BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:	)	
	)	
TCEQ Title V Air Operating Permit No. O1381	)	
	)	Permit No. O1381
For the Valero Houston Refinery	)	
	)	
Issued by the Texas Commission on Environmental Quality	)	

PETITION TO OBJECT TO THE TITLE V OPERATING PERMIT FOR THE VALERO HOUSTON REFINERY

Pursuant to § 505(b)(2) of the Clean Air Act, 42 U.S.C. § 7661d(b)(2), and 40 C.F.R. § 70.8(d), Texas Environmental, Justice Advocacy Services ("t.e.j.a.s."), Caring for Pasadena Communities, Sierra Club ("Lone Star Chapter"), and Environmental Integrity Project ("Petitioners")[1] petition the Administrator of the U.S. Environmental Protection Agency ("EPA") to object to the above-referenced proposed Title V permit issued by the Texas Commission on Environmental Quality ("TCEQ") for the Houston, Texas refinery owned and operated by Valero Refining-Texas, L.P. ("Valero").

BACKGROUND

As discussed below, the proposed Title V permit for Valero's Houston refinery fails to comply with Title V requirements in multiple ways. Among other issues, the permit fails to include monitoring that assures compliance with Permit by Rule requirements; fails to ensure compliance with standards for hazardous air pollutants from 40 C.F.R. Part 63 Subpart CC, and fails to include monitoring and emission calculation methods that can ensure compliance with New Source Review (non-Permit by Rule) limits for some of the refinery's main, most-polluting units, including the fluid catalytic cracking unit, flares, atmospheric tower heater, storage tanks, and cooling towers.

As recognized by EPA in its June 2022 Title V order, acute environmental justice concerns in the communities surrounding Valero's refinery continue to provide additional reasons why EPA must pay special attention, and object, to this proposed permit. These communities are densely populated, predominantly communities of color, and low-income, and are already overburdened by air pollution from Valero's refinery and other large sources of air pollution, including multiple

[1] The undersigned attorneys submit this petition on behalf of the Petitioners.

other refineries and petrochemical facilities. Further, the Houston region has historically struggled to attain the National Ambient Air Quality Standard ("NAAQS") for ozone and was recently redesignated as severe nonattainment under the 2008 standard.

THE PROPOSED PERMIT ON WHICH THIS PETITION IS BASED

This petition asks EPA to object to a new proposed Title V permit for Valero's Houston, Texas refinery (Permit No. O1381) that purportedly addresses EPA's many objections to the previous proposed renewal permit for the refinery. *See Order Granting in Part and Denying in Part a Petition for Objection to Permit, In the Matter of Valero Refining-Texas, L.P., Valero Houston Refinery*, Petition No. VI-2021-8 ("Valero Houston Order") (June 30, 2022).

On August 25, 2023, TCEQ published notice of a revised draft Title V permit to supposedly address EPA's objections. TCEQ claimed it was addressing those objections through a minor permit revision. Petitioners timely commented on that draft revised permit. *See* Ex. A, September 20, 2023 Comments ("Sept. 2023 Comments"). Petitioners' comments raised all the objections in this petition except as specifically mentioned below. On May 3, 2024, TCEQ purported to respond to Petitioners' comments on the draft permit (TCEQ's response did not even attempt to address many of the issues raised) and sent a proposed permit to EPA for its review. Petitioners are timely filing this petition by the August 19, 2024, deadline listed on Region 6's website to petition EPA to object to the proposed permit.[2] This date is within 60 days of the expiration of EPA's 45-day review period, which, according to Region 6's website, ended on June 21, 2024. *See also* TCEQ Letter, Notice of Proposed Permit (May 3, 2024). TCEQ Letter, Notice of Proposed Permit (May 3, 2024).

As noted above, this is the second petition to EPA by Petitioners in the last four years regarding renewal of the Title V permit O1381 for Valero's Houston refinery. Because TCEQ's revised proposed permit fails to resolve numerous objections from EPA's 2022 order and otherwise fails to comply with Title V requirements, Petitioners are taking two actions:

First, Petitioners are filing this petition seeking EPA's review of TCEQ's new proposed Title V permit and its non-compliance with both Title V requirements and EPA's 2022 Title V order.

Second, Petitioners will soon provide notice to EPA of their intention to file suit under section 304 of the Clean Air Act ("CAA") to remedy EPA's unreasonable delay in taking over the permit to fix the numerous problems identified in EPA's 2022 order that TCEQ has failed to resolve. EPA must take over the permit to fix these problems because TCEQ has "fail[ed], within

[2] https://www.epa.gov/caa-permitting/operating-permit-timeline-texas.

90 days after the date of [EPA's] objection to submit a permit revised to meet the objection." 42 U.S.C. § 7661d(c). As reiterated below, there is some overlap between the issues covered in this petition and issues that will be covered by our notice letter. Out of an abundance of caution, we are protectively including some issues in both this petition and the notice letter should EPA (wrongly and unlawfully) take the position that it has no duty to take over the permit on these issues. By including these issues in this petition, we are in no way waiving our arguments that EPA "shall issue or deny the permit" for these issues under § 7661d(c).

PETITIONERS

T.e.j.a.s. is a non-profit group whose mission is to create sustainable, healthy communities in the Houston Ship Channel region by educating individuals on health impacts from environmental pollution and empowering individuals to promote enforcement of environmental laws. T.e.j.a.s. promotes environmental protection through education, policy development, community awareness, and legal action where possible and appropriate. In furtherance of this mission, t.e.j.a.s. provides services to its members and constituents and educates the public about air pollution, fires, explosions, spills, releases, and other chemical disasters at industrial facilities in Texas, particularly at refineries and petrochemical facilities in the Houston Ship Channel. T.e.j.a.s.' members and constituents include those who live in the Manchester, Galena Park, Milby Park, and Pasadena neighborhoods, which are the neighborhoods that are most exposed to and most affected by the Valero Houston refinery's emissions.

Caring for Pasadena Communities is a community-based nonprofit organization committed to raising awareness of environmental issues affecting residents of Pasadena and nearby communities along the Houston Ship Channel, where many of its members live and work. Caring for Pasadena Communities is organized to advocate for these communities, improve public education on environmental issues, and to ensure equal treatment for low-income residents in environmental matters. This work has entailed direct involvement in the public participation process of numerous projects by highlighting environmental justice concerns for various permitting agencies that would otherwise go unnoticed and unaccounted for.

Sierra Club's Lone Star Chapter has members who live in east Houston and on the west end of the Houston Ship Channel. Sierra Club's mission is to explore, enjoy, and protect the wild places of the earth, to practice and promote the responsible use of the earth's ecosystems and resources, to educate and enlist humanity to protect and restore the quality of the natural and human environment, and to use all lawful means to carry out these objectives. To achieve this, Sierra Club focuses in part on ways to prevent and reduce harmful air pollution, including from petroleum refineries such as Valero's Houston facility, and ensuring the full implementation and enforcement of national and local refinery limits and standards in permits such as the proposed permit at issue in this petition.

Environmental Integrity Project ("EIP") is a non-profit, non-partisan watchdog organization that advocates for effective enforcement of environmental laws. EIP has three goals: (1) to illustrate through objective facts and figures how the failure to enforce and implement environmental laws increases pollution and harms public health; (2) to hold federal and state

agencies, as well as individual corporations, accountable for failing to enforce or comply with environmental laws; and (3) to help communities obtain protections guaranteed by environmental laws.

GENERAL TITLE V PERMIT REQUIREMENTS

To protect public health and the environment, the Clean Air Act prohibits stationary sources of air pollution from operating without or in violation of a valid Title V permit, which must include conditions sufficient to "assure compliance" with all applicable Clean Air Act requirements. 42 U.S.C. §§ 7661c(a), (c); 40 C.F.R. §§ 70.6(a)(1), (c)(1). "Applicable requirements" include all standards, emissions limits, and requirements of the Clean Air Act. 40 C.F.R. § 70.2. Congress intended for Title V to "substantially strengthen enforcement of the Clean Air Act" by "clarify[ing] and mak[ing] more readily enforceable a source's pollution control requirements." S. Rep. No. 101-228 at 347, 348 (1990), *as reprinted in* A Legislative History of the Clean Air Act Amendments of 1990 (1993), at 8687, 8688. As EPA explained when promulgating its Title V regulations, a Title V permit should "enable the source, States, EPA, and the public to better understand the requirements to which the source is subject, and whether the source is meeting those requirements." Operating Permit Program, Final Rule, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992).

Among other things, a Title V permit must include compliance certification, testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit. 42 U.S.C. § 7661c(c); 40 C.F.R. § 70.6(c)(1). The D.C. Circuit has explained that Title V requires that a "monitoring requirement insufficient 'to assure compliance' with emission limits has no place in a permit unless and until it is supplemented by more rigorous standards." *See Sierra Club v. EPA,* 536 F.3d 673, 677 (D.C. Cir. 2008).

If applicable requirements themselves contain no periodic monitoring, EPA's regulations require permitting authorities to add "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." 40 C.F.R. § 70.6(a)(3)(i)(B); *see also In the Matter of Mettiki Coal, LLC*, Order on Petition No. III-2013-1 (Sept. 26, 2014) ("Mettiki Order") at 7. The D.C. Circuit has also acknowledged that the mere existence of periodic monitoring requirements may not be sufficient. *Sierra Club,* 536 F.3d at 676–77. For example, the court noted that annual testing is unlikely to assure compliance with a daily emission limit. *Id.* at 675. In other words, the frequency of monitoring methods must bear a relationship to the averaging time used to determine compliance. 40 C.F.R. § 70.6(c)(1) of EPA's regulations acts as a "gap filler" and requires that permit writers must supplement a periodic monitoring requirement inadequate to assure compliance. *Id.* at 675*; see also* Mettiki Order at 7.

