under that scenario LoTOx might be cost effective; but in reality because Valero complied with the EPA Cost Control Manual in evaluating these "like to like" costs, Valero's Tier III analyses properly rejected additional NOx controls.

Valero followed EPA guidance and TCEQ practice by using an outlet concentration of 20 ppm to estimate the cost effectiveness of LoTOx and SCR to control NOx emissions. Valero accordingly urges the Commissioners to strike findings of fact 88²¹, 90²², 97²³, and 100²⁴, and conclusion of law 27²⁵. Proposed Order at 12, 13, 17.

2. Valero used the appropriate "inlet" concentration to estimate the cost effectiveness of LoTOx and SCR.

The Proposed Order correctly states that "[a]n inlet concentration in a cost calculation should be a baseline emissions rate without additional pollution controls. Baseline emissions may be assumed to be the emissions from the lower polluting process itself." FOF No. 85. This finding is derived from EPA's NSR Manual, which provides further context: "[w]hen calculating the cost effectiveness of adding post process emissions controls to certain inherently lower polluting processes, baseline emissions may be assumed to be the emissions from the lower polluting process

²¹ "Current installations of LoTOx in refineries have achieved NOx levels of 8 ppm – 10 ppm from FCCUs. Manufacturers have confirmed that LoTOx can be designed to achieve 2 ppm NOx from current inlet concentrations for FCCUs."

²² "Valero's cost analysis of using LoTOx to control NOx is not based on reasonable assumptions about the actual control efficiency of LoTOx."

²³ "SCR can be designed to reduce 95%-98% NOx emissions from FCCUs and achieve 2 ppm NOx while maintaining a low ammonia slip of less than 5 ppm."

²⁴ "Valero's cost analysis of using SCR to control NOx is not based on reasonable assumptions about its actual control efficiency."

²⁵ "Valero's BACT determination for NOx is deficient because Valero omitted any cost analysis for SCR and did not utilize reasonable assumptions about the control efficiency of LoTOx."

itself. In other words, emission reduction credit can be taken for use of inherently lower polluting processes.” Pro. Ex. 1 at CFEJ_0117 (EPA’s NSR Manual). Specifically, “Inherently Lower-Emitting Processes/Practices include “the use of materials and production processes and work practices that prevent emissions and result in lower ‘production-specific’ emissions.” *Id.* at CFEJ_0090. The use of promotor catalyst additives and control of excess oxygen are two “inherent” process controls in use for the HOC at the Valero West Refinery. App. Ex. 100 at 5:19-28 (Direct Testimony of M. Marquard). Accordingly, Valero’s use of a baseline concentration of 37 ppm is supported by the relevant guidance and evidence in the record. No party has alleged that Valero should have used a higher “inlet,” or “baseline” concentration in its cost effectiveness calculations, and the record would not support such an argument.

ii. Valero Provided Average Cost Effectiveness Estimates, Not Incremental.

The PFD concludes that Valero has not provided average cost effectiveness estimates, based on the misguided assertion that “[t]here is no evidence in the record concerning the relative costs of utilizing LoTOx or SCR or other technologies across the industry—which is what a BACT analysis requires.” PFD at 48. First, as will be addressed further in Section III.D.i, Valero *did* provide examples of the relative costs of installing LoTOx and SCR in Texas and Louisiana, which showed that Valero’s estimates were higher than or on par with those that have been rejected as not economically reasonable. But this is beside the point—the question of whether Valero conducted an average or incremental cost effectiveness analysis does not hinge on whether Valero compared its estimates to others “across the industry,” an assertion for which the PFD cites to no authority or supporting testimony. There is no question that Valero provided average, annualized cost effectiveness estimates for both LoTOx and SCR.

The Proposed Order correctly states that “[a]verage cost effectiveness is the total annualized costs of control divided by the annual emission reductions. Annual emission reduction

is the difference between the baseline emission rate, which represents the realistic upper boundary of uncontrolled emissions for the source, and the controlled emission rate.” FOF No. 61. Of course, this is exactly what has been discussed throughout these proceedings: using an inlet concentration of 37 ppm, compared to a “controlled” outlet concentration of 20 ppm, Valero provided an annualized cost effectiveness estimate for the removal of NO_x emissions from the HOC’s gas stream. By contrast, “[t]he incremental cost effectiveness calculation compares the costs and emissions performance level of a control option to those of the next most stringent option.” FOF No. 62. The PFD and Proposed Order confuse the concepts of average and incremental cost effectiveness with the general guidance that an applicant should demonstrate that its estimated costs for a control alternative are “disproportionately high when compared to the cost of control for the pollutant in recent BACT determinations.” ED-4 at 000131 (TCEQ BACT Guidance). This is a separate question, which will be addressed in Section III.D.

Still, the Proposed Order concludes that “Valero did not consider the average cost effectiveness of installing LoTO_x [or SCR] to reduce its emissions of NO_x.” FOF Nos. 91, 101. To the extent this implies Valero provided incremental cost effectiveness analyses instead, the First Circuit Court of Appeals has rejected a similar argument. In *Town of Weymouth*, the petitioners argued that the applicant “focused only on incremental costs when the analysis required demands a focus on average cost.” *Town of Weymouth, Massachusetts v. Massachusetts Dep’t of Env’tl. Prot.*, 961 F.3d 34, 49 (1st Cir. 2020), on reh’g, 973 F.3d 143 (1st Cir. 2020). The First Circuit disagreed with the petitioners, stating:

Petitioners miss the point. The NSR Workshop Manual says that, for add-on technologies, the baseline for the average-cost-effectiveness calculation is the emissions rate for the technology to which it is being added (here, SoLoNO_x). Incremental cost effectiveness compares one control technology to the next most effective technology (again, SoLoNO_x). So for the SCR, the two formulae would

yield the same result of \$41,541 per ton. **It matters not whether Algonquin called this “average” or “incremental” cost effectiveness.**

Id. (emphasis added). Applying this same logic here, Valero used the NO_x emissions rate for the technology to which LoTO_x or SCR would be added as its baseline, *i.e.* the inherent process controls in the HOC, including the promotor catalyst additives and control of excess oxygen, which control NO_x emissions to 37 ppm. That baseline was then compared to an outlet concentration that represents a BACT level of control for each technology: 20 ppm, which all parties agree is the lowest permitted NO_x BACT emission rate for an FCCU equipped with LoTO_x or SCR. As in *Town of Weymoth*, the average and incremental cost effectiveness formulae would yield the same result: an estimate of \$38,264.00/ton for LoTO_x, and \$88,660.41/ton for SCR. Valero accordingly urges the Commission to strike FOF Nos. 91²⁶ and 100²⁷. Proposed Order at 12, 13.

iii. Valero’s Cost Effectiveness Estimates Were Site-Specific, Conservative, and Did Not Rely on Generalized Industry Assumptions.

The actual cost data on which Valero relied to perform the cost effectiveness calculations facilitated the most accurate estimates. For LoTO_x, Valero used actual capital cost and operation and maintenance cost data from LoTO_x retrofit projects at two other Valero refineries to calculate the cost effectiveness of installing the technology at the Valero West Refinery. App. Ex. 200 at 47:32-48:28 (J. Lovegren) (“the total capital investment and direct annual costs were derived from actual data provided by Valero for its St. Charles and Texas City refineries, respectively.”); App. Ex. 102 (St. Charles Capital Costs Report). For SCR, Valero commissioned detailed, site-specific third-party engineering estimates of the capital and operation and maintenance costs for installing the technology at the Valero West Refinery. *See* App. Ex. 221 (SCR Cost Estimate Basis). Had Valero included the cost of rebuilding or replacing the wet gas scrubber, its cost effectiveness

²⁶ “Valero did not consider the average cost effectiveness of installing LoTO_x to reduce emissions of NO_x.”

²⁷ “Valero did not consider the average cost effectiveness of installing SCR to reduce its emissions of NO_x.”

estimates would be significantly higher. App. Ex. 200 at 50:10-28 (J. Lovegren) (“Since the figure arrived at was on the low side (since it assumed no scrubber rebuild) yet clearly economically unreasonable, it became unnecessary to further substantiate this line of inquiry.”). Valero’s cost effectiveness estimates for LoTOx and SCR represent the most realistic—albeit conservative—figures available to serve as the basis for a Tier III BACT determination.

Although the PFD and Proposed Order adjusts the cost effectiveness ranges in the RECLAIM Report for inflation,²⁸ they fail to acknowledge the fact that Valero’s cost effectiveness estimate for LoTOx was performed two years ago and should likewise be adjusted. *See* Valero’s Reply Brief at 19. Nor do they acknowledge Dr. Lovegren’s testimony that “material costs, equipment costs, and labor costs have increased significantly” since 2021. App. Ex. 200 at 50:29-35 (J. Lovegren) (“[u]sing the CPI data series for industrial commodities, the increase from August 2021 to June 2023 is 8%. Actual costs for refinery construction projects involving commodities such as steel and skilled labor have gone up even higher than this.”). Comparing Valero’s refined and detailed cost effectiveness estimates to the extrapolated numbers from the RECLAIM Report conflicts with the legal requirement that BACT analyses be evaluated on a “case-by-case basis.” 40 CFR § 51.21(b)(12), as incorporated in 30 TAC § 116.160.

iv. CFEJ Did Not Provide Alternative Cost Effectiveness Analyses That Followed TCEQ or EPA Methodology and Failed to Rebut Valero’s Cost Effectiveness Estimates.

The only cost effectiveness estimates offered by CFEJ to rebut Valero’s site-specific, detailed calculations are those from the RECLAIM Report, which are not comparable due to the different incentives driving SCAQMD and use of higher inlet concentrations and a different cost

²⁸ PFD at 50 (“As argued by CFEJ, these cost calculations are based on 2014 dollars. If adjusted for inflation using the Consumer Price Index, the same method Valero’s expert witness used, the cost effectiveness of LoTOx ranges from \$13,840 per ton of NOx removed to \$38,407 per ton of NOx removed, with an average cost effectiveness of \$19,689.”).

accounting methodology, neither of which are endorsed by EPA or TCEQ for PSD BACT evaluations. CFEJ never performed a Tier III BACT analysis for control of NO_x emissions from the HOC at the Valero West Refinery. Nor did CFEJ identify any deficiencies in the capital or operating cost bases used to calculate the cost effectiveness of LoTO_x or SCR. As Valero emphasized in its closing arguments, CFEJ failed to meet its statutory burden to rebut the *prima facie* demonstration that Valero's Tier III BACT determination for NO_x meets all state and federal legal and technical requirements. TEX. GOV'T. CODE § 2003.047(i-1)-(i-3). While this failure alone should require findings and conclusions upholding Valero's *prima facie* demonstration, Valero nevertheless provided additional evidence of recent BACT determinations that reject LoTO_x and SCR as economically unreasonable, as will be discussed in detail in Section III.C.

The ED has consistently reaffirmed that Valero's Tier III BACT analysis for NO_x emissions from the modified HOC comply with all legal and technical requirements throughout the permitting process: the ED fully addressed CFEJ's challenges in its Response to Public Comment, in prefiled testimony, and at the hearing on the merits. App. Ex. D, AR Tab C at 000143-00166 (Response to Public Comment); Ex. ED-1 at 000032:20-33 (C. Hill); HOTM Tr. at 204:10-15 (C. Hill). Accordingly, Valero urges the Commissioners to adopt the following findings, as summarized in Attachment A:

- 85(a). Because 20 ppm is the most commonly attested permit limit for NO_x emissions from an FCCU, the correct outlet concentration to be used in the Tier III cost-effectiveness calculation for installing LoTO_x or SCR to control NO_x emissions from the HOC is the value of 20 ppm used by Valero. ED Ex. 1 at CFEJ_0125 (NSR Workshop Manual); HOTM Tr. at 205:17-207:5 (C. Hill) (testifying that the outlet concentration should be derived from "recently issued permits and RBLC data."); App. Ex. 200 at 47:2229 (Direct Testimony of J. Lovegren).
- 85(b). Valero uses processes inherent to the operation of the HOC to meet the current NO_x emission limit of 37 ppm, such as combustion promoters and control of excess oxygen levels. Valero's use of 37 ppm is the correct inlet concentration to be used

in the Tier III cost-effectiveness calculation for installing LoTOx or SCR to control NOx emissions. App. Ex. D, AR Tab D at VAL_000060-000063.

- 85(c). Using actual capital cost data and operation and maintenance cost data from LoTOx retrofit projects at two other Valero refineries, Valero determined that the cost effectiveness value for installing LoTOx at the Valero West Refinery to reduce NOx emissions from 37 ppm to 20 ppm would be \$38,264.00 per ton of NOx removed, which exceeds TCEQ's threshold for economic reasonableness. App. Ex. 200 at 47:32-48:28 (Direct Testimony of J. Lovegren); HOTM Tr. at 204:16-205:1 (C. Hill); App. Ex. 102 (St. Charles Capital Costs Report).
- 85(d). Similar to Valero, the Marathon Garyville Refinery used an inlet concentration of 40 ppm and an outlet concentration of 20 ppm to calculate the cost-effectiveness of LoTOx to control NOx emissions from its FCCU, which resulted in a cost-effectiveness value of \$40,370. App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit). LoTOx was therefore rejected by the permitting authority in Louisiana as being economically unreasonable. App. Ex. 200 at 48:31-36 (Direct Testimony of J. Lovegren).
- 85(e). Using a detailed cost basis provided by Valero, the cost effectiveness value for installing SCR to reduce NOx emissions from 37 ppm to 20 ppm would be \$88,660.41 per ton of NOx removed, which also exceeds TCEQ's threshold for economic reasonableness. App. Ex. 200 at 54:10-12 (Direct Testimony of J. Lovegren); App. Ex. 221 (SCR Cost Estimate Basis); See App. Ex. 220 (SCR Cost Estimate); HOTM Tr. at 204:16-205:1 (C. Hill).
- 85(f). The Marathon Garyville Refinery calculated the cost effectiveness of using SCR to control NOx, which resulted in an estimate of \$36,496.00/ton. App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit). SCR was therefore rejected by the permitting authority in Louisiana as being economically unreasonable. *Id.*
- 85(g). The record includes no BACT analysis supporting a more stringent BACT limit for NOx emissions from the HOC than 20 ppm. The record includes no cost-effectiveness calculations showing that the installation of LoTOx or SCR to control NOx emissions from the HOC is economically reasonable

C. Even Assuming LoTOx and SCR Could Achieve Greater Reductions than Recent BACT Determinations, the Evidence Shows They Are Still Not Cost Effective.

- i. The Record Demonstrates that LoTOx is Not Cost Effective, Even Using an Outlet Concentration of 8-10 ppm.*

Even if Valero used an outlet concentration of 8-10 ppm to estimate the cost to install LoTOx to control NOx emissions from its HOC, it would have resulted in cost effectiveness values ranging from \$22,092.68 to \$24,092.68, which still exceed TCEQ's cost effectiveness threshold.

App. Ex. 200 at 53:16-25 (J. Lovegren). **Again, there is no evidence that TCEQ has accepted cost effectiveness estimates within the range of \$22,092.68 to \$24,092.68 as economically reasonable in a Tier III BACT determination.** In fact, as mentioned in Section III.B.iv, CFEJ did not provide evidence of *any permitting agency* that has accepted cost effectiveness estimates within this range as economically reasonable. This further supports Valero's request that the Commissioners strike FOF No. 93²⁹.

ii. Valero Demonstrated that SCR is Not an Economically Reasonable Option for Controlling NOx Emissions from the HOC.

Like the cost effectiveness estimate for LoTOx, the estimate for SCR can be adjusted to account for a lower outlet concentration using simple math and the evidence in the record. Given that the cost effectiveness of SCR has been proven to be much higher than for LoTOx, this exercise is redundant and unnecessary. *See* Pro. Ex. 3 at CFEJ_0390 (Dec. 1978 EPA Memo) (“Duplicative analyses will not be required in preparing the BACT permit application.”). Regardless, this estimate may be calculated by adjusting the number in line 48 of the SCR Cost Estimate, admitted into evidence as App. Ex. No. 220. Reducing NOx emissions from 37 ppm to 8-10 ppm using SCR would cost an estimated \$51,973.99 to \$55,823.74 per ton of NOx removed. As was the case for LoTOx, this range far exceeds other estimates determined to be economically unreasonable by Texas and Louisiana permitting authorities, and CFEJ has provided no evidence of any permitting authority accepting estimates within this range as cost effective.

D. The Record Demonstrates that LoTOx and SCR Are Not Economically Reasonable According to Recent Precedent.

i. The Record Includes Comparisons to Recent BACT Determinations.

²⁹ “Valero’s stated cost effectiveness for using LoTOx to reach a level of 8 ppm to 10 ppm of \$22,092.68 to \$24,092.68 is within the range of cost effectiveness and close to the average cost effectiveness of installing LoTOx at other refineries.”

The PFD incorrectly states that “[w]hile Valero has supplied a cost effectiveness estimate for its specific project, it has done so in a vacuum. There is no evidence in the record concerning the relative costs of utilizing LoTOx or SCR or other technologies across the industry—which is what a BACT analysis requires.” PFD at 48. This statement is legally and factually inaccurate, and its inclusion in the PFD requires the Commission’s review.

In 2012, the EPA Administrator declined to object to a facility’s Title V permit based on the petitioner’s claim that “KDAQ did not demonstrate that the cost-per-ton of pollutant prevented was disproportionate to the cost-per-ton incurred by other sources that were controlling the pollutant.” *In the Matter of Kentucky Syngas, LLC*, Petition No. IV-2010-9 (2012) at 23. EPA stated “...nothing in the CAA or the Kentucky SIP requires the specific cost comparisons requested by the Petitioners, so KDAQ has some discretion in assessing costs.” *Id.* The same logic should apply to TCEQ: the only authority for the notion that an applicant must provide evidence of other recent Tier III cost effectiveness analyses is in TCEQ’s BACT Guidance document, which is not legally binding. *See* App. ED-4 at 000130 (TCEQ BACT Guidance). As Ms. Hill testified, TCEQ makes economic reasonableness determinations based on the agency’s breadth of experience in reviewing air quality permit applications for similar sources. HOTM Tr. at 204:14-23 (C. Hill); ED’s Ex. ED-1 at 000011:40-000012:9 (C. Hill).

Furthermore, the record includes evidence of two examples of prior BACT determinations wherein NOx control technologies were rejected as not economically reasonable. In 2022, the Commission issued a final order authorizing a PSD permit for the construction of a new liquefied natural gas facility in Port Arthur, Texas, which included a finding of fact indicating that a cost effectiveness range of \$22,510 to \$23,633 per ton of NOx removed “exceeds the TCEQ’s NOx

threshold for economic reasonableness used with BACT determinations for NO_x.”³⁰ This evidence was not mentioned in the PFD. Valero’s cost effectiveness estimates for LoTO_x (\$36,496.00/ton) and SCR (\$88,660.41/ton) exceed this range by multiples.

Valero also provided evidence that the Marathon Garyville petroleum refinery rejected both LoTO_x and SCR as NO_x control options for its FCCU based on average cost effectiveness calculations. App. Ex. 214 at VAL_008252-53 (Marathon Garyville Permit). Marathon Garyville used an outlet concentration of 20 ppm to calculate the cost-effectiveness of LoTO_x to control NO_x emissions from its FCCU, which resulted in a cost-effectiveness value of \$40,370. *Id.* Marathon Garyville also calculated the cost effectiveness of using SCR to control NO_x, which resulted in an estimate of \$36,496.00/ton. *Id.* The Louisiana Department of Environmental Quality (“LDEQ”) accepted Marathon Garyville’s BACT determination without reference to any other economic reasonableness determinations. The PFD mentions this evidence in a footnote, but dismisses it, reasoning that “these costs significantly exceed the LoTO_x costs at issue in this case.” PFD at 49, fn 209. This is plainly wrong—Valero’s cost effectiveness estimate for LoTO_x is \$38,264.00/ton, using an outlet concentration of 20 ppm, which does not “significantly exceed” the \$40,370.00/ton estimate rejected as economically unreasonable by the LDEQ.

To the extent the ALJs considered the “costs at issue in this case” to be the figures provided in response to CFEJ’s argument that Valero should have used a lower outlet concentration, they should not be compared to Marathon Garyville’s figures, which were based on the correct outlet concentration of 20 ppm. App. Ex. 214 at VAL_008252-53 (Marathon Garyville Permit). Regardless, even if Valero used a lower outlet concentration, its estimated costs to control LoTO_x

³⁰ Valero’s Reply Brief at 22 (citing Final Order, *In Re: Application by Port Arthur LNG, LLC for Air Quality Permit Nos. 158420, PSDTX1572, and GHGPSDTX198* (SOAH Docket No. 582-22-0201, TCEQ Docket No. 2021-0942-AIR (Sept. 2022) at FOF No. 71).

would range from \$22,092.68 to \$24,092.68, which is still on par with or higher than the range that TCEQ rejected as economically unreasonable in the case of Port Arthur LNG.³¹ This evidence further supports Valero’s request that the Commissioners strike FOF No. 92³² and FOF No. 93.³³

ii. TCEQ’s Numerical Threshold for Economic Reasonableness is Not Arbitrary.

Ignoring the evidence showing that Valero’s cost effectiveness estimates were close to or higher than those rejected as economically unreasonable in Texas and Louisiana, the PFD ultimately concludes that “Valero and the ED rely on an unsupported, arbitrary threshold of \$10,000 rather than considering evidence of recent NOx BACT determinations for FCCUs, which is what is required for a BACT analysis.” PFD at 50. However, as discussed in the previous subsection, the evidence demonstrates that the ED and Valero *did not* rely on a numerical threshold to reject LoTOx and SCR as economically unreasonable options for controlling NOx emissions from the HOC. The Proposed Order even accepts evidence that TCEQ does not rely on a bright-line standard for determining economic reasonableness. FOF No. 94 (“The TCEQ does not have a bright-line test for determining economic reasonableness”). The Proposed Order is thus inconsistent, and it is unclear whether the ALJs based their ultimate recommendation on its assertion that TCEQ’s use of a numerical threshold was “arbitrary.” Although the outcome of this permitting action is not dependent on whether TCEQ’s use of a numerical threshold for Tier III BACT determinations is “arbitrary,” the ALJs’ rebuke of TCEQ practice invites the Commission’s review.

EPA guidance and judicial precedent confirm that the ultimate determination of economic reasonableness should be left to the state agency’s discretion. *See* Pro. Ex. 1 at CFEJ_0124 (EPA’s

³¹ Final Order, *In Re: Application by Port Arthur LNG, LLC for Air Quality Permit Nos. 158420, PSDTX1572, and GHGPSDTX198* (SOAH Docket No. 582-22-0201, TCEQ Docket No. 2021-0942-AIR (Sept. 2022) at FOF No. 71).

³² “The cost effectiveness for LoTOx ranges from \$13,840 per ton NOx remove to \$38,407 per ton of NOx removed, with an average cost effectiveness of \$19,689.”

³³ “Valero’s stated cost effectiveness for using LoTOx to reach a level of 8 ppm to 10 ppm of \$22,092.68 to \$24,092.68 is within the range of cost effectiveness and close to the average cost effectiveness of installing LoTOx at other refineries.”

NSR Manual) (“The final decision regarding the reasonableness of calculated cost effectiveness values will be made by the review authority considering previous regulatory decisions.”); Pro. Ex. 3 at CFEJ_0386 (Dec. 1978 EPA Memo) (“A critical decision in the BACT analysis is the relative weight assigned to the energy, environmental, and economic impacts. Congress implied that this decision should be made by the State, thus allowing some flexibility in emission control requirements depending on local energy, environmental, and economic conditions and local preferences.”). In other words, “[s]tate judgment and the Federal emission standards are the foundations for the BACT determination.” Pro. Ex. 3 at CFEJ_0386 (Dec. 1978 EPA Memo).

In 2020, the First Circuit Court of Appeals accepted Massachusetts DEP guidance stating that technologies falling in (or below) the range of \$11,000 to \$13,000 per ton of NO_x removed per year will be considered “cost feasible.” *Town of Weymouth, Massachusetts v. Massachusetts Dep't of Env'tl. Prot.*, 961 F.3d 34, 44 (1st Cir. 2020), on reh'g, 973 F.3d 143 (1st Cir. 2020). And in 2021, TCEQ stated that a \$10,000 threshold “*may* be used for permitting new, modified, and reconstructed sources of air pollutants under the New Source Review air permitting program.”³⁴

Given the agency’s ultimate discretion and the record evidence that TCEQ does not solely rely on a “bright line” numerical value for determining economic reasonableness, it makes little sense to argue that the \$10,000 “threshold” should be adjusted for inflation. Still, Valero provided the as-adjusted number (\$12,808.96)³⁵ to demonstrate the futility of this argument. The evidence in the record demonstrates that the cost effectiveness estimates for installing LoTO_x or SCR to further control NO_x emissions from the HOC are multiple times higher than *both* this as-adjusted threshold and the estimates rejected by Texas and Louisiana as economically unreasonable. Even

³⁴ Appendix B to TCEQ’s 2021 Regional Haze State Implementation Plan Revision at B-15 (emphasis added).

³⁵ Valero’s Reply Brief at 22 (adjusting \$10,000 for eight years of inflation, from July 2015 to July 2023).

if Valero used a lower outlet concentration, its cost effectiveness estimates are still too high to be considered economically reasonable.

IV. DENIAL IS NOT AN APPROPRIATE REMEDY

The ALJs' ultimate recommendation that the Application be denied is contrary to Texas statutory and regulatory procedure and should therefore be rejected. SOAH's role in adjudicating this contested case hearing is limited to evaluating "whether the application complies with all statutory and regulatory requirements." 30 TAC § 55.210(b). The ED issued Valero's Draft Permit after rigorous technical review in accordance with all applicable federal and state statutes, rules, and regulations. PFD at 4. Valero complied with all public notice requirements, and the Commission held a public meeting, solicited public comment, and issued reasoned responses to all public comments before issuing the Draft Permit. *Id.* The proposed remedy of denial contravenes the evidentiary record in this case and is legally unsupportable.

Even if the Commission determines that an application does not meet the requirements of BACT, the Texas Clean Air Act requires that the Commission "shall set out in a report to the applicant its specific objections to the submitted plans of the proposed facility." TEX. HEALTH & SAFETY CODE § 382.0518(d) (emphasis added). The applicant can then alter its plans and specifications "to meet the Commission's specific objections," and the Commission "shall grant the permit, permit amendment, or special permit." *Id.* § 382.0518(e) (emphasis added).³⁶ The recommendation for outright denial of Valero's Application contravenes this statutorily mandated

³⁶ The report referenced in Section 382.0518(d) mirrors a similar provision for renewal applications in Section 382.055(f)-(g), under which the Commission has refused to deny a permit renewal application outright without first requiring additional information from the applicant to address the requirements at issue. *See In re Application of ASARCO Incorporated to Renew Air Quality Permit No. 20345*, TCEQ Docket No. 2004-0049-AIR, SOAH Docket No. 582-05-0593 (2008). In that case, the Commission ultimately granted the renewal application once the applicant addressed the specific requirements outlined in the Commission's order and the ED's Section 382.055 report.

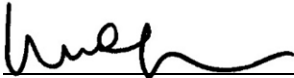
procedure, and the Commissioners should accordingly reject it. Valero urges the Commissioners to strike conclusion of law No. 31³⁷ and replace it with the following:

31. In accordance with Tex. Health & Safety Code § 382.0518(b), the Application to amend Air Quality Permit Nos. 38754 and PSDTX324M14 (App. Ex. D, AR Tab D at VAL_000001-000850) should be approved and the attached Air Quality Permit Nos. 38754, PSDTX324M15 and GHGPSDTX211 should be issued.

V. CONCLUSION

The ALJs correctly determined by their proposed findings and conclusions of law that Valero's determination that BACT for PM emissions from the HOC is 1 lb/1000 lb coke burn complies with all state and federal legal and technical requirements. However, the ALJs erred in finding that Valero failed to establish, by a preponderance of the evidence, that its proposed NOx emissions limit of 37 ppm meets the requirements of BACT. Attached to this Brief is a summary of the changes to the ALJs' Proposed Order (see Attachment A), which Valero respectfully requests the Commission adopt. Alternatively, the Commission should establish an alternative BACT limit for NOx that complies with all legal and technical requirements, or otherwise follow the requirements of Section § 382.0518 and set out in a report its specific objections, if any.

Respectfully submitted,

By: 

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³⁷ "The Application of Valero for Air Quality Permit Nos. 38754 and PSDTX324M15 is denied."

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Applicant Valero Refining-Texas, L.P.'s Brief and Exceptions to the Proposal for Decision has been served on the following counsel/persons by electronic mail on this 11th day of December, 2023.

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SOAH DOCKET NO. 582-23-14975
TCEQ DOCKET NO. 2023-0203-AIR

APPLICATION OF VALERO	§	
REFINING-TEXAS, L.P. FOR	§	BEFORE THE STATE OFFICE
MODIFICATION TO STATE AND	§	
PREVENTION OF SIGNIFICANT	§	OF
DETERIORATION AIR QUALITY	§	
PERMIT NOs. 38754 AND	§	ADMINISTRATIVE HEARINGS
PSDTX324M15	§	

APPLICANT VALERO REFINING-TEXAS, L.P.'S
BRIEF AND EXCEPTIONS TO THE PROPOSAL FOR DECISION AND ORDER

Attachment A

SOAH DOCKET NO. 582-23-14975
TCEQ DOCKET NO. 2023-0203-AIR

APPLICATION OF VALERO	§	
REFINING-TEXAS, LP FOR	§	BEFORE THE STATE OFFICE
MODIFICATION TO STATE AND	§	
PREVENTION OF SIGNIFICANT	§	OF
DETERIORATION AIR QUALITY	§	
PERMIT NOs. 38754 AND	§	ADMINISTRATIVE HEARINGS
PSDTX324M15	§	

APPLICANT VALERO REFINING-TEXAS, L.P.’S
SUMMARY OF REQUESTED CHANGES TO THE ALJs’ PROPOSED ORDER

Introduction

Amend the following Finding of Fact as follows:

2. Valero seeks approval of a project (the HOC Reconfiguration Project) that will require ~~new refining units to change the type of crude oil the Facility can receive and process.~~ the construction of new or modified facilities and will allow the Valero West Refinery to manufacture higher-value products.

Explanation of Proposed Change: The statement that the HOC Reconfiguration Project “will require new refining units to change the type of crude oil the Facility can receive and process” is not factually accurate and not supported by any citation to the record.

Contested Issues:

Whether the controls proposed in the draft permit constitute Best Available Control Technology (BACT)

Amend the following Conclusion of Law to add the following bolded language:

20. TCEQ defines BACT under the TCAA as “[a]n air pollution control method for a new or modified facility that through experience and research, has proven to be operational, obtainable, and capable of reducing or eliminating emissions from the facility, and is considered technically practical and economically reasonable for the facility. The emissions reduction can be achieved through technology such as the use of add-on control equipment or by enforceable changes in production processes, systems, methods, or work practice.” 30 TAC § 116.10(1). **TCEQ defines BACT under 30 TAC 116.160(c)(1)(A) (relating to Prevention of significant Deterioration Requirements) as “an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant that would be emitted**

from any proposed major stationary source or major modification, which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant...” 30 TAC § 116.160; 40 CFR § 52.21(b)(12).

Explanation of Proposed Change: The Proposed Order includes only the minor source definition of BACT, rejecting the applicable PSD definition without explanation.

Adopt the following Conclusions of Law:

20(a). The definition of BACT specifically requires that an emissions limitation be “achievable.” 30 TAC § 116.160; 40 CFR § 52.21(b)(12).

20(b). Achievability requires that a case-by-case BACT emissions limitation must be met continuously, under all operating conditions, for the life of the facility. App. Ex. 200 at 20:31-35 (Direct Testimony of J. Lovegren). The consideration for an achievability determination is whether a particular emissions limitation has been demonstrated in practice to be achievable for an identical or similar facility. App. Ex. 200 at 21:29-33 (Direct Testimony of J. Lovegren); ED Ex. ED-1 at 000019:3-7 (Direct Testimony of C. Hill). Actual operating data showing that a particular emissions limit has been demonstrated in practice would support a finding of achievability. App. Ex. 200 at 21:3522:4 (Direct Testimony of J. Lovegren).

20(c). Because facility owners are legally bound to achieve continuous compliance with BACT emission limits, permitting authorities provide for a reasonable compliance margin when setting emission limits, which should reflect the degree of uncertainty associated with facility performance. App. Ex. 200 at 21:13-17 (Direct Testimony of J. Lovegren); HOTM Tr. at 52:15-53:17 (R. Sahu). A BACT limit should not be set at a level such that the source is put into an impossible situation. *Id.*

Explanation of Proposed Change: Valero requested that these findings be included in the Proposed Order, but the ALJs rejected them without explanation. There is no legal or factual dispute as to the accuracy of the statements therein.

Amend the following Findings of Fact as follows:

54. Under TCEQ’s guidance document, BACT is determined on a case-by-case basis. Before accepting a proposed BACT, any new technical developments which may have led to new emission reduction option(s) must be considered. ~~BACT is technology forcing and technology-driving and BACT determinations made over time should tend to be more stringent.~~

Explanation of Proposed Change: Dr. Lovegren testified that “BACT is technology-based but not technology-forcing. BACT, by definition, is an emission reduction based on ‘available methods, systems, and techniques,’ and therefore considers only those technologies that are commercially available. Other CAA programs, such as the NAAQS standards, however, are usually accepted as ‘technology-forcing,’ as the NAAQS are health-based and not technology-based.” The ALJs’ finding that BACT is “technology

forcing and technology driving” is derived from nonbinding outdated EPA guidance that holds little relevance and contradicts the TCAA definitional language that the technology be “**proven** to be operational, obtainable, and capable of reducing or eliminating emissions reduction from the facility.” 30 TAC § 116.10(1) (emphasis added).

59. Economic reasonableness or cost effectiveness is based on the cost per ton of emissions removed. ~~TCEQ follows standard EPA methodology in evaluating cost effectiveness.~~

Explanation of Proposed Change: The last sentence implies that TCEQ Tier III cost effectiveness analyses are controlled by EPA guidance, which is not accurate. The Fifth Circuit has confirmed that EPA’s 1990 Draft Workshop Manual (“NSR Manual”) does not establish binding legal requirements. *Port Arthur Community Action Network v. Texas Commission on Environmental Quality*, No. 22-60556 (5th Cir. 2023). TCEQ’s BACT Guidance, APDG 6110, directs TCEQ to refer to portions of EPA’s Control Cost Manual for estimating *capital and operational costs* as part of a Tier III analysis—but this document, dated 2002, is not part of the NSR Manual.

61. Average cost effectiveness is the total annualized costs of control divided by the annual emission reductions. Annual emission reduction is the difference between the baseline emission rate, which represents the realistic upper boundary of uncontrolled emissions for the source, and the ~~controlled emission rate~~ **outlet emission rate, which represents the realistic upper-bound performance level of controlled emissions, derived from recently issued permits and RBLC data.**

Explanation of Proposed Change: The NSR Manual states that “the applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases.” Pro. Ex. 1 at CFEJ_0103 (NSR Workshop Manual). Dr. Lovegren testified that “[t]he outlet concentration should be the realistic upper-bound performance level (i.e., anticipated permit limit) for that control option,” *i.e.*, “directly proportional to the **allowable emission rate.**” App. Ex. 200 at 51:9-12 (J. Lovegren) (emphasis added). Ms. Hill agreed that the outlet concentration should be derived from “recently issued permits and RBLC data,” and confirmed that TCEQ permit reviewers look to anticipated permit limits for a representative outlet concentration. HOTM Tr. At 205:17-207:5 (C. Hill). By contrast, CFEJ cited to no authority to support Dr. Sahu’s opinion that a Tier III cost effectiveness calculation should be based on a comparison between the *upper-boundary* of uncontrolled emissions to the *lower-boundary* of controlled emissions. Such an evaluation assumes that the facility can continuously operate at the lower-boundary of controlled emissions, which is an unrealistic expectation not supported by the applicable rules or guidance.

Strike the following Finding of Fact:

65. Using a lower baseline emissions inlet value has the effect of substantially inflating the cost of a control option, making the control option appear less cost effective.

Explanation of Proposed Change: This sentence is ambiguous and superfluous. No party has alleged that Valero manipulated the baseline emissions rate in its cost effectiveness calculations to inflate the cost of a control option.

Whether the emission limits for NO_x from the HOC in the Draft Permit constitute BACT

Strike the Following Findings of Fact:

87. Based on cost information from LoTO_x and SCR manufacturers, a level of 10 ppm NO_x or less is feasible and cost-effective for FCCUs.

92. The cost effectiveness for LoTO_x ranges from \$13,840 per ton NO_x remove to \$38,407 per ton of NO_x removed, with an average cost effectiveness of \$19,689.

93. Valero's stated cost effectiveness for using LoTO_x to reach a level of 8 ppm to 10 ppm of \$22,092.68 to \$24,092.68 is within the range of cost effectiveness and close to the average cost effectiveness of installing LoTO_x at other refineries.

Explanation of Proposed Changes: These findings of fact are based on the RECLAIM Report, which Valero has demonstrated is not a reliable basis of comparison and is not binding on TCEQ for the following reasons: (1) the RECLAIM Report relies on SCAQMD's cost accounting methodology, which is not accepted by TCEQ or EPA and results in lower cost effectiveness estimates than the methodology required by TCEQ guidance; (2) the cost effectiveness estimates included in the RECLAIM Report are based on inlet concentrations ranging from 70-200 ppm, whereas Valero's cost effectiveness estimates are based on an inlet concentration of 37 ppm; (3) the unnamed facilities in the RECLAIM Report did not ultimately accept or reject a control technology based on the cost effectiveness estimates—these estimates are generalized and extrapolated from one refinery, as well as from manufacturers' data, and there is no evidence in the record to support that these estimates are sufficiently site-specific to satisfy BACT requirements.

Strike the Following Findings of Fact and Conclusion of Law:

89. Valero estimated the cost of LoTO_x with a control efficiency of 20 ppm.

90. Valero's cost analysis of using LoTO_x to control NO_x is not based on reasonable assumptions about the actual control efficiency of LoTO_x.

100. Valero's cost analysis of using SCR to control NO_x is not based on reasonable assumptions about its actual control efficiency.

27. Valero's BACT determination for NO_x is deficient because Valero omitted any cost analysis for SCR and did not utilize reasonable assumptions about the control efficiency of LoTO_x.

Explanation of Proposed Changes: The evidence demonstrates that the appropriate outlet concentration to be used in a Tier III BACT cost effectiveness calculation is not based solely on "actual control efficiency" of a technology; rather, it is derived from recent BACT permitting decisions and the RBLC. The lowest permitted NO_x emissions limit is 20 ppm,

as confirmed by the Proposed Order's FOF No. 77. Valero followed EPA guidance and TCEQ practice by using an outlet concentration of 20 ppm to estimate the cost effectiveness of LoTOx and SCR to control NOx emissions. Furthermore, the evidence demonstrates that Valero did not omit any cost analysis for SCR.

Adopt the following Findings of Fact:

85(a). Because 20 ppm is the most commonly attested permit limit for NOx emissions from an FCCU, the correct outlet concentration to be used in the Tier III cost-effectiveness calculation for installing LoTOx or SCR to control NOx emissions from the HOC is the value of 20 ppm used by Valero. ED Ex. 1 at CFEJ_0125 (NSR Workshop Manual); HOTM Tr. at 205:17-207:5 (C. Hill) (testifying that the outlet concentration should be derived from "recently issued permits and RBLC data."); App. Ex. 200 at 47:2229 (Direct Testimony of J. Lovegren).

85(b). Valero uses processes inherent to the operation of the HOC to meet the current NOx emission limit of 37 ppm, such as combustion promoters and control of excess oxygen levels. Valero's use of 37 ppm is the correct inlet concentration to be used in the Tier III cost-effectiveness calculation for installing LoTOx or SCR to control NOx emissions. App. Ex. D, AR Tab D at VAL_000060-000063.

85(c). Using actual capital cost data and operation and maintenance cost data from LoTOx retrofit projects at two other Valero refineries, Valero determined that the cost effectiveness value for installing LoTOx at the Valero West Refinery to reduce NOx emissions from 37 ppm to 20 ppm would be \$38,264.00 per ton of NOx removed, which exceeds TCEQ's threshold for economic reasonableness. App. Ex. 200 at 47:32-48:28 (Direct Testimony of J. Lovegren); HOTM Tr. at 204:16-205:1 (C. Hill); App. Ex. 102 (St. Charles Capital Costs Report).

85(d). Similar to Valero, the Marathon Garyville Refinery used an inlet concentration of 40 ppm and an outlet concentration of 20 ppm to calculate the cost-effectiveness of LoTOx to control NOx emissions from its FCCU, which resulted in a cost-effectiveness value of \$40,370. App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit). LoTOx was therefore rejected by the permitting authority in Louisiana as being economically unreasonable. App. Ex. 200 at 48:31-36 (Direct Testimony of J. Lovegren).

Strike the Following Findings of Fact:

88. Current installations of LoTOx in refineries have achieved NOx levels of 8 ppm – 10 ppm from FCCUs. Manufacturers have confirmed that LoTOx can be designed to achieve 2 ppm NOx from current inlet concentrations for FCCUs.

97. SCR can be designed to reduce 95%-98% NOx emissions from FCCUs and achieve 2 ppm NOx while maintaining a low ammonia slip of less than 5 ppm.

Explanation of Proposed Changes: There is no evidence in the record that the unnamed facilities in the RECLAIM Report have demonstrated that these lower levels are "achievable" as the term is applied in the context of BACT. Instead, the evidence shows that Marathon Texas City still accepted a NOx emissions limit of 20 ppm. Pro. Ex. A at

47 (R. Sahu); App. Ex. 219 at VAL_008444 (Marathon Texas City Permit Special Conditions).

Strike the following Findings of Fact:

91. Valero did not consider the average cost effectiveness of installing LoTOx to reduce emissions of NOx.

101. Valero did not consider the average cost effectiveness of installing SCR to reduce its emissions of NOx.

Explanation of Proposed Changes: The evidence in the record demonstrates that Valero provided annualized average cost effectiveness estimates for LoTOx and SCR, using an inlet concentration of 37 ppm, compared to an outlet concentration of 20 ppm. *Town of Weymouth, Massachusetts v. Massachusetts Dep't of Env'tl. Prot.*, 961 F.3d 34, 49 (1st Cir. 2020), on reh'g, 973 F.3d 143 (1st Cir. 2020) (rejecting petitioner's argument that the applicant "focused only on incremental costs when the analysis required demands a focus on average cost" because for add-on controls, "the two formulae would yield the same result..."). The question of whether Valero provided an average or incremental cost effectiveness should not be confused with the ultimate question of whether those estimates are "economically reasonable."

Strike the following Finding of Fact:

95. Valero's Application omitted any cost analysis for SCR.

102. Valero failed to establish that the use of SCR control technology to reduce NOx emissions is economically unreasonable.

Explanation of Proposed Changes: Valero's decision to rely on the Tier III analysis for LoTOx in its Application based on the knowledge that SCR is an even more expensive technology than LoTOx was legally sound, and the basis for this decision has since proven true. Texas statutory procedure explicitly requires applicants to introduce "additional evidence to support the draft permit" where a party has successfully rebutted the *prima facie* demonstration that "the draft permit meets all state and federal legal and technical requirements; and a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property." TEX. GOV'T. CODE § 2003.047(i-1)-(i-3). Valero submitted an average cost effectiveness analysis for use of SCR to control NOx emissions from the HOC from 37 ppm to 20 ppm, which showed it would cost at least \$88,660.41 per ton of NOx removed. Even if Valero used a lower outlet concentration, reducing NOx emissions from 37 ppm to 8-10 ppm using SCR would cost an estimated \$51,973.99 to \$55,823.74 per ton of NOx removed. These values are multiple times higher than other values in the record rejected as economically unreasonable. The statement in FOF 95 is therefore irrelevant—the ALJs are compelled by Texas law to consider Valero's cost effectiveness analysis for control of SCR in making its recommendations.

Adopt the following Findings of Fact:

85(e). Using a detailed cost basis provided by Valero, the cost effectiveness value for installing SCR to reduce NOx emissions from 37 ppm to 20 ppm would be \$88,660.41 per ton of NOx removed, which also exceeds TCEQ's threshold for economic reasonableness. App. Ex. 200 at 54:10-12 (Direct Testimony of J. Lovegren); App. Ex. 221 (SCR Cost Estimate Basis); *See* App. Ex. 220 (SCR Cost Estimate); HOTM Tr. at 204:16-205:1 (C. Hill).

85(f). The Marathon Garyville Refinery calculated the cost effectiveness of using SCR to control NOx, which resulted in an estimate of \$36,496.00/ton. App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit). SCR was therefore rejected by the permitting authority in Louisiana as being economically unreasonable. *Id.*

85(g). The record includes no BACT analysis supporting a more stringent BACT limit for NOx emissions from the HOC than 20 ppm. The record includes no cost-effectiveness calculations showing that the installation of LoTOx or SCR to control NOx emissions from the HOC is economically reasonable.

Amend the following Conclusion of Law as follows:

19. The evidence in the record demonstrates that Valero ~~failed to meet its burden of proof regarding its BACT analysis for NOx emissions from its HOC, but~~ met its burden of proof regarding all ~~other~~ applicable statutory and regulatory requirements.

Adopt the following proposed Conclusion of Law:

26(a). Valero's proposed NOx emission limit of 37 ppm for its HOC satisfies BACT requirements.

Explanation of Proposed Changes: The evidence demonstrates that Valero's BACT analysis and BACT determination for NOx is both complete and sufficient to support the proposed emission limit of 37 ppm for the modified HOC. Valero reviewed TCEQ's published Tier I guidelines for this facility type and pollutant; and conducted a survey of recently approved BACT analyses, permits issued by Texas and other States, and entries in the RBLC. Valero also identified other information from judicial consent decrees, EPA's NSPS Ja rulemaking dockets, and other technical publications. Valero then performed a quantitative economic analysis of LoTOx and SCR according to TCEQ guidance and found that neither technology would be cost-effective for the West Refinery.

Strike the following Conclusion of Law:

31. The Application of Valero for Air Quality Permit Nos 38754 and PSDTX 324M15 is denied.

Explanation of Proposed Change: The ALJs' ultimate recommendation that Valero's Application be "denied" is contrary to statutory procedure, and the Commissioners should reject it. SOAH's role in adjudicating this contested case hearing is limited to evaluating "whether the application complies with all statutory and regulatory requirements." 30 TAC § 55.210(b). Even if the Commission determines that an application contravenes the requirements of BACT, the Texas Clean Air Act requires that the Commission "shall set out in a report to the applicant its specific objections to the submitted plans of the proposed facility." TEX. HEALTH & SAFETY CODE § 382.0518(d) (emphasis added). The applicant

can then alter its plans and specifications “to meet the Commission’s specific objections,” and the Commission “shall grant the permit, permit amendment, or special permit.” *Id.* § 382.0518(e) (emphasis added).

Replace Conclusion of Law No. 31 with the following proposed language:

31. In accordance with Tex. Health & Safety Code § 382.0518(b), the Application to amend Air Quality Permit Nos. 38754 and PSDTX324M14 (App. Ex. D, AR Tab D at VAL_000001-000850) should be approved and the attached Air Quality Permit Nos. 38754, PSDTX324M15 and GHGPSDTX211 should be issued.