Recommended Revisions to the Proposed Order

Background:
Amend the Following Finding of Fact:

FOF No. 2. Valero seeks approval of a project (the HOC Reconfiguration Project) that will require new or modified facilities ~~refining units~~ to change the type of products the Facility can manufacture ~~crude oil the Facility can receive and process~~.

Explanation of Proposed Change: More accurately describes the project being authorized.

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

Amend the following Conclusion of Law:

COL No. 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 further defines BACT under 30 Tex. Admin. Code § 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 Tex. Admin. Code § 116.160; 40 CFR § 52.21(b)(12).

Explanation of Proposed Change: The Proposed Order includes only the minor source definition of BACT, omitting the applicable PSD definition.

Adopt the following Conclusions of Law:

COL No. 20a. The definition of BACT requires that an emissions limitation be "achievable." 30 Tex. Admin. Code § 116.160; 40 CFR § 52.21(b)(12).

Explanation of Proposed Change: Clarifies that 30 TAC § 116.160; 40 CFR § 52.21(b)(12) specifically require that an emissions limitation be achievable.

Amend the following Findings of Fact:

FOF No. 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: BACT, by definition, is an emission reduction based on 'available methods, systems, and techniques,' and therefore considers only those technologies that are commercially available. The ALJs' proposed finding contradicts the TCAA's definition, which states that the air pollution control method "has proven to be operational, obtainable, and capable of reducing or eliminating emissions reduction from the facility, and is considered technically practical and economically reasonable for the facility." 30 TAC § 116.10(1).

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~~.

Explanation of Proposed Change: The last sentence implies that TCEQ's 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.

FOF No. 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: This change tracks the language of the calculation and removes ambiguity. 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." CFEJ Ex. 1 at CFEJ_0103 (NSR Workshop Manual). Cara Hill testified 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).

Strike the following Finding of Fact:

~~FOF No. 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 unnecessary. No party 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 NOx from the HOC in the Draft Permit constitute BACT

Strike the Following Findings of Fact:

FOF No. 87. ~~Based on cost information from LoTOx and SCR manufacturers, a level of 10 ppm NOx or less is feasible and cost-effective for FCCUs~~.

FOF No. 92. ~~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~~.

FOF No. 93. ~~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~~.

Explanation of Proposed Changes: These findings of fact are based on the RECLAIM Report, which uses a non-standard cost accounting methodology and is not the result of BACT analyses. Specifically: 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, concentrations significantly higher than the inlet concentration of 37 ppm for this Facility; and 3) the 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 demonstrating that these estimates are sufficiently site-specific to satisfy BACT requirements.

Strike the Following Findings of Fact and Conclusion of Law:

FOF No. 89. ~~Valero estimated the cost of LoTOx with a control efficiency of 20 ppm.~~

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 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~~.

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. As specified in the ALJs' Proposed Order 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. In addition, the record demonstrates that Valero's rebuttal evidence includes a cost analysis for SCR.

Adopt the following Findings of Fact:

FOF No. 85a. 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, based on Valero's survey of recent permitting decisions, the RBLC, and consent decrees involving petroleum refineries.

Explanation of Proposed Changes: Revised to be consistent with the ALJs' Proposed Order Finding of Fact No. 77, ED testimony, and the NSR Workshop Manual. 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.")

FOF No. 85b. 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.

Explanation of Proposed Changes: This change adds evidence from the record demonstrating that Valero used the correct inlet concentration in its cost-effectiveness calculation for installing LoTOx and SCR. App. Ex. D, AR Tab D at VAL_000060-000063.

FOF No. 85c. 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 per ton of NOx removed, which exceeds TCEQ's threshold range for economic reasonableness.

Explanation of Proposed Changes: This change adds evidence from the record demonstrating that the cost-effectiveness calculations performed by Valero demonstrate that the cost of installing LoTOx at the Valero facility is not economically reasonable. 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).

FOF No. 85d. 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. LoTOx was therefore rejected by the permitting authority in Louisiana as being economically unreasonable.

Explanation of Proposed Changes: This change adds evidence from the record demonstrating that the cost-effectiveness calculations performed by Valero demonstrate that the cost of installing LoTOx at the Valero facility is not economically reasonable. App. Ex. 200 at 48:31-36 (Direct Testimony of J. Lovegren.) App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit).

Strike the Following Findings of Fact:

FOF No. 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~~.

FOF No. 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 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 accepted a NOx emissions limit of 20 ppm. CFEJ Ex. A at 47 (R. Sahu); App. Ex. 219 at VAL_008444 (Marathon Texas City Permit Special Conditions).

Strike the following Findings of Fact:

FOF No. 91. ~~Valero did not consider the average cost effectiveness of installing LoTOx to reduce emissions of NOx~~.

FOF No. 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. The cost effectiveness calculations do not require industry-wide averages.

Amend the following Finding of Fact:

FOF No. 95. Valero's Application omitted a ~~any~~ cost analysis for SCR. However, Valero provided cost estimates for SCR as part of its rebuttal evidence.

Explanation of Proposed Changes: See explanation for FOF No. 102.

Strike the following Finding of Fact:

FOF No. 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 a more expensive technology than LoTOx is moot, because as part of its rebuttal case, 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. Valero also provided cost analyses

using lower outlet concentrations. 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. App. Ex. 221 (SCR Cost Estimate Basis). The ALJs are required to consider evidence provided in the Applicant's rebuttal case. Tex. Gov't Code § 2003.47 (i-3) and 30 TAC § 80.17(c)(2), providing that "[i]f a party rebuts the *prima facie* demonstration, the applicant and the ED may present additional evidence to support the draft permit."

Adopt the following Findings of Fact:

FOF No. 85e. 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 exceeds TCEQ's threshold range 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).

FOF No. 85f. The Marathon Garyville Refinery calculated the cost effectiveness of using SCR to control NOx, which resulted in an estimate of $36,496 per ton of NOx removed. SCR was therefore rejected by the permitting authority in Louisiana as being economically unreasonable.

App. Ex. 214 at VAL_008252-53 (Marathon Garyville 2008 Permit).

FOF No. 85g. 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:

COL No. 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 Conclusion of Law:

COL No. 26a. Valero's proposed NOx emission limit of 37 ppm for its HOC satisfies BACT requirements.

COL No. 26b. The Draft Permit meets all state and federal legal and technical requirements for BACT for NOx and PM.

Explanation of Proposed Changes for FOF Nos. 85(e)-(g), COL No. 19, COL Nos. 26(a) and (b): The evidence demonstrates that Valero's BACT analysis and BACT determination for NOx is 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 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.

Amend the following Conclusion of Law:

Conclusion of Law No. 31. ~~The Application of Valero for Air Quality Permit Nos 38754 and PSDTX 324M15 is denied.~~ 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) is approved, and the attached Air Quality Permit Nos. 38754, PSDTX324M15 and GHGPSDTX211 is hereby issued.

Explanation of Proposed Change: The ALJs' ultimate recommendation that Valero's Application be denied is contrary to the evidence in the record supporting Valero's BACT analyses for PM and NOx.

Transcript Costs

Strike the following Finding of Fact:

FOF No. 111. ~~CFEJ prevailed in exposing deficiencies in the Draft Permit.~~

Explanation of Proposed Change: The evidence in the record supports a determination that the Draft Permit meets all state and federal legal and technical requirements for BACT for NOx and PM. (See explanation for FOFs 26(a) and (b)).

*Correctly number Conclusions of Law 31-37 as Ordering Provisions No. 1-7.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AN ORDER
~~DENYING~~ APPROVING THE APPLICATION BY
VALERO REFINING-TEXAS, LP FOR MODIFICATION TO STATE AND PREVENTION OF SIGNIFICANT DETERIORATION AIR QUALITY PERMIT NOS. 38754 AND PSDTX324M15;
TCEQ DOCKET NO. 2023-0203-AIR; SOAH DOCKET NO. 582-23-14975

On April 24, 2024, the Texas Commission on Environmental Quality (TCEQ or Commission) considered the applications of Valero Refining-Texas, LP for Modification to State and Prevention of Significant Deterioration Air Quality Permit Nos. 38754 and PSDTX324M14 for its Bill Greehey Refinery West Plant in Corpus Christi, Nueces County, Texas. A Proposal for Decision (PFD) was issued by Amy Davis and Holly Vandrovec, Administrative Law Judges (ALJs) with the State Office of Administrative Hearings (SOAH) and considered by the Commission.

After considering the PFD, the Commission makes the following findings of fact and conclusions of law.

I. FINDINGS OF FACT

Background

1. Valero Refining-Texas LP (Applicant or Valero) is proposing to amend air quality Permit Nos. 38754 and PSDTX324M14 for the Bill Greehey Refinery West Plant in Corpus Christi, Texas (Facility or West Refinery).

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

3. The HOC Reconfiguration Project includes installing a new riser reactor in the Facility's heavy oil cracker (HOC), which is a type of fluid catalytic cracking unit (FCCU or cracker) configured to handle different feedstock than an FCCU, and a new gas plant.

4. On September 30, 2021, Valero applied for an amendment to state air quality and Prevention of Significant Deterioration (PSD) permits for its HOC Reconfiguration Project (the Application). The Application included all affected facilities associated with the HOC Reconfiguration Project and was supplemented to provide additional supporting information. A complete copy of the Application was included in the Administrative Record.

5. Approval of the Application would authorize Valero to construct a new utility steam boiler, a new cooling tower, a new gas plant, a new sour water stripper, a new liquefied petroleum gas (LPG) Merox Treating Unit, a new Selective Hydrogenation Unit, a new C3/C4 Splitter Tower, and two new butane/butylene bullet tanks.

6. The Application seeks authorization for the Facility to emit the following air contaminants: ammonia, carbon monoxide, hydrogen sulfide, nitrogen oxides (NO_x), organic compounds, particulate matter (PM) including particulate matter with diameters of 10 microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO2), and greenhouse gases.

7. The Application includes a complete Form PI-1 General Application signed by Valero's authorized representative. The Application was submitted under the seal of a Texas registered professional engineer.

8. The appropriate permit fee of $75,000 was submitted with the Application and Valero is not delinquent in the payment of any fee, tax, or penalty owed by the State of Texas.

9. TCEQ's Executive Director (ED) declared the Application administratively complete on October 5, 2021, and technically complete on May 19, 2022, on which date the ED rendered his preliminary decision to approve the Application.

10. The ED issued the Final Draft Permit and rendered his final decision to approve the Application on December 2, 2022, when he issued his Response to Public Comment.

Notice and Jurisdiction

11. On October 5, 2021, the Chief Clerk issued Notice of Receipt of Application and Intent to Obtain Air Permit and provided mailed notification to all agencies, regulatory bodies, and other persons and entities to which notification was required.

12. On October 14, 2021, Valero Published Notice of Receipt of Application and Intent to Obtain Air Permit in English as required in the *Corpus Christi Caller Times*.

13. On October 15, 2021, Valero published Notice of Receipt of Application and Intent to Obtain Air Permit in Spanish as required in *Tejano y Grupero News*.

14. Valero posted signs in English and Spanish as required for the duration of the initial public comment period and provided appropriate public notice verification of such on November 16, 2021.

15. On May 19, 2022, the Chief Clerk issued a Notice of Application and Preliminary Decision and provided mailed notification to all agencies, regulatory bodies, and other persons and entities to which notification was required.

16. On June 1, 2022, Valero published the Notice of Application and

Preliminary Decision as required in the *Corpus Christi Caller Times*.

17. On June 1, 2022, Valero published the Notice of Application and Preliminary Decision in Spanish as required in *Tejano y Grupero News*.

18. The ED held a public meeting in Corpus Christi on July 11, 2022, following the provision of all required public notice. The public comment period ended on July 11, 2022.

19. Copies of the Application and other required information were made available for public inspection for the required duration at the TCEQ central office, the TCEQ regional office in Corpus Christi, and the Owen R. Hopkins Public Library.

20. On December 2, 2022, the ED issued its Response to Public Comments. In response to public comment, the ED changed Draft Permit Special Conditions Nos. 11, 15, 20, 25, 39.B(2).

21. On December 2, 2022, the ED issued his decision to approve the Application.

22. On January 13, 2023, Valero requested that the Draft Permit be directly referred to SOAH pursuant to Texas Water Code section 5.557(a) and 30 Texas Administrative Code (TAC) section 55.210(a).

Proceedings at SOAH

23. On April 7, 2023, the Chief Clerk issued the Notice of Public Hearing and provided mailed notification to all agencies, regulatory bodies, and other persons and entities to which notification was required.

24. On April 21, 2023, Valero published Notice of Public Hearing in English as required in the *Corpus Christi Caller Times*.

25. On April 15, 2023, Valero published Notice of Public Hearing in Spanish in *Tejano y Grupero News.*

26. On April 21, 2023, the Chief Clerk filed the Administrative Record with SOAH. The Administrative Record was supplemented by the Chief Clerk by filing dated May 3, 2023.

27. On May 22, 2023, Administrative Law Judges (ALJs) Amy Davis and Holly Vandrovec held a preliminary hearing. SOAH found that notice was proper, took jurisdiction over the Application without objection, and entered an agreed procedural schedule for the hearing.

28. The Administrative Record was admitted into evidence without objection.

29. On May 22, 2023, the ALJs named the following statutory parties as parties to this permitting proceeding: Valero, the ED, and TCEQ's Office of Public Interest Counsel (OPIC).

30. At the preliminary hearing on May 22, 2023, the ALJs considered requests for party status filed by Citizens for Environmental Justice (CFEJ) and Hillcrest Residents Association, and accepted evidence and argument on the issue of whether either organization could demonstrate associational standing. No other party appeared at the preliminary hearing and sought party status.

31. At the preliminary hearing on May 22, 2023, the ALJs heard testimony from Mr. Lamont Taylor, who appeared as a member and representative of Hillcrest Residents Association. After considering the applicable law and evidence offered at the preliminary hearing, the ALJs determined that Hillcrest Residents Association did not meet its burden to show that Mr. Taylor is an affected person and that Hillcrest Residents Association is an affected association.

32. At the preliminary hearing on May 22, 2023, the ALJs heard testimony from Ms. Tammy Foster and Ms. Patricia Placker, who appeared as members and representatives of CFEJ. After considering the applicable law and evidence offered at the preliminary hearing, the ALJs granted party status to CFEJ based on a determination that its member Patricia Placker is an affected person and CFEJ is an affected association.

33. The hearing on the merits was held by Zoom videoconferencing on August 22, 2023, before ALJs Amy Davis and Holly Vandrovec.

34. The record in the contested case hearing closed on September 21, 2023, with the filing of replies to closing arguments.

Prima Facie Demonstration

35. The filing of the Administrative Record established a prima facie demonstration that a final permit, if issued in accordance with the Draft Permit, meets all state and federal legal and technical requirements and protects human health and safety, the environment, and physical property.

36. The agreed procedural schedule in SOAH Order No. 1 allowed any party to present evidence to rebut the prima facie demonstration by demonstrating that one or more provisions in the Draft Permit violate a specifically applicable state or federal requirement that relates to a matter directly referred to SOAH or referred by the Commission.

37. The agreed procedural schedule in SOAH Order No. 1 allowed Valero and the ED to present additional evidence to support the ED's Draft Permit if the prima facie demonstration was rebutted.

38. CFEJ presented evidence that sought to demonstrate that the emissions limits for PM and NO_x for the HOC (EPN No. 121) in the Draft Permit do not reflect Best Available Control Technology (BACT) as required. No party presented evidence that sought to rebut the prima facie demonstration that any other provision in the Draft Permit violates a specifically applicable state or federal requirement that relates to a matter directly referred to SOAH or referred by the Commission.

39. Accordingly, the Administrative Record establishes Valero's prima facie demonstration and satisfies Valero's burden of proof with respect to all undisputed issues.

40. The Application was complete and included all necessary supporting information and appropriate TCEQ forms.

41. The Application includes a complete Form PI-1 General Application signed by Applicant's authorized representative. A Revised Form PI-1 signed by Valero's authorized representative was submitted on December 12, 2021. Valero submitted another Revised Form PI-1 signed by Valero's authorized representative on April 7, 2022.

42. The Application was submitted under the seal of a Texas registered

professional engineer.

43. The Application addressed all sources of air emissions associated with the proposed Project at the Valero West Refinery that are subject to permitting under TCEQ rules.

Contested Issues

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

44. TCEQ BACT evaluation is conducted using a three-tiered analysis approach. In the first tier, controls accepted as BACT in recent permit reviews for the same process are approvable as BACT in a current review if no new technical developments have occurred that would justify additional controls as economically or technically reasonable.

45. Environmental Protection Agency (EPA) BACT evaluation is conducted using a top down method. The most effective control that is not eliminated as technically infeasible or economically unreasonable is BACT.

46. Either EPA's top down methodology or TCEQ's three-tiered BACT review may be used because both should result in the same BACT determination.

47. BACT for any particular industry is not static and is subject to change over time as technology progresses and as process improvements occur.

48. The BACT analyses in the Application used TCEQ's three-tiered methodology.

49. Valero's BACT analyses considered information from EPA's RACT/BACT/LAER Clearinghouse (RBLC), consent decrees, recent permit reviews for other petroleum refineries, TCEQ's Tier I BACT Guidelines, and other economic analyses.

50. In TCEQ's Tier I analysis, the reviewer should, first, review the proposed emission reduction options; second, review the proposed BACT performance elements; and third, compare the proposed emission reduction performance level with the performance levels that have been accepted as

BACT in recent reviews for the same industry. The proposed emission reduction performance level should be at least equivalent to those previously accepted as BACT in recent permit reviews.

51. TCEQ's Tier II analysis is only required where BACT requirements have not already been established for a particular process/industry or if there are compelling technical differences between the applicant facility's process and others in the same industry. The Tier II analysis involves consideration of controls that have been accepted as BACT in recent permits for similar air emission streams in a different process or industry.

52. A BACT evaluation will proceed to Tier III only if the first two tiers of evaluation have failed to identify an emission reduction option that is technically practicable and economically reasonable.

53. In TCEQ's Tier III analysis, the applicant must identify all emission reduction options; eliminate technically infeasible options; rank remaining emission reduction options in terms of total emissions reduced; perform quantitative cost analysis to determine the cost-effectiveness (dollars per ton of pollutant reduced) of each emission reduction option; and select BACT based on cost- effectiveness and performance. A Tier III BACT evaluation does not consider the effect of emission reduction costs on corporate economics.

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.~~

55. The permit reviewer should instruct the applicant to perform a detailed technical and economic analysis of any new or previously unconsidered emission reduction options that the reviewer identifies. The procedures for the detailed analysis are the same as those used in a Tier III BACT analysis.

56. If the analysis demonstrates that the identified emissions reduction option(s) is technically practicable and economically reasonable, the applicant must propose an overall emission reduction performance level that is at least equivalent to that of the newly identified option(s).

57. If no such options are identified and the overall emission reduction performance of the proposed BACT is at least equivalent to what has been accepted in recent permit reviews for the same industry, the BACT proposal should be accepted as satisfying BACT requirements.

58. The BACT analysis must be well documented in the administrative record.

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.~~

60. An applicant should document the basis for equipment cost estimates with data from equipment vendors or with reference sources. Rejection of more effective technology based on cost must be supported by a reasoned explanation, based on objective economic data, which includes consideration of average cost effectiveness.

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 emissions rate, which represents the realistic upper-bound performance level of controlled emissions, derived from recently issued permits and RBLC data.

62. Incremental cost effectiveness compares the costs and emissions level of a control option to those of the next most stringent option. Incremental cost alone cannot be used to argue for one alternative over another.

63. To justify elimination of a control technology as economically unreasonable, an applicant should demonstrate that the costs of pollutant removal for the control technology are disproportionately high when compared to the cost of control for the pollutant in recent BACT determinations.

64. When evaluating the total or incremental cost effectiveness of a control alternative, an applicant should ensure the assumptions made are reasonable and supportable, to avoid inflating the cost-effectiveness figures.

65. [Deleted]

~~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.~~

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

66. The HOC's cracking process involves the deposition of carbonaceous hydrocarbons, or coke, onto a catalyst. A catalyst regenerator then burns coke from the catalyst to reactivate it. The burning of coke generates PM, among other emissions. The emissions limitation is therefore expressed as pounds of PM per pounds of coke burned off.

67. PM emissions from Valero's HOC are controlled using the Belco Scrubber, a wet gas scrubber.

68. Valero proposed a PM limitation of 1 pound (lb) /1000 lbs of coke burn.

69. Valero conducted a Tier I BACT analysis for PM emissions to determine the proposed PM limit.

70. TCEQ has established a 1 lb/1000 lbs coke burn Tier I BACT limit for PM emissions from FCCUs.

71. The record does not include a BACT analysis supporting a more stringent BACT limit for PM from the HOC.

72. The record includes no evidence of new control technology that consistently produces lower PM emissions limits than a wet gas scrubber.

73. The Total Refinery (Total) in Port Arthur, Texas has a PM limit of 0.82 lb/1000 lb coke burn. Total was motivated to propose and accept a limit of 0.82 lb/1000 lb coke burn to avoid state permitting review and federal PSD review, even though TCEQ viewed Tier I BACT as 1 lb/1000 lb coke burn at the time the permit was issued.

74. Total's PM limit can be characterized as "beyond BACT." No BACT analysis (including any economic analysis) was performed to arrive at Total's permitted PM limit.

75. There is no evidence that rebuilding Valero's wet gas scrubber would actually allow Valero to meet a lower limit.

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

76. Valero determined that Tier I was not sufficient for NO_x emissions from the HOC and conducted a Tier II and Tier III BACT analyses for NO_x emissions.

77. Valero's Tier II and Tier III BACT analysis for NO_x included a survey of recent permitting decisions, the RBLC, and consent decrees involving petroleum refineries, which indicated that the lowest permitted NO_x emissions limits were 20 ppm.

78. Valero contends that a NO_x emissions limit of 37 ppm is BACT for the HOC.

79. The current NO_x permit limit for the HOC is 37 ppm, which was the outcome of Valero's system-wide consent decree.

80. Valero identified two add-on control technologies capable of achieving a NO_x limit of 20 ppm: low temperature oxidation (LoTOx) technology and selective catalytic reduction (SCR).

81. Since meeting a limit of 20 ppm would require retrofitting the Valero West Refinery with LoTOx or SCR technology, Valero proceeded to Tier II and Tier III analyses to determine whether implementation of such technical developments would be economically reasonable.

82. Valero's Tier II analysis did not identify similar industries for which applicable controls could be identified.

83. Valero's Tier III analysis included an evaluation of the cost-effectiveness of controlling NO_x emissions (expressed as dollars per ton of pollutant reduced) from the HOC. For LoTOx, the cost-effectiveness evaluation was based on capital cost and annual operating cost estimates based on Valero's installation of LoTOx technology at two of its other refineries. For SCR, the cost-effectiveness calculation was based on a third-party engineering study that presented capital cost and annual operating cost estimates of installing SCR.

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.

85a. The correct outlet concentration to be used in the Tier III cost-effectiveness calculations for installing LoTox or SCR to control NOx emissions from the HOC is the value of 20 ppm used by Valero, based on Valero's survey of recent permitting decisions, the RBLC, and consent decrees involving petroleum refineries.

85b. 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.

85c. 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 values for installing LoTOx at the Valero West Refinery to reduce NOx emissions from 37 ppm to 20 ppm would be $38,264 per ton of NOx removed, which exceeds TCEQ's threshold range for economic reasonableness.

85d. 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 value of $40,370. LoTOx was therefore rejected by the permitting authority in Louisiana as being economically unreasonable.

85e. 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 exceeds TCEQ's threshold range for economic reasonableness.

85f. The Marathon Garyville Refinery calculated the cost effectiveness of using SCR to control NOx, which resulted in an estimate of $36,496 per ton of NOx removed. SCR was therefore rejected by the permitting authority in Louisiana as being economically unreasonable.

85g. 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.

86. In the cost analysis equation, a larger outlet concentration would lower the overall cost of pollutant removal.

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

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

89. [Deleted] ~~Valero estimated the cost of LoTOx with a control efficiency of 20 ppm.~~

90. [Deleted] ~~Valero's cost analysis of using LoTOx to control NO_x is not based on reasonable assumptions about the actual control efficiency of LoTOx.~~

91. [Deleted]~~Valero did not consider the average cost effectiveness of installing LoTOx to reduce emissions of NO_x.~~

92. [Deleted] ~~The cost effectiveness for LoTOx 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. [Deleted] ~~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.~~

94. The TCEQ does not have a bright-line test for determining economic reasonableness.

95. Valero's Application omitted a~~ny~~ cost analysis for SCR. However, Valero provided cost estimates for SCR as part of its rebuttal evidence.

96. SCR is available, demonstrated in practice, and technically feasible.

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

98. SCR can be used with full burn crackers like Valero's HOC.

99. Valero estimated the cost of SCR with a control efficiency of 20 ppm.

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

101. [Deleted]~~Valero did not consider the average cost effectiveness of installing SCR to reduce its emissions of NO_x.~~

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

Transcription Costs

103. The total cost for recording and transcribing the preliminary hearing and hearing on the merits was $8,806.

104. The transcript was required by SOAH's rules.

105. Valero, CFEJ, the ED, and OPIC all participated in the contested case hearing and benefitted from having a transcript for use in preparing written closing arguments and responses.

106. Transcript costs cannot be assessed against the ED or OPIC because they are statutory parties who are precluded from appealing the decision of TCEQ.

107. Valero and CFEJ participated fully in the hearing, and each hired expert witnesses for the hearing.

108. Valero and CFEJ presented testimony and exhibits.

109. CFEJ is a community group represented by a non-profit legal aid organization and a non-profit environmental law organization.

110. Valero is a large corporation.

111. [Deleted] ~~CFEJ prevailed in exposing deficiencies in the Draft Permit.~~

112. It is appropriate to assess all transcription costs to Valero.

II. CONCLUSIONS OF LAW

1. TCEQ has jurisdiction over the emission of air contaminants and authority to issue a permit under Texas Health and Safety Code §§ 382.011 and .0518 and Texas Water Code § 5.013.

2. The Application was referred to SOAH under Texas Water Code § 5.557.

3. SOAH has jurisdiction to conduct a hearing and to prepare a proposal for decision in contested cases referred by TCEQ under Texas Government Code § 2003.047.

4. Notice was provided in accordance with Texas Water Code § 5.5553; Texas Health and Safety Code §§ 382.0516, .0517, and .056; Texas Government Code §§ 2001.051 and .052; and 30 Texas Administrative Code chapter 39.

5. Valero properly submitted the Application to TCEQ pursuant to Texas Health and Safety Code §§ 382.0515 and .0518; and 30 Texas Administrative Code §§ 116.110, .111, and .140.

6. The Application was submitted to TCEQ for a modification to a state and PSD air permit on September 30, 2021. As such, the Application is subject

to the legal and regulatory provisions that apply to applications submitted to TCEQ after September 1, 2015. *See* Tex. Gov't Code §§ 55.203(d), 55.205(b), 55.211(c)(2), and 80.127(h).

7. A direct referral request for a contested case hearing on a permit application by either the applicant or the ED shall be referred to SOAH to determine whether the application complies with all applicable statutory and regulatory requirements. Tex. Water Code § 5.557; 30 Tex. Admin. Code § 55.210(b).

8. The Application is subject to the requirements of Texas Government Code § 2003.047(i-1)-(i-3).

9. The filing of the Application, the Draft Permit, the preliminary decision issued by the ED, and other supporting documentation in the administrative record of the Application established a prima facie case that: (i) the Draft Permit meets all state and federal legal and technical requirements; and (ii) the 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).

10. A party may rebut the prima facie demonstration by presenting evidence that: (1) relates to an issue directly referred; and (2) demonstrates that one or more provisions in the Draft Permit violates a specifically applicable state or federal requirements. Tex. Gov't Code § 2003.047(i-2); 30 Tex. Admin. Code §§ 80.17(c)(2).

11. If a party rebuts the prima facie demonstration, the applicant and the ED may present additional evidence to support the draft permit. Tex. Gov't Code § 2003.047(i-3); 30 Tex. Admin. Code § 80.17(c)(3).

12. The applicant retains the burden of proof regarding the sufficiency of the application and compliance with the necessary statutory and regulatory requirements. 30 Tex. Admin. Code § 80.17(a).

13. The burden of proof is on the applicant by a preponderance of the evidence. 30 Tex. Admin. Code § 80.17(a).

14. CFEJ had the burden of proof to show affected person status. 30 Tex. Admin. Code §§ 80.109(a), (b)(5), 55.203.

15. CFEJ met the requirements for associational standing. 30 Tex. Admin. Code § 55.205.

16. The federal Clean Air Act allows states to seek approval from EPA to administer their state's PSD permitting program. Approvable programs must be incorporated into a State Implementation Plan (SIP) and must meet applicable federal Clean Air Act requirements. 42 U.S.C. § 7401(a)(2)(A).

17. The Commission issues PSD air permits for proposed major sources and major modifications in attainment or unclassifiable areas in Texas subject to the approved Texas SIP. 40 C.F.R. § 52.2270. TCEQ's current regulations and the approved Texas SIP incorporate by reference the federal PSD rules, including the federal definition of BACT, federal rules regarding technology reviews, and federal rules regarding source impacts analysis. 30 Tex. Admin. Code §§ 116.111(a)(2)(c), .160(c)(2)(A)-(B); 40 C.F.R. § 52.2270.

18. The Commission is to issue a permit for a facility that may emit air contaminants upon finding that: (1) the proposed facility will use at least BACT, considering the technical practicability and economic reasonableness of reducing or eliminating the emissions resulting from the facility; and (2) there is no indication that the emissions from the facility will contravene the intent of the Texas Clean Air Act (TCAA), including protection of the public's health and physical property. Tex. Health & Safety Code § 382.0518(b).

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

20. TCEQ defines BACT 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 Tex. Admin. Code § 116.10(1). TCEQ further defines BACT under 30 Tex. Admin. Code § 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 Tex. Admin. Code § 116.160; 40 CFR § 52.21(b)(12).

20a. The definition of BACT requires that an emissions limitation by "achievable." 30 Tex. Admin. Code § 116.160; 40 CFR § 52.21(b)(12).

21. BACT is evaluated on a case-by-case basis for technical practicability and economic reasonableness. TCEQ Air Permit Reviewer Reference Guide (APDG 6110) at 101.

22. The performance of the proposed BACT "must be compared to the emission reduction performance levels that have been previously accepted as BACT in recent reviews for the same industry." TCEQ Air Permit Reviewer Reference Guide (APDG 6110) at 101.

23. "[W]hen reviewing a control technology with a wide range of emission performance levels, it is presumed that the source can achieve the same emission reduction level as another source unless the applicant demonstrates that there are source-specific factors or other relevant information that provide a technical, economic, energy or environmental justification to do otherwise." New Source Review Workshop Manual at B.24 (Oct. 1990).

24. The proposed emission reduction performance should be "at least equivalent to those previously accepted as BACT" in recent permit reviews. TCEQ Air Permit Reviewer Reference Guide (APDG 6110) at 101.

25. If no technological developments which have led to new emission reduction options that may not have been considered in past permit reviews for the same industry are identified, and the overall emission reduction performance of the

proposed BACT is "at least equivalent to what has been accepted in recent permit reviews for the same industry, the BACT proposal should be accepted as satisfying BACT requirements." TCEQ Air Permit Reviewer Reference Guide (APDG 6110) at 101.

26. Valero's proposed PM emissions limit of 1 lb/1,000 lb coke burn off for its HOC satisfies BACT requirements.

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

26b. The Draft Permit meets all state and federal legal and technical requirements for BACT for NOx and PM.

27. [Deleted] ~~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 LoTOx.~~

28. No transcript costs may be assessed against the ED or OPIC because the TCEQ's rules prohibit the assessment of any cost to a statutory party who is precluded by law from appealing any ruling, decision, or other act of the Commission. 30 Tex. Admin. Code § 80.23(d)(2).

29. Factors to be considered in assessing transcript costs include: the party who requested the transcript; the financial ability of the party to pay the costs; the extent to which the party participated in the hearing; the relative benefits to the various parties of having a transcript; and any other factor which is relevant to a just and reasonable assessment of the costs. 30 Tex. Admin. Code § 80.23(d)(1).

30. Considering the factors in 30 Texas Administrative Code § 80.23(d)(1), a reasonable assessment of hearing transcript costs against parties to the contested case proceeding is that Valero should pay $8,806 of the transcript costs.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, IN ACCORDANCE WITH THESE FINDINGS OF FACT AND CONCLUSIONS OF LAW, THAT:

1. ~~The Application of Valero for Air Quality Permit Nos. 38754 and PSDTX324M15 is denied~~. In accordance with Tex. Health & Safety Code § 382.0518(b), the Application to amend Air Quality Permit Nos. 38754 and PSDTX32M14 (App. Ex. D, AR Tab D at VAL_000001-000850) is approved, and the attached Air Quality Permit Nos. 38754, PSDTX324M15, and GHGPSDTX211 is hereby issued.

2. Valero shall pay $8,806 of the transcription costs.

3. The Commission adopts the Executive Director's Response to Public Comment in accordance with 30 Texas Administrative Code § 50.117. If there is any conflict between the Commission's Order and the Executive Director's Responses to Public Comments, the Commission's Order prevails.

4. All other motions, requests for entry of specific Findings of Fact or Conclusions of Law, and any other requests for general or specific relief, if not expressly granted herein, are hereby denied.

5. The effective date of this Order is the date the Order is final, as provided by Texas Government Code § 2001.144 and 30 Texas Administrative Code § 80.273.

6. TCEQ's Chief Clerk shall forward a copy of this Order to all parties.

7. If any provision, sentence, clause, or phrase of this Order is for any reason held to be invalid, the invalidity of any provision shall not affect the validity of the remaining portions of this Order.