In addition to including permit terms sufficient to satisfy EPA's Title V monitoring and reporting requirements, permitting authorities must include a rationale for the monitoring and reporting requirements selected that is clear and documented in the permit record. Mettiki Order at 7-8; *see also* 40 C.F.R. § 70.7(a)(5) ("The permitting authority shall provide a statement that sets for the legal and factual basis for the draft permit conditions ….").

If a state proposes a Title V permit that fails to include and assure compliance with all applicable Clean Air Act requirements, EPA must object to the issuance of the permit before the end of its 45-day review period. 42 U.S.C. § 7661d(b)(1); 40 C.F.R. § 70.8(c). If EPA does not object to a Title V permit, "any person may petition the Administrator within 60 days after the expiration of the Administrator's 45-day review period … to take such action." 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d). The Clean Air Act provides that EPA "shall issue an objection … if the petitioner demonstrates to the Administrator that the permit is not in compliance with the requirements" of the Act. 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(c)(1); *see also N.Y. Pub. Interest Group v. Whitman*, 321 F.3d 316, 333 n.12 (2d Cir. 2003) (explaining that under Title V, "EPA's duty to object to non-compliant permits is nondiscretionary"). EPA must grant or deny a petition to object within 60 days of its filing. 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d).

GROUNDS FOR OBJECTION

For all of the reasons discussed below, EPA must object to the proposed Title V permit for Valero's Houston refinery because that permit fails to satisfy substantive requirements of the Clean Air Act and EPA's Title V regulations.

I. ENVIRONMENTAL JUSTICE CONCERNS MANDATE INCREASED FOCUS AND ACTION BY EPA TO ENSURE THAT THE PERMIT'S PROVISIONS ARE STRONG AND COMPLY WITH TITLE V AND OTHER CLEAN AIR ACT REQUIREMENTS..... 7

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I. ENVIRONMENTAL JUSTICE CONCERNS MANDATE INCREASED FOCUS AND ACTION BY EPA TO ENSURE THAT THE PERMIT'S PROVISIONS ARE STRONG AND COMPLY WITH TITLE V AND OTHER CLEAN AIR ACT REQUIREMENTS.

As Petitioners pointed out in their comments (Ex. A, Sept. 2023 Comments at 1-8), communities surrounding the Valero Houston Refinery are home to a high density of low-income and minority populations. Enveloped by industrial activity and overburdened by hazardous and other air pollution, these communities are subjected to environmental conditions that fail even the most basic tests of pollution burden. Valero's insufficient Title V monitoring and compliance assurance conditions raise severe environmental justice concerns for these communities.[3]

Harris County, which includes Valero's Houston Refinery, is currently in severe nonattainment for the 2008 ozone NAAQs[4] and moderate nonattainment for the 2015 ozone NAAQs.[5] Previously, the county was designated severe nonattainment for the 1997 standard.[6] EPA denied Texas' request to extend Houston-Galveston-Brazoria's ("HGB") attainment deadline because the area was unlikely to attain the 2008 ozone NAAQs by its deadline, or even within a year after the deadline.[7] As a result, EPA increased HGB's 2008 standard nonattainment classification to severe, triggering a "more stringent set of implementation requirements" which is

[3] *See In the Matter of United States Steel Corp. – Granite City Works*, Order on Petition No. V-2011-2 (Dec. 3, 2012) ("Granite City Works Order").
[4] 87 Fed. Reg. 60,926 (Nov. 7, 2022).
[5] 87 Fed. Reg. 60,897 (Nov. 7, 2022); TCEQ, *Houston-Galveston-Brazoria: Current Attainment Status*, (last updated Oct. 13, 2023) (explaining that even after EPA lowered the primary and secondary eight-hour ozone NAAQs to 0.070 parts per million (ppm), attainment was not met) Houston-Galveston-Brazoria: Current Attainment Status - Texas Commission on Environmental Quality - www.tceq.texas.gov (last visited July 22, 2024).
[6] 81 Fed. Reg. 78,691 (Nov. 8, 2016). Redesignation for the 1979 and 1997 NAAQs was accomplished through an unlawful redesignation substitute regulation. *See Air Quality Mgmt. Dist. v. EPA,* 882 F.3d 1138, 1152 (D.C. Cir. 2018). This regulation did not meet Clean Air Act requirements, and so t.e.j.a.s. has challenged this unlawful redesignation. *See Downwinders at Risk et al v. EPA*, No. 18-60290 (5th Cir. filed Apr. 19, 2018).
[7] EPA, *EPA Legal Tools to Advance Environmental Justice: Cumulative Impacts Addendum*, Pub. No. 360R22002, at 7-8 (Jan. 2023).

"warranted where the Agency has identified populations that may already be overburdened by pollution."[8] Valero's emission of hundreds of tons per year of ozone precursors including NOx and VOCs contribute to unhealthy levels of ozone in the county.

Houston Ship Channel communities face serious health impacts because they are surrounded by petroleum refineries and petrochemical facilities. The Houston Ship Channel is the largest hub in the nation for these types of facilities[9] and these communities have borne the brunt of their emissions. For decades, large numbers of community members have been burdened by increased vulnerability to health effects from air pollution due to their age. Manchester is particularly exposed to emissions from Valero's Houston Refinery among other Houston Ship Channel facilities.

Researchers consistently find disproportionate cumulative impacts from pollution in the community around Valero's Houston Refinery. Texas A&M researchers concluded "[r]esidents of the environmental justice neighborhood of Manchester, located on Houston's East End, are disproportionately exposed to toxic pollutants from both industry and transportation infrastructure."[10] As long as Valero's Houston Refinery continues to operate outside legally required monitoring and compliance Manchester neighborhoods will be inundated with increased emissions.

Communities surrounding Valero's Houston refinery are overwhelmingly comprised of people of color and low-income residents.[11] Specifically, EPA found that 85,289 people live within a three-mile radius of the Valero refinery—94% of whom are people of color (including a large percentage of Latino and African American residents), 29% are children under the age of 18, and 11% are seniors aged 65 and older.[12] In addition, ECHO indicates that the area surrounding the facility is above the 90th percentile for 12 environmental justice indices, including the Air Toxics Cancer Risk (98th percentile), the $PM_{2.5}$ index (96th percentile), NATA Respiratory Hazard index (95th percentile), and the Risk Management Plant Proximity index (97th percentile).[13]ECHO lists the refinery as being an environmental justice concern.[14]

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[8] *Id*.; *see also* 87 Fed. Reg. at 21,825, 21,835 (April 13, 2022).
[9] Yukyan Lam *et. al.*, *Toxic Air Pollution in the Houston Ship Channel: Disparities Show Urgent Need for Environmental Justice*, NAT. RESOURCE DEF. COUNSEL, at 1 (Sept. 2021).
[10] G. Sansom *et al.*, *Domestic Exposures to Polycyclic Aromatic Hydrocarbons in a Houston, Texas, Environmental Justice Neighborhood*, ENV'T. JUSTICE (Oct. 2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6241524/ (noting that "[i]n another study, the total PAHs observed in Manchester were more analogous to settled house dust collected in a residential area close to an industrial complex in Sumgayit, Azerbaijan (2.9 mg/m2), than in a rural, agricultural community in Texas (0.11 mg/m2)").
[11] EPA, ECHO Database – Valero Houston Refinery, https://echo.epa.gov/detailed-facility-report?fid=110000460885 (last visited August 17, 2024).
[12] EPA, ECHO Database – Valero Houston Refinery, https://echo.epa.gov/detailed-facility-report?fid=110000460885 (last visited August 17, 2024).
[13] *Id*.
[14] EPA, ECHO Database – Valero Houston Refinery, https://echo.epa.gov/detailed-facility-report?fid=110000460885 (last visited July 22, 2024).

Petitioners are aware of 32 schools,[15] and two dozen public parks,[16] within a three-mile radius of the Valero refinery where residents visit and engage in recreation and children play outside. For example, J.R. Harris Elementary School—a public school where 61% of students are English language learners, 99% are African American and/or Latino, and 100% are economically disadvantaged—is within one mile of the Valero refinery, and within close proximity to a chemical manufacturer and a hazardous waste facility.[17] While Valero's Houston Refinery is relieved of legally required monitoring measures these community members are daily harmed by its pollution.

Countless studies form a consensus that these communities' proximity to hundreds of petroleum and petrochemical facilities cause severe health impacts. In 2010, research from University of Texas showed that children living within two miles of the Houston Ship Channel have a 56 percent higher risk of leukemia than children that live further away.[18] In 2015, Texas Department of State Health Services found that in the East Harris County census tract, "the number of other leukemia cases among all ages was statistically significantly higher than expected."[19] For adults, brain and cervical cancer cases were also "statistically significantly higher than expected."[20] A 2019 study confirmed that emissions from HAPs and VOCs can cause increased threat of cancer, non-cancer chronic effects, and acute impacts, for vulnerable populations.[21]

In addition to severe, confirmed health impacts, these communities suffer environmental "double jeopardy."[22] A 2016 report revealed that the most-exposed, most-affected east Houston neighborhoods—including Harrisburg-Manchester (where 97% of the population are people of

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[15] Ex. B, EJScreen Community Report – Valero Houston Refinery 3-mi Radius, at 3.

[16] John R. Harris Park, Harris County Park; Hartman Park, Houston, TX; Clinton Park, Houston, TX; Milby Park, Houston, TX; Oak Forest Park, Houston, TX; Ray Park, Houston, TX; Charlton Park, Houston, TX; Gus Wortham Park, Houston, TX; Pleasanton manor park, Houston, TX; Robinson Park, Houston, TX; Meadowcreek Village, Houston, TX; Allendale Spaceway, Houston, TX; Oak Meadow, Houston, TX; Ingrando Park, Houston, TX; Woodruff Park, Houston, TX; Glenbrook Park & Golf Course, Houston, TX; Ray Park, Houston, Texas; Memorial Park, Pasadena Texas; Sunset Park, Pasadena, Texas; Friendship Garden, Local Conservation Area, Pasadena, TX; Crane Park, Pasadena, TX; Cascade Park, Pasadena, TX; Light Company Park, Pasadena, TX; Vermillion Park, Pasadena, TX; Parklane Play Lot, Pasadena, TX; Park Place Park, Houston, TX; Highlands Park, Pasadena, TX; Mason Park, Houston, TX ; Elm Street Park, Houston, TX.

[17] Tex. Edu. Agency, *2018-2019 School Report Card, Harris Elementary*, Houston ISD, https://rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&_program=perfrept.perfmast.sas&cyr=2019&level=campus&search=campname&namenum=Harris&campus=101912166&_debug=0&prgopt=2019%2Fsrc%2Fsrc.sas (last visited July 24, 2024).

[18] K. Walker *et al.*, *An investigation of the association between hazardous air pollutants and lymphohematopoietic cancer risk among residents of Harris County, Texas*, U. OF TEX. H. SCI. AT HOUSTON, SCH. OF PUB. H. (2010), https://www.semanticscholar.org/paper/Preliminary-epidemiologic-investigation-of-the-the-Walker-Coker/3b6775f96037b7dd2104a11296784f52d4cddf33?p2df.

[19] Tex. DSHS, *Supplemental Analyses, Assessment of the Occurrence of Cancer, East Harris County, Texas, 1995-2012* (Dec. 28, 2015), https://s3.documentcloud.org/documents/2107698/assessment-finds-elevated-cancer-rates-in-parts.pdf (last visited July 24, 2024).

[20] *Id*.

[21] D. Payne Sturges, M. Marty, *et al.*, *Healthy Air, Healthy Brains: Advancing Air Pollution Policy to Protect Children's Healt*h, 109 AMER. J. PUB. H. 4 (April 1, 2019) (highlighting that particularly vulnerable populations include pregnant women and exposed children who have extra susceptibility and exposure to this pollution in utero, and as infants). https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2018.304902 (last visited July 24, 2024).

[22] Ronald White *et. al.*, *Double Jeopardy in Houston: Acute and Chronic Exposures Pose Disproportionate Risks for Marginalized Communities*, UNION OF CONCERNED SCIENTISTS (2016), https://www.ucsusa.org/sites/default/files/attach/2016/10/ucs-double-jeopardy-in-houston-full-report-2016.pdf.

color, and 37% live in poverty) and Galena Park (86% are people of color and 21% live in poverty)—face an unjust "double jeopardy" of extra health impacts from toxic air pollution and disproportionate safety threats when compared with two mainly white and higher income neighborhoods in west Houston.[23] The same report found that "[l]ong-term daily exposures to air pollution can lead to health effects that go unaddressed due to residents' limited financial and health care resources."[24]

Serious environmental harms suffered by Houston Ship Channel's fence line communities are compounded by poverty, food security, housing, and healthcare vulnerabilities.[25] Harrisburg-Manchester neighborhoods are particularly exposed to environmental vulnerabilities suffering "50 to 55 times the burdens experienced by the Houston region overall" growing to 60 times more exposure in the most recent data years.[26] Nearly half of the population experiences these health burdens without health insurance.[27]

South Texas has just experienced another hurricane that highlighted disproportionate pollution impacts on environmental justice communities.[28] In 2017, Hurricane Harvey's "second storm" released thousands of tons of additional pollution into Ship Channel communities, including at least 120 tons of VOCs and 12.5 tons of other unpermitted emissions released by Valero's Houston Refinery.[29] Hurricane Imelda in October 2019 reinforced Harvey's revelations as refineries and chemical facilities released over 100,000 pounds of excess toxic air pollution, including carcinogenic and acute health-threatening chemicals, benzene and 1,3-butadiene.[30] And just weeks ago, Hurricane Beryl revealed that even a Category 1 Hurricane can result in significant emissions releases.[31] Between July 8 and 10, 2024, seventeen air emissions events attributed to Hurricane Beryl were reported to TCEQ including dozens of tons of Carbon Monoxide, NOx,

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[23] *Id.*
[24] *Id.*
[25] Lam *supra* note 8, at 3.
[26] *Id.* at 5
[27] RICE UNIV KINDER INST. FOR URBAN RSCH., Houston Community Data Connections: Harrisburg/Manchester (May 1, 2024), https://www.datahouston.org/ (last visited July 22, 2024).
[28] Sean Reilly, *Hurricane Beryl's Toll: Polluted Air*, E&E NEWS (July 10, 2024) https://subscriber.politicopro.com/article/eenews/2024/07/10/hurricane-beryls-toll-polluted-air-00167297 (last visited July 23, 2024); Shanti Menon, *Hurricanes' Hidden Risk: Toxic Chemicals*, EDF (Updated July 8, 2024).
[29] L. Olsen, *After Harvey, a 'second storm' of air pollution, state reports show*, HOUSTON CHRON. (Mar. 30, 2018), https://www.houstonchronicle.com/news/houston-texas/houston/article/After-Harvey-a-secondstorm-of-air-12795260.php (quoting Juan Parras, Texas Environmental Justice Advocacy Services).; *see also*, Wendee Nicole, *A Different Kind of Storm: Natech Events in Houston's Fenceline Communities*, ENV'T. HEALTH PERSPECTIVES, at 2 (May 2021).
[30] *See*, P. Trevizo, *Imelda Cited in Release of Almost 100,000 Pounds of Air Pollutants*, HOUSTON CHRON. (Sept. 24, 2019) 2019), https://www.houstonchronicle.com/news/houston-texas/houston/article/Imelda-cited-in-release-of-almost-100-000-pounds-14465369.php; TEXARKANA GAZETTE, *Texas Agency Blames Imelda in Mass Release of Air Pollutants* (Sept. 25, 2019) https://www.texarkanagazette.com/news/2019/sep/25/texas-agency-blames-imelda-mass-release-air-pollut/; C. Maxouris & D. And one, *Barges Break Loose and Strike a Bridge Near Houston After Imelda Forces 400 Water Rescues and Strands 300 Drivers*, CNN (Sept. 20, 2019) https://www.cnn.com/2019/09/20/weather/imelda-flooding-friday-wxc/index.html.
[31] Reilly *supra* note 29.

ethylene, SO_2, and other pollutants.[32] Several studies have concluded that Manchester is particularly heavily impacted by these storm and flood related releases.[33]

Despite Chemical Safety Board warnings about hurricanes' toxic consequences for communities around chemical and refining facilities,[34] TCEQ still has failed to require Valero and other Ship Channel facilities to strengthen their hurricane preparation and toxic release prevention plans. It is unclear whether TCEQ has done anything at all to attempt to prevent hurricane-related releases from occurring season after season. TCEQ has a legal duty under the federal regulations, 40 C.F.R. § 68.215, to inspect, audit, and assure compliance with the federal Risk Management Program regulations, including the 2017 Amendments also known as the Chemical Disaster Rule.[35]

The EPA has already recognized serious environmental justice concerns for communities near the Valero Refinery.[36] EPA's Region 6 Texas Environmental Collaborative Action Plan in 2016 recognized the need to "work with proper authorities to investigate and address problematic permitted facilities."[37] Manchester, Galena Park, Pasadena, and nearby communities were identified as requiring particular attention due to environmental justice concerns.[38] Then EPA's June 2022 Title V order highlighted Manchester's disproportionately high EJScreen indices and acknowledged that "any additional emissions could interfere with protecting public health and

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[32] *Id*.

[33] Garett T. Sansom *et. al.*, *Spatial Distribution of Polycyclic Aromatic Hydrocarbon Contaminants After Hurricane Harvey in Houston Neighborhoods*, 11 J. OF HEALTH & POLLUTION 29, at 8 (March 2021) (explaining that communities adjacent to the Houston Ship Channel may be at an increased risk of exposure to polycyclic aromatic hydrocarbons (PAH) contamination and half of the Manchester neighborhood experiences heavy contamination); Shanti Menon, *Hurricanes' Hidden Risk: Toxic Chemicals*, EDF (Updated July 8, 2024) (highlighting that 93% of toxic releases in Houston during Hurricane Harvey occurred within a four-mile radius of Manchester).

[34] Chem. Safety Bd., *U.S. Chemical Safety Board Urges Chemical Companies to Prepare for Harsh Hurricane Season*, (July 3, 2024) (highlighting toxic chemical releases in Texas and Louisiana, in 2017 and 2020 respectively, which caused serious toxic chemical releases).

[35] 40 C.F.R. § 68.215(e): "The air permitting authority or the agency designated by delegation or agreement under paragraph (d) of this section shall, at a minimum: (1) Verify that the source owner or operator has registered and submitted an RMP or a revised plan when required by this part; (2) Verify that the source owner or operator has submitted a source certification or in its absence has submitted a compliance schedule consistent with paragraph (a)(2) of this section; (3) For some or all of the sources subject to this section, use one or more mechanisms such as, but not limited to, a completeness check, source audits, record reviews, or facility inspections to ensure that permitted sources are in compliance with the requirements of this part; and (4) Initiate enforcement action based on paragraphs (e)(1) and (e)(2) of this section as appropriate." *See also* 40 C.F.R. Part 68; "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act," 82 Fed. Reg. 4594 (Jan. 13, 2017).

[36] *See* Valero Houston Order at 9-11.

[37] EPA Region 6, Texas Environmental Justice Collaborative Action Plan at 4 (Aug. 3, 2016), https://www.epa.gov/sites/production/files/2016-12/documents/texas_ej_plan_8-3-16_final.pdf; *see also*, at EPA, Region 6 Climate Adaptation Implementation Plan, at 34 (Oct. 2022) (emphasizing the need to increase "Risk Management Plan inspections at facilities in EJ areas along the Gulf Coat that are susceptible to impacts from storms. And highlighting the need to "[t]arget facilities noncompliant with America's Water Infrastructure Act (AWIA) of 2018, which requires Risk and Resilience Assessments and Emergency Response Plans to address risks such as Natural disasters caused by climate change.") https://www.epa.gov/system/files/documents/2022-10/bh508-R06%20EPA%20CAIP_Submitted_October2022_508.pdf.

[38] EPA Region 6, Texas Environmental Justice Collaborative Action Plan at 4 (Aug. 3, 2016), https://19january2017snapshot.epa.gov/sites/production/files/2016-12/documents/texas_ej_plan_8-3-16_final.pdf.

environment."[39] EPA concluded that environmental justice concerns require giving "focused attention to the adequacy of monitoring (as well as other concerns raised by Petitioners)."[40] Finally, in 2023, EPA affirmed its awareness that Houston Ship Channel communities are disproportionately impacted by pollution and highlighted Title V as a method to scrutinize compliance with CAA requirements.[41]

II. TCEQ FAILED TO PROVIDE NOTICE TO THE PUBLIC THROUGH A MAILING LIST FOR REVISIONS TO THE TITLE V PERMIT.

In its order, EPA gave specific direction to TCEQ to "provide documentation showing how it complied with the requirements of 40 C.F.R. § 70.7(h)(1). If TCEQ is unable to show that it complied with title V requirements to develop a mailing list and provide notification, it should develop a mailing list, ensuring that the Petitioners are included, and re-notice the Permit following all applicable public notice procedures." Valero Houston Order at 12. EPA also noted that it was "unable to determine if TCEQ complied with title V requirements to develop and mailing list and provide notification to persons on that mailing list." *Id*.

As Petitioners explained in their comments (Sept. 2023 Comments at 8-10), TCEQ yet again failed to provide Petitioners with the requisite notice through a mailing list. In its latest response, *Notice of Proposed Permit and Executive Director's Response to Public Comment*, dated May 3, 2024 ("RTC"), TCEQ states that public participation requirements under 40 C.F.R. § 70.7(h) do not apply to FOP O1381/Project 32179 because TCEQ styled it as a minor permit revision. Because of this, TCEQ continues, it "is not required under Part 70 or 30 TAC Chapter 122 to mailout [sic] public notice announcement information to the [Interested Parties] list." RTC at 13. TCEQ's position is wrong, and EPA must object to the Proposed Permit for each of the reasons below:

First, TCEQ is wrong that § 70.7(h) does not apply because the changes TCEQ made following the EPA's Valero Houston Order relate back to, and directly concern, the original permitting action—that is, the renewal of FOP O381/Project 24377. The revisions TCEQ made were in direct response to EPA's order objecting to the previous proposed *renewal* permit in many different ways. The opening language of § 70.7(h), which states "except for modifications qualifying for minor permit procedures, all permit proceedings, including initial permit issuance, significant modifications, and *renewals*, shall provide adequate procedures for public notice including offering an opportunity for public comment and a hearing on the draft permit" (emphasis added) makes it clear that the section's requirements that follow, including that notice shall be given to persons on a mailing list, apply in this instance. The revisions that TCEQ was implementing were in direct response to EPA's order objecting to the permit—the revisions were,

[39] Valero Houston Order at 7.
[40] Valero Houston Order at 9-11 (noting that "Executive Orders 13990 and 14008, signed by President Biden on January 20, 2021, and January 27, 2011, respectively, affirm the federal government's commitment to environmental justice"); *see also*, *In the Matter of United States Steel Corp. – Granite City Works*, Order on Petition No. V-2011-2 at 4–6 (December 3, 2012).
[41] EPA, *Tools to Advance Environmental Justice: Cumulative Impacts Addendum*, at 8, 11 (Jan. 2023).

therefore, made in the context of the *permit renewal,* which means § 70.7(h)'s requirements apply. EPA must object to TCEQ's failure to provide notice of the revised draft permit through a mailing list.

In fact, EPA's order specifically contemplated that TCEQ would provide notice to Petitioners, through a mailing list, for the permit revisions in response to EPA's order. EPA's order stated that, "[i]f, as the EPA anticipates, TCEQ re-notices the Permit in reaction to this objection, this may be done in conjunction with any re-notice of the Permit as necessary to respond to other grants discussion in the following sections." Valero Houston Order at 12. Despite this, TCEQ never notified Petitioners about the draft revised permit.

Second, TCEQ's response failed to demonstrate that TCEQ has *used* the mailing list required by both 40 C.F.R. § 70.7(h)(1) and by EPA's order to provide Petitioners with notice, as Petitioners previously stated. Valero Houston Order at 12; *see also* Sept. 2023 Comments at 8-9. As Petitioners mentioned in their Sept. 2023 Comments, § 70.7(h)(1) requires that notice of the public comment period on a draft Title V permit "shall be given to persons on a mailing list developed by the permitting authority using generally accepted methods (*e.g.,* hyperlink sign-up function or radio button on an agency Web site, sign-up sheet at a public hearing, etc.) that enable interested parties to subscribe to the mailing list." The federal regulations continue by requiring "[t]he permitting authority [to] provide at least 30 days for public comment and shall give notice of any public hearing at least 30 days in advance of the hearing." 40 C.F.R. § 70.7(h)(4); see also TEX. ADMIN. CODE § 122.320(b)(9).

TCEQ did not provide notice to Petitioner Caring for Pasadena Communities through its counsel, Lone Star Legal Aid. Counsel for Caring for Pasadena Communities had signed up to receive notice of the permit through a mailing list and participated in the comments on the Title V permit renewal as well as the original petition to EPA regarding the deficiencies in the permit. Despite having taken these actions, Lone Star Legal Aid did not receive notice of these revisions. Moreover, community residents have expressed concerns about air pollution from this facility for quite some time as shown in prior comments, and TCEQ is aware of that concern. Notably, Caring for Pasadena Communities through its counsel, Lone Star Legal Aid, has submitted multiple comments to TCEQ regarding this permit and related permit O3784. Yet TCEQ made no attempt to reach out directly to community residents to notify them of the revisions.

TCEQ did not provide notice to either t.e.j.a.s. or Lone Star Chapter about the revisions to the Title V permit, nor did it provide notice to their counsel, Earthjustice, despite all three having specifically requested to receive notice through a mailing list for any such permits for the Valero facility on April 10, 2018. Commenters t.e.j.a.s. and Sierra Club filed comments with TCEQ on a proposed change to Valero's NSR permit 2501A to add a limit for hydrogen cyanide on April 10, 2018. Those comments clearly and specifically stated that "[c]ommenters also request to be added to the mailing list for this permit amendment and future permit actions for this Valero facility." In their March 2023 comments on the renewal of permit 2501A, t.e.j.a.s and Sierra Club, as well as their counsel, asked to be placed on the mailing list for any air permit applications related to the

Valero Houston refinery, including, but not limited to, any permit applications and actions related to the Title V operating permit.[42] Despite this, TCEQ did not send notice of the new draft Title V permit and the attendant revisions to either t.e.j.a.s. or Sierra Club. Because TCEQ failed to provide Petitioners with notice, it has not demonstrated that it *used* its mailing list, constituting a failure to abide by the EPA order. For this reason, EPA must object.

To be clear, in asking that EPA object because of these errors, Petitioners are not asking EPA to require TCEQ to re-notice the permit. Petitioners would bear an outsized burden if they were forced to, yet again, comment and petition on revisions to the same permit. EPA must not require TCEQ to re-notice the permit. EPA must instead object to set a precedent for other Title V permitting circumstances, and EPA should provide instruction to TCEQ about complying with the requirements of 40 C.F.R. § 70.7(h)(1) for future permit proceedings.

III. THE PROPOSED TITLE V PERMIT FAILS TO INCLUDE SUFFICENT MONITORING, TESTING, AND RECORDKEEPING REQUIREMENTS TO ASSURE COMPLIANCE WITH APPLICABLE LIMITS ESTABLISHED BY PERMITS BY RULE.

In its order, EPA concluded that the "title V permit does not include monitoring sufficient to assure compliance with all applicable requirements relevant to units authorized by [permits by rule]," also known as "PBRs." Valero Houston Order at 22. EPA gave specific direction to TCEQ to "revise the Permit to specify monitoring, recordkeeping, and reporting sufficient to assure compliance with all applicable requirements associated with PBRs." *Id*. at 23. In its order, EPA explained that "[o]ne way for TCEQ to resolve this objection would be to include or identify within the PBR Supplemental Tables the monitoring, recordkeeping, and reporting from the application forms for registered PBRs (in addition to the claimed by not registered PBRs)." *Id*. at 23-24. "TCEQ could resolve EPA's grant of this claim by requiring Valero to include all necessary monitoring, recordkeeping, and reporting in OP-PBRSUP and then properly incorporating the form (and not merely the application containing the form) into the title V permit." *Id*. at 24. However, the proposed permit fails to include sufficient monitoring, testing, and recordkeeping requirements to assure compliance with applicable limits established by PBRs, and for each of the reasons below, EPA must object to the proposed permit.

First, TCEQ's RTC references a revised Table D dated December 20, 2023, at two distinct points—once towards the beginning, where TCEQ summarizes the single modification it made from the draft to the proposed permit and then, a second time, in the body of TCEQ's responses. RTC at 5 & 18. However, TCEQ's reliance on this allegedly revised Table D is inadequate for multiple reasons. Specifically, TCEQ's RTC contains the following language, when summarizing the one modification it made from the draft to the proposed permit:

> Special Term and Condition 22 is revised as follows: 'Permit holder shall comply with the requirements of New Source Review authorizations issued or

[42] Comments on Renewal and Amendment of New Source Review Permit 2501A, Valero Refining-Texas,L.P., 9701 Manchester St., Houston, TX, submitted on behalf of t.e.j.a.s and Sierra Club's Lone Star Chapter March, 13, 2023, pg. 16.

> claimed by the permit holder for the permitted area, including permits, permits by rule (including the terms, conditions, monitoring, recordkeeping, and reporting identified in registered PBR and permits by rule identified in the PBR Supplemental Tables dated December 20, 2023 in the application for project 34289), standard permits, flexible permits, special permits, permits for existing facilities including Voluntary Emissions Reduction Permits and Electric Generating Facility Permits issued under 30 TAC Chapter 116, Subchapter I, or special exemptions referenced in the New Source Review Authorization References attachment.'

RTC at 5. Later, the TCEQ also states the following regarding an allegedly revised Table D, in the narrative of its response:

> applicant has voluntarily submitted a revised Table D in OP-PBRSUP form dated 12/20/2023 to further clarify the PBR monitoring requirements…Special Term and Condition 23 in the proposed permit is revised as following: Permit holder shall comply with the requirements of New Source Review authorizations issued or claimed by the permit holder for the permitted area, including permits, permits by rule (including the terms, conditions, monitoring, recordkeeping, and reporting identified in registered PBR and permits by rule identified in the PBR Supplemental Tables dated December 20, 2023 in the application for project 34289), standard permits...

May 2024 RTC at 18. The first deficiency is that TCEQ has not properly included the revised Table D in the proposed permit. That is, not only is it not included anywhere in the proposed permit itself, TCEQ's attempt to incorporate it by reference is improper because TCEQ has not told the public where they can locate the revised Table D. It is only ever referenced in the RTC. A search of the TCEQ File Room shows that no such document is available for the public to inspect.[43] Without being able to inspect a revised Table D from December of 2023, there is no way for Petitioners to verify whether the terms, conditions, monitoring, recordkeeping, and reporting that are allegedly identified in that PBR Supplemental Table are legally sufficient, and, thus, EPA should object to the Proposed Permit for this reason. Additionally, Petitioners and the public did not have an opportunity to raise the problems associated with an allegedly revised Table D, dated December 2023, because the previous comment period ended in September of 2023. An allegedly revised Table D was not available at that time for Petitioners and the public to review. For these reasons, EPA must object to TCEQ's reliance on an allegedly revised Table D.

However, these are not the only deficiencies with the RTC's two references to a revised Table D. Another deficiency is that there is an internal inconsistency in TCEQ's response. TCEQ's statement regarding the one modification made from Draft to Proposed Permit references a supposedly revised *Special Term and Condition 22* that cites to a PBR Supplemental Table dated December 20, 2023, while the body of the RTC later states that Special *Term and Condition 23* has been revised to include the PBR Supplemental Table dated December 20, 2023. RTC at 5 & 18. A review of the proposed permit shows that *Special Term and Condition 22* reads, "Permit holder shall comply with the requirements of New Source Review

[43] TCEQ Records Online https://records.tceq.texas.gov/cs/idcplg?IdcService=TCEQ_SEARCH (last accessed August 9, 2024).

authorizations…including…permits by rule (including the terms, conditions, monitoring, recordkeeping, and reporting identified in…the PBR Supplemental Tables dated August 3, 2023 in the application for project 34289)…" FOP Revised—Effective 07/2024 pg. 14. That is, it references an earlier version of the table. Meanwhile, *Special Term and Condition 23* reads, in its entirety, "[t]he permit holder shall comply with the general requirements of 30 TAC Chapter 106, Subchapter A of the general requirements, if any, in effect at the time of the claim of any PBR." *Id*. Therefore, Special Term and Condition 23 has nothing to do with a revised Table D.

Neither of these two special terms and conditions reference any new PBR Supplemental Tables from December of 2023, and, in fact, the proposed permit continues to reference the older Table D from August 2023 (the deficiencies of which Petitioners already commented on to TCEQ and which are addressed in the following subsections of this Petition at *infra* III.(A)-(C); *see also* Sept. 2023 Comments at pg. 11 and Exhibit A). EPA must object to the TCEQ's reliance on an allegedly revised Table D for this reason.

An additional overarching deficiency with the proposed permit has to do with the way TCEQ attempts to incorporate materials by reference that have to do with monitoring and emissions calculations methods. TCEQ states that "[r]egarding comments related to emissions, emission calculations and methods, emission rates, emission factors, etc…the ED notes that the Proposed Permit which is issued under 30 TAC 122 does not authorize emissions or emissions increases. The NSR permits issued under 30 TAC Chapter 116 and 106, including permits by rule (PBRs), Standard Exemptions (SEs), and standard permits, authorize emissions and emissions increases. Emissions related information for PBRs, SEs, and standard permits can be found in the appropriate NSR permit/project file." RTC at 16-17. To the extent TCEQ is suggesting that the "appropriate" PBR files contain the relevant monitoring and emission calculation methods here, this does not satisfy the requirement that, to incorporate materials by reference, the permitting authority must clearly identify those materials and tell the public how they can easily access the materials.

Beyond these overarching deficiencies, TCEQ's proposed permit fails to include monitoring, testing, and recordkeeping requirements sufficient to ensure compliance with limits from applicable PBRs covering the three different categories of sources below, and, for each of the following reasons, EPA must object to the proposed permit. Petitioners' comments pointed out multiple deficiencies with PBR monitoring in the draft revised Title V permit. Sept. 2023 Comments at 11-14. Several of those deficiencies related to Table D from a PBR Supplemental Table dated August 3, 2023 (attached as Exhibit 5 to Sept. 2023 Comments and reattached here as Exhibit C). For the reasons stated in Petitioner's Sept. 2023 Comments, this Table D (distinct from the revised Table D dated December 20, 2023) does not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with many PBR limits at the Valero Refinery, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c).

A. Inadequate Fugitive Monitoring

The Proposed Permit remains deficient and cannot ensure compliance with applicable PBR requirements for fugitive emissions. Specifically, despite TCEQ's (incorrect) assertion that the

proposed permit now incorporates a revised Table D from December 2023, the Table D from August 2023 that is actually referenced in the proposed permit includes the same inadequate language for fugitive emissions monitoring that Petitioners pointed out problems with during the comment period:

> Emissions from fugitive component leaks are minimized through the 28VHP Leak Detection and Repair program as detailed in the relevant conditions of NSR Permit No. 2501A. The LDAR requirements in the permit specific the parameter monitored, the frequency of monitoring and averaging times. "Except as may be provided for in the special conditions of this permit, accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer "[sic]For more detail see applicable Special Conditions in NSR Permit No. 2501A.

Table D August 2023 (Exhibit C). Petitioners pointed out these deficiencies in their Sept. 2023 Comments at 11-12, specifically that Table D and its alleged monitoring cannot ensure compliance with applicable PBR requirements for fugitive emissions for two main reasons—which are discussed in greater detail in *infra* V.(E) of this petition detailing the problems with the monitoring for the fugitive VOC limits from NSR permit 2501A—namely that (1) neither Table D nor the Proposed Permit identifies how Valero will calculate fugitive VOC emissions and (2) the LDAR requirements from permit 2501A (which Table D relies upon) mainly only require quarterly monitoring using a gas analyzer, which is both too infrequent and likely to miss leaks from valves, pumps, seals, and other equipment. For this reason, EPA must object to the Proposed Permit.

In its response, TCEQ simply states that the applicable requirements summary ("ARS") table includes extensive monitoring, reporting, recordkeeping and testing requirements for fugitive emissions subject to requirements under 30 TAC Chapter 115, HRVOC Fugitive Emissions, 40 CFR Part 63, Subparts CC and GGGGG, and 40 CFR Part 60, Subparts GGG and GGGa. May 2024 RTC at 16. However, this response is inadequate to address Petitioners' concerns as the cited authorities are separate state and federal requirements, not PBR limits—and TCEQ does not even attempt to tie these other requirements to the PBR limits or explain how these other requirements can ensure compliance with the PBR limits. For this reason, EPA must object to the Proposed Permit.

B. Inadequate Monitoring for Storage Tanks

The proposed permit and TCEQ's RTC demonstrate the proposed permit does not include monitoring sufficient to demonstrate compliance with all applicable requirements relevant to Storage Tank Units authorized by PBRs.

Petitioners previously pointed out that the Monitoring Requirements listed in Table D cannot assure compliance with applicable PBR limits for storage tanks for four reasons. Sept. 2023 Comments at 12-13. Specifically, Table D included the following language:

> The average temperature, material vapor pressure and throughput are recorded on a monthly basis. Calculate the rolling 12-month emissions and ensure resulting 12

month emissions are less than the applicable limit. Emissions are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks" and (b) the guidance contained on the webpage entitled, "NSR Guidance for Storage Tanks," located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html.[44]

Table D August 2023 (Exhibit C). The Proposed Permit, with its continued reliance on the unrevised Table D, fails to include monitoring and other requirements sufficient to ensure compliance with applicable PBR limits for tanks for the same four reasons already explained in Petitioner's Sept. 2023 Comments, and which are as follows:

First, TCEQ has not clearly identified the relevant emission factors and calculation methods. It remains unclear whether AP-42 emission factors, emissions factors from TCEQ guidance, or some combination of the two apply. In addition, Petitioners pointed out that TCEQ must revise Table D to clearly identify the specific guidance and emissions factors from "NSR Guidance for Storage Tanks" that is to be used to calculate the VOC emissions for each tank and relevant PBRs. The website cited in the language above from Table D links to numerous documents and it is not clear which apply, including two different guidance documents that address estimating short-term emissions from tanks (one for fixed-roof tans, and the other for floating roof tanks). Sept. 2023 Comments, pg. 12-13. In its RTC, TCEQ states that the proposed permit does not authorize emissions or emissions increases but that the NSR permits issued under 30 TAC Chapters 116 and 106, including PBRs, do authorize emissions and emissions increases, and that the emissions related information for PBRs is to be found in the appropriate NSR permit/project file. RTC at 16-17. However, this response is inadequate to address this issue — TCEQ refers to unidentified NSR files yet does not specifically identify which files it is referring to, let alone the emissions factors or calculation methods from those files that apply to the PBR limits for the storage tanks. For this reason, EPA must object to the proposed permit.

Second, and as Petitioners already pointed out, methods from AP-42 and TCEQ's "NSR Guidance for Storage Tanks" webpage require Valero to make certain assumptions to calculate emissions from the tanks—but that neither Table D nor the Title V permit required these assumptions to be verified or substantiated. Sept. 2023 Comments at 13. Petitioners further developed this issue, explaining that these factors include: tank geometry; tank condition; condition of the roof including the floating roof pan; the presence and condition of roof penetrations such as guide poles; the condition of specific tank components such as rim seals and guide pole seals; properties of the tank product and their variation with ambient conditions, like temperature; product throughput; and wind speed. Sept. 2023 Comments at 58; *infra* V.(G); *see also* Oct. 2019 Declaration from Dr. Ranajit Sahu, Ex. D ¶24.

TCEQ's response refers to its guidance document APDG 6419- Short-term Emissions from Floating Roof Storage Tanks while also stating that monitoring for storage tanks is contained in the major NSR summary table for NSR Permit 2501A. TCEQ continues, stating that conditions 3, 5, 30, 31, and 62 list the monitoring, reporting, recordkeeping and testing ("MRRT")

[44] Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area, dated Aug. 3, 2023.

requirements for storage tank units that are sufficient to demonstrate compliance with applicable requirements. RTC at 16-17. This response is inadequate for multiple reasons, the first being that the guidance document APDG 6419 Short-term Emissions from Floating Roof Storage Tanks is not referenced anywhere, with any specificity, in the proposed permit. It is only referenced in TCEQ's response. RTC at 17. Next, TCEQ's references to the conditions of NSR Permit 3, 5, and 62 are also inadequate to address the issue of unverified and unsubstantiated assumptions for methods from AP-42 because these are conditions having to do with general applicability of certain parts of the code of federal regulations (Conditions 3 and 5), and recordkeeping (Condition 62). Additionally, TCEQ's reference to Condition 31 is inadequate as it has to do with requiring Valero to provide a sample or analysis of any liquid stored in the tanks upon request by TCEQ personnel or any local air pollution control program with jurisdiction—it has nothing to do with validating or substantiating assumptions. Finally, although the RTC references Condition 30, having to do with VOC Storage Tanks, this response is nevertheless deficient to remedy the Petitioners' concern. Special Condition 30(G) for NSR Permit 2501A references an Attachment G dated March 22, 2023—this Attachment G was not previously included in the permit that Petitioners sought the EPA to review via their original petition in 2021—yet its inclusion does not remedy Petitioners' concern that the above-mentioned assumptions are unverified and, in fact, presents a new issue for which EPA must object to the Proposed Permit. For further detail, *infra* V. (G) of this Petition regarding how the proposed permit's monitoring requirements cannot assure compliance with hourly and annual limits for the refinery's tanks. For this reason, EPA must object to the Proposed Permit.

Third, and as Petitioners already pointed out, Table D does not require Valero to inspect floating roof tank components at all, much less on a regular, or sufficiently frequent basis, in order to assure that each tank is properly maintained. Sept. 2023 Comments at 13. Petitioners further referred TCEQ to their discussion of the identical inadequacy in the monitoring for tanks with limits from permit 2501A which requires only annual or less frequent inspections of floating roof tanks, except when those tanks are emptied or degassed. Petitioners further cited the October 2019 declaration of Dr. Sahu on how certain inspections are not frequent enough to ensure the proper maintenance of tank seals, among other issues. Sept. 2023 Comments at 58; *infra* V. (G).

The TCEQ's response references supposed periodic monitoring requirements and continues by stating that monitoring for storage tank units is also stated in major NSR summary table for NSR Permit 2501A, specifically in, conditions 3, 5, 30, 31, and 62. RTC pg. 16. However, the inclusion of Attachment G in the proposed permit is not sufficient to remedy Petitioners' concerns that tank inspection is not frequent enough to ensure compliance with applicable PBR requirements and, in fact, presents a new issue for which EPA must object to the Proposed Permit. For further details, *infra* V.(G) regarding how the proposed permit's monitoring requirements cannot assure compliance with hourly and annual limits for the refinery's tanks. For this reason, EPA must object to the Proposed Permit.

Fourth and finally, and as Petitioners mentioned previously, TCEQ's reliance on Table D does not demonstrate compliance with applicable PBR limits because it does not require Valero to periodically verify the accuracy of the required calculation methods. Sept. 2023 Comments at 13. As Petitioners detailed, direct measurements of tank VOC emissions have shown that AP-42

methods can grossly underestimate VOC emissions from these tanks based, in part, on the AP-42 methods' inability to fully capture the underlying processes that lead to emissions from tanks. Sept. 2023 Comments at 59-60. Dr. Sahu's October 2019 Declaration points out how AP-42 calculation methods were developed decades ago and were based on limited "testing" on a small number of tanks, at a time when it was impossible to conduct direct measurements of large tanks' actual emissions to verify the accuracy of the calculation methods. Sept. 2023 Comments at 59. For further details, *infra* V.(G) regarding how the proposed permit's monitoring requirements cannot assure compliance with permit 2501A's hourly and annual limits for the refinery's tanks. That is, the monitoring does not ensure compliance with the applicable PBR requirements for tanks.

These are not, however, the only deficiencies with the Proposed Permit's inclusion of Table D from August 2023. As Petitioners mentioned in their Sept. 2023 Comments at 13, Table D contains the following, inadequate language regarding monitoring for other tanks and PBRs:

> Estimate and record throughout each month. Calculate the rolling-12 month emissions and ensure resulting 12 month emissions are less than the applicable limit.
> …
> Estimate and record throughout each month. Calculate the rolling-12 month emissions to ensure compliance with 106.4 limits. Keep records to document the subsection of 106.472 [or 106.478] under which the tank is authorized.

Table D August 2023 (Exhibit C). This monitoring language cannot ensure compliance with the applicable PBR requirements for tanks for the same four reasons discussed above: One, TCEQ has not identified the relevant emission factors and calculation methods; two, Table D and the proposed permit do not require assumptions for emissions calculations to be verified or substantiated; three, Table D and the proposed permit do not require Valero to inspect floating roof tank components at all—much less on a regular or sufficient frequent basis to assure that each tank is properly maintained and sealed; and, finally, Table D and the proposed permit do not require Valero to periodically verify the accuracy of any required calculation methods. EPA must object to the proposed permit for each of these reasons.

C. The Proposed Permit Provides Inadequate Monitoring for Docks

As Petitioners explained in their Sept. 2023 Comments at 14, the Proposed Permit does not include adequate monitoring requirements for two different docks. The monitoring language in Table D for 90DOCK1 reads:

> The dock is limited to be used for loading and unloading of No. 6 fuel oil, asphalt, B/B/ (butene, butylene), butane, catalyst feed, diesel, cycle oils, isobutane, kerosene, natural gas, propane, and spent acid. Estimate and record throughput each month. Calculate the rolling-12 month emissions. Emissions will not exceed 4.81 tpy.

The monitoring language for 90DOCK2 reads:

> The dock is limited to be used for loading and unloading of Kerosene/Jen Fuel, Light Cycle OPil, Cat Feed/Gas Oils, and No. 6 Oil/Resid. Estimate and record throughout each month. Calculate the rolling-12 month emissions. Emissions will not exceed 3.89 tpy.

Table D August 2023 (Exhibit C). However, this monitoring language from (the unrevised) Table D is inadequate to ensure compliance with the referenced limits of 4.81 and 3.89 tons per year, specifically because Table D does not identify how Valero will calculate emissions from the docks. Petitioners and the public are not able to evaluate whether any of the required monitoring and calculation methods can assure compliance with the rolling 12-month limits specifically because Table D does not list the emission calculation methods for these two docks. EPA must object to the Proposed Permit for this reason. TCEQ simply states that the ARS includes extensive monitoring, reporting, recordkeeping, and testing requirements for these two docking units subject to 30 TAC Chapter 115 without providing, with any specificity, the monitoring that is required. The TCEQ continues by stating that Loading and Unloading of VOC and 90DOCK1 are subject to 40 CFR Part 63, Subparts CC and Y, without providing, with any specificity, the monitoring required. RTC at 17. The TCEQ's response here that the MRRT requirements listed in the ARS are sufficient to demonstrate compliance with applicable state and federal regulations is, therefore, deficient. EPA must object to the proposed permit for this reason.

IV. THE NEW PROPOSED PERMIT DOES NOT INCLUDE THE REQUIRED GENERAL DUTY TO OPERATE AND MAINTAIN THE VALERO HOUSTON REFINERY CONSISTENT WITH SAFETY AND AIR POLLUTION PRACTICES.

In its order, EPA stated that "TCEQ must evaluate those NSPS and NESHAP provisions that are not included in the Permit, including 40 C.F.R. §§63.642(n)" and determine if it is applicable to the Valero Facility. "If [it is] applicable, TCEQ should revise the Permit to include these citations." Valero Houston Order at 30.

As Petitioners explained in their Sept. 2023 Comments at 18, 40 C.F.R. § 63.642(n) is the general duty requirement from Subpart CC to operate and maintain the facility consistent with safety and air pollution control practices. Specifically, 40 C.F.R. § 63.642(n) from Subpart CC requires that Valero "[a]t all times…must operate and maintain [the refinery], including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions." As Petitioners have already pointed out, although the proposed permit includes the general duty from 40 C.F.R. § 63.642(n) in the ARS for three units (90DOCK1, MAINTVENT, PROCVENT), the general duty applies to *all units* at the refinery subject to Subpart CC, not just these three units. Sept. 2023 Comments at 18. TCEQ, for its part, has stated that it has added 40 C.F.R. § 63.642(n) to the applicable requirements summary for only two units—MAINTVENT and PROCVENT. RTC at 23. This is not, however, an adequate response. According to the applicable requirements summary table, a *non-exhaustive list* of other units that are subject to 40 C.F.R. Part 63, Subpart CC—and to which, therefore, 40 C.F.R. § 63.642(n) and its generally duty applies—includes the following units: 90FB735, 91FB922, 91FB924, 91FB931, 30FL1 and 30FL6. That is, *any unit* that is included in the

applicable requirements summary table and that is subject to 40 C.F.R. Part 63, Subpart CC, should also reference 40 C.F.R. § 63.642(n) as an applicable requirement. EPA should object to the proposed permit because it does not properly cite to this important general duty for all units that are subject to 40 C.F.R. § 63.642(n) and its general duty. EPA should also object to the proposed permit because it does not include 40 C.F.R. § 63.642(n) as a special condition to ensure clarity about its enforceability.

V. THE NEW PROPOSED PERMIT STILL FAILS TO INCLUDE SUFFICIENT MONITORING, REPORTING, AND EMISSION CALCULATION REQUIREMENTS FOR KEY UNITS AND LIMITS AT THE REFINERY.

As discussed below, the new proposed permit still cannot ensure compliance with limits for the refinery's fluid catalytic cracking unit ("FCCU"), flares, dissolved air flotation ("DAF") unit, boilers, fugitive emissions, atmospheric tower heater, storage tanks, and cooling towers. And as discussed above, environmental justice concerns here mandate increased, focused attention to ensure that all Title V requirements—especially monitoring, recordkeeping, reporting, and compliance certification requirements—have been complied with for these units.

For some of the issues listed below, EPA must take over the refinery's Title V permit because TCEQ "fail[ed" to "submit a permit revised to meet the objection[s]," 42 U.S.C. § 7661d(c), from EPA's June 2022 order objecting to the previous proposed Title V permit for the Valero Houston refinery—as explained in our notice of intent to sue that we will soon be sending EPA regarding its failure to take over the permit. Out of an abundance of caution, however, we are protectively including these issues in this petition—should EPA (wrongly and unlawfully) take the position that it has no duty to take over the permit on these issues. By including these issues in this petition, we are in no way waiving our arguments that EPA "shall issue or deny the permit" for these issues under § 7661d(c).

A. The Proposed Permit's Monitoring Requirements Still Cannot Ensure Compliance with the Hourly and Annual PM Limits for the Refinery's FCCU.

In its Title V order, EPA objected to the monitoring requirements for the refinery's FCCU and required TCEQ to: (1) identify the monitoring for the FCCU's hourly and annual PM2.5 and PM10 limits from NSR permit 2501A's Maximum Allowable Emission Rates Table (MAERT); (2) evaluate the frequency of stack testing (the previous permit relied on testing from 2008) used to establish a lb PM/1,000 lb coke-burn emission factor, which, along with lb/hr coke-burn data, TCEQ previously relied upon (or so TCEQ said in its previous response to comments for the permit that EPA objected to) to assure compliance with permit 2501A's PM limits; and (3) revise Valero's permit(s) to clarify that testing for condensable PM be included in stack testing requirements. Valero Houston Order at 35-36. Regarding the second of these, EPA objected:

> The Petitioners next assert that the monitoring is inadequate because the Permit does not require any new stack tests or stack tests at any interval sufficient to ensure compliance and to determine an appropriate emission

> factor. The Petitioners, in their public comments, squarely put forth the issue of too infrequent monitoring for TCEQ's consideration and response. TCEQ's response provides no explanation for why the stack test frequency required in the permit is adequate to ensure compliance. . . Without a reasoned response from TCEQ, the EPA is unable to determine that the monitoring is adequate to satisfy part 70 monitoring requirements . . . If TCEQ concludes that no further stack testing is needed, TCEQ must explain on the record how it has determined that the emission characteristics of the FCCU have not changed since 2008 and is not expected to change over the term of the Permit in order to conclude that periodic stack testing is not required.

Id. at 36 (citation omitted).

As Petitioners' comments explained (Ex. A, Sept. 2023 Comments, at 21-24), the new proposed Title V permit and revised permit 2501A still do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with the PM limits for the FCCU. Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the proposed permit's monitoring, emission calculation, and other requirements cannot ensure compliance with the PM2.5 and PM10 limits of 75.5 lbs/hour and 240 tons/year.[45] *See* Permit 2501 MAERT at "FCCU Unit Stack"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating the March 22, 2023 version of permit 2501A into the Title V permit).[46]

TCEQ's March 2023 revisions to NSR permit 2501A adequately address only the above-listed first and third objections/instructions from EPA regarding FCCU monitoring. Revised permit 2501A's Special Condition (SC) 15 states:

> Compliance with MAERT limit will be demonstrated by adding front half and back half amounts of particulate matter. Stack tests required by Special Condition 57[47] and MACT UUU 40 CFR §63.1571(a)(5) are used for MAERT compliance demonstration. The emission factors used to demonstrate compliance will be taken from the most recent stack test.

SC 56 requires stack testing only on a schedule "as required by the TCEQ Executive Director"—*i.e.*, with no set frequency. Subsections 56.D-G contain limitations on the FCCU's ability to operate at certain coke burn rates, and 56.G requires a new stack test if the FCCU is operating at greater than 10% of the burn rate from the previous stack test and emissions from that

[45] Because permit 2501 lists certain monitoring or other related requirements for PM from the FCCU but those requirements cannot ensure compliance with the PM limits, § 70.6(c)(1) requires TCEQ to supplement 2501A's original monitoring and other requirements.

[46] The March 22, 2023 version of permit 2501A, which reflects TCEQ's revisions to try to address EPA's Title V objections, is appended to the proposed Title V permit.

[47] This SC should instead read: "Stack tests required by Special Condition 56 and MACT UUU…" SC 57 addresses testing for the ULSD Heaters Common Stack—not the FCCU.

previous test exceeded 80% of the short-term emission rate from the MAERT.[48] In addition, Attachment G to permit 2501A states that short-term PM2.5 and PM10 emission rates are to be "[c]alculated with emission factor determined from most recent stack test in terms of lb/1000lb coke burn and the hourly coke burn-off rate, calculated with Equation 6 in NSPS Ja Section 60.104a(d)(4)."[49]

Permit 2501A's SC 15 and Attachment G (along with the other provisions from permit 2501A and the proposed Title V permit) cannot ensure compliance with the FCCU's hourly and annual PM limits—and TCEQ has not "submit[ed] a permit revised to meet" EPA's second objection on FCCU monitoring, regarding the frequency of testing[50]—for two reasons:

First, the proposed permit and permit 2501A do not require frequent enough testing and monitoring of PM from the FCCU. To begin with, although TCEQ claims that permit 2501A's SC 56.C refers to "initial stack testing" and "is included as a common permitting practice" (Ex. E, 8/18/23 TCEQ Resp. to EPA Objection, at 6), SC 56.C still provides that the "last acceptable criteria pollutant stack test" for the FCCU "was conducted on December 19, 2008." This provision, when read in conjunction with SC 15 and Attachment G, could be read to mean that Valero is to use the PM/coke burn emission factor from that 2008 stack test to demonstrate compliance with the PM MAERT limits. As we explained in our previous petition on this refinery's Title V permit (at 46), an emission factor from a stack test conducted almost 15 years ago—and counting—cannot ensure compliance with the FCCU's hourly and annual limits. Permit 2501A and/or the Title V permit must be revised to make clear that the language stating that the last acceptable stack test was conducted in 2008 is irrelevant to how compliance with the PM MAERT limits is determined.

Further, even if the PM/coke burn emission factor from the 2008 testing is not used to calculate PM emissions from the FCCU, "Special Condition 5[6] and MACT UUU 40 CFR §63.1571(a)(5)" (*see* SC 15) combined only require testing once every five years, or annually if emissions are high enough. Specifically, § 63.1571(a)(5) only requires testing once every five years—or annually if emissions are greater than .80 g/kg. As we explained above and in our previous petition (at 56), SC 56 does not actually require any testing, with the very limited exception for when the FCCU is operating at greater than 10% of the burn rate from the previous stack test and emissions from that test exceeded 80% of the short-term limit. Emission factors from annual tests or tests every five years cannot ensure compliance with 2501A's hourly and annual PM limits. This is doubly true for the hourly limits. As we explained in our previous Title V petition (at 46) and as explained in paragraphs 8-10 of the June 2021 declaration from Dr. Ranajit

[48] Relatedly, subsection 56-F allows the FCCU to operate at a burn rate not exceeding 10% of the burn rate from the previous stack test if the short-term emission rate in that test did not exceed 80% of the MAERT limit.
[49] Attachment G provides that annual PM rates are calculated as follows: "Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis."
[50] More specifically, under 42 U.S.C. § 7661d(c), EPA must take over the Title V permit as to the FCCU monitoring because TCEQ has not resolved EPA's objection that TCEQ "provide[d] no explanation for why the stack test frequency required in the permit is adequate to ensure compliance." *See* Valero Houston Order at 36.

Sahu,[51] which we are again attaching to this present petition as Exhibit F,[52] the FCCU's lb PM/1,000 lb coke-burn emission rate depends on many factors that do not remain constant. Based on testing conducted at other facilities, FCCU PM rates are variable and can change from stack test run to run, hour to hour, month to month, and year to year based on the operating and maintenance conditions of the FCCU's controls, the additives that Valero may use to achieve NOx and SO2 reductions (including agents such as ammonia for additional NOx control), the manner in which the regenerator is operating, the temperature of regeneration, and other factors.

As we explained in our previous petition (at 49-50), strong PM monitoring requirements for the FCCU are especially important to confirm that the PM emissions increases resulting from the "FCCU/Alkylation Turnaround" project that TCEQ authorized in January 2019 (referenced in permit 2501A's SC 67) do not trigger major PSD. Valero projected PM2.5 and PM10 increases resulting from the project (7.62 and 8.55 tons/year, respectively) that are relatively close to the thresholds for triggering PSD—10 tons/year PM2.5 and 15 tons/year PM10.[53] Valero expects the overwhelming majority of the increases resulting from the project to be from the FCCU itself (*i.e.*, not from downstream processes)—6.88 tons/year PM 2.5 and 7.81 tons/year PM10. *See id.*

The requirements from 30 TAC § 116.127 that Valero calculate and maintain a record of the annual emissions, in tons per year, on a calendar year basis for either five or ten years—and report if annual emissions from the project exceed the baseline emissions by a significant amount—are themselves applicable requirements under Title V because they are "requirement[s] provided for in the applicable implementation plan." *See* 40 C.F.R. § 70.2's definition of "applicable requirement"; 30 Tex. Admin. Code § 122.10(2)). Thus, the draft Title V permit must ensure compliance with these requirements, but it fails to do so for the same reasons that it fails to ensure compliance with the PM MAERT limits.

Second, despite EPA's explicit objection that TCEQ "provide[d] no explanation for why the stack test frequency required in the permit is adequate to ensure compliance" (Valero Houston Order at 36), TCEQ still has not provided this explanation. As EPA noted in previously objecting to the PM monitoring for the FCCU, "The Petitioners, in their public comments, squarely put forth the issue of too infrequent monitoring for TCEQ's consideration and response." *Id.* And again, Petitioners squarely presented this same issue in their comments on the Title V permit that was supposedly revised to respond to EPA's objections. And yet again, TCEQ has utterly (and blatantly) failed to remedy this problem.

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[51] Commenters filed this declaration, along with two other declarations from Dr. Sahu, with our previous petition requesting that EPA object to the refinery's Title V permit. These declarations did not address the revisions that TCEQ made in response to EPA's objections—though we consulted with Dr. Sahu in drafting our comments on the revised Title V permit, and he reviewed and approved the monitoring/emission calculation portions of the comments.

[52] The relevant paragraphs from Dr. Sahu's declarations are not merely incorporated into this petition by reference. *See* 40 C.F.R. § 70.12(a)(2) ("… the Administrator will not consider arguments … or other information incorporated into the petition by reference."). Instead, the cited paragraphs from the declarations directly support the petition's arguments that the proposed permit's monitoring and emission calculation provisions are flawed for the reasons discussed herein. In addition, the paragraphs from Dr. Sahu's declaration cited above and below in this petition also directly support the additional facts and arguments for which we cite the declaration as support.

[53] The projected emission increases can be arrived at by subtracting the baseline emissions listed in the table in permit 2501A's SC 67.A from the projected actual emissions listed in that same table.

1. EPA should require the use of PM CEMS at the FCCU, among other things.

As we explained in our petition (at 50-51) and our comments on the revised draft permit (Sept. 2023 Comments at 23-24), to remedy the above-described problems and ensure compliance with the hourly and annual PM2.5 and PM10 limits for the FCCU, and to also ensure that the FCCU upgrade project does not result in the need to conduct the netting test for major PSD applicability (and thus ensure compliance with the requirements from 30 TAC § 116.127), EPA should require the Title V permit and/or permit 2501A to be revised as follows:

- Require PM CEMS (which are widely available from several vendors) and continuous flow and temperature measurements for compliance with the filterable portions of Valero's PM limits.

- Because PM CEMS only measures filterable PM: (a) require annual stack testing for condensable PM; (b) establish a filterable/condensable ratio from the most recent stack test (or as an average of the result from the most recent test and all prior tests, as these tests begin to accumulate over time); (c) establish hourly filterable and condensable operating limits that reflect the relative proportions from the most recent stack test (or using the average of tests discussed in (b) above); and (d) require Valero to meet those filterable and condensable operating limits as shown by hourly PM2.5 and PM10 CEMS results. As we explained in our previous petition (at 44-45), a significant portion of PM from the FCCU is condensable PM.[54]

- Remove the language from SC 56-F that allows the FCCU to operate at a burn rate not exceeding 10% of the burn rate from the previous stack test if the short-term emission rate did not exceed 80% of the MAERT limit.

These strong monitoring requirements—as well as strong requirements for units other than the FCCU (discussed below)—are especially important because, as discussed above, environmental justice concerns here mandate increased, focused attention to ensure that all Title V requirements—including, in particular, monitoring, recordkeeping, reporting, and compliance certification requirements—have been complied with.

2. TCEQ's response to comments is (yet again) inadequate to address the problems with the permit's monitoring requirements for PM from the FCCU.

TCEQ's response to comments does not even attempt to resolve the problems that Petitioners identified, in their comments on the revised permit, regarding the frequency of testing and monitoring of PM from the FCCU. TCEQ states that it "respectfully disagrees with the . . . assertion 'emission factors from annual tests or tests every five years cannot ensure compliance with 2501A's hourly and annual PM limits.'" RTC at PDF p. 56. Nowhere does TCEQ explain why it disagrees—despite Petitioners squarely putting forth the frequency issue in their previous

[54] Permit 2501A previously contained filterable PM limits of 32.5 lbs/hour and 142.35 tons/year. *See* June 2021 Title V Petition at 44. Because these former filterable PM limits are significantly lower than the PM2.5 and PM10 limits of 75.5 lbs/hour and 240 tons/year, this means that much of the PM from the FCCU is condensable.

comments and previous petition and their comments on the revised permit, and despite EPA's explicit objection that "TCEQ's response provides no explanation for why the stack test frequency required in the permit is adequate to ensure compliance" (Valero Houston Order at 36).

TCEQ also responds with various statements and assertions that have nothing to do with the fundamental problem regarding the frequency of monitoring and testing of PM from the FCCU. For example, TCEQ states that permit 2501A's "conditions 3, 5, 11, 12, 13, 14, 15, 16, 40, 53, 56, 61, 64, 67, 68, 69 lists the MRRT [monitoring, reporting, recordkeeping and testing] requirements for FCCU that are sufficient to demonstrate compliance with the applicable requirements." RTC at PDF p. 56. TCEQ does not explain how any of these provisions can ensure compliance with the FCCU's very specific PM limits from permit 2501A. And, in fact, none of these provisions resolve, or are even relevant to, the frequency problem. We explain above why conditions 15 and 56 are inadequate, and many of the other conditions TCEQ cites focus on pollutants other than PM and/or units other than the FCCU. Petitioners' previous petition also explained why many of these provisions are inadequate to ensure compliance with the FCCU's PM limits. See June 2021 Petition at 47-49. For example, Special Condition 14 lists a 20% opacity limit, but Valero does not actually monitor opacity. *See* Proposed Permit at 234-37 (EPA's March 2016 Alternative Monitoring Plan Approval). Special Condition 16 lists operating parameter limits for the FCCU's wet gas scrubber that were approved by EPA in March 2016 as part of the Alternative Monitoring Plan, but TCEQ's previous response to comments stated that the parameters "are not meant to ensure compliance with the hourly PM limits, because, the EPA's limits are not PM emission rates (EPA's limit is a lb of filterable PM/1,000 lb coke-burn, whereas the MAERT limit is a total PM (filterable + condensable) lb/hr limit)." Previous RTC at 72. This presumably applies to the annual PM MAERT rates as well.[55]

[55] Regardless, this parametric monitoring cannot ensure compliance with the annual and hourly PM limits. EPA only approved using this parametric monitoring in lieu of a continuous opacity monitoring system (COMS) for the opacity limit under NSPS and NESHAP. Proposed Permit at 234-37. This approval was not related to 2501A's PM limits, and nothing in the permit: explains how this parametric monitoring could ensure compliance with the PM limits listed in the MAERT; correlates the parametric limits with specific, actual filterable PM, PM2.5 or PM10 hourly or annual emissions; or explains how this parametric monitoring can be used to determine actual emissions of filterable PM, PM2.5 or PM10. *See In the Matter of Shell Chemical LP and Shell Oil Co., Deer Park Chemical Plant and Refinery* ("Deer Park Order"), Order on Petition Nos. IV-2014-04 and IV-2014-05 at 21-23 (Sept. 24, 2015) (objecting to provision that required parametric monitoring for tanks because permit did not explain how parametric monitoring data would be used to determine the actual quantity of VOC emissions). Nor does the permit record explain how this parametric monitoring could be used to determine actual hourly or annual filterable PM, PM2.4 or PM10 emissions. Thus, this parametric monitoring is also inadequate to ensure compliance with the MAERT PM limits. Ex. G, March 2019 Sahu Decl. ¶10.

Further, COMS only reflects filterable PM, and the NSPS and NESHAP limits for FCCUs are only filterable (and not condensable) PM limits. *See, e.g.*, 40 C.F.R. Part 63, Subpart UUU, Table 4 (requiring "Method 5 or 5B (40 CFR Part 60, appendix A-3) to determine PM emissions and associated moisture content for unit with wet scrubber"). Thus, the parametric monitoring approved to establish compliance with opacity limits from NSPS and NESHAP cannot ensure compliance with condensable PM limits. Even if it could, the permit record fails to show that the parametric monitoring has been correlated with —or can ensure compliance with—the significant condensable portions of the very specific MAERT hourly and annual PM limits. Also, the permit does not explain how this parametric monitoring can be used to determine actual emissions of condensable PM. *See* Deer Park Order at 21-23.

TCEQ also states:

> MRRT for particulate matter (PM) and PM Opacity measurements of liquid and gas flow rate, and the liquid supply pressure are documented under the periodic monitoring section of the proposed permit. 40 CFR Part 60, Subparts J and Ja [which has requirements for PM and PM (Opacity) pollutants in the ARS] and 40 CFR Part 63, Subpart UUU contains several work practice (or operational) standards to assure process performance and compliance with emission limitations.

RTC at PDF p. 56. As explained above, however, Valero does not actually monitor opacity from the FCCU, and TCEQ previously admitted that the scrubber parametric monitoring could not assure compliance with permit 2501A's PM limits for the FCCU. Further, the FCCU's NSPS and NESHAP requirements can in no way ensure compliance with permit 2501A's PM limits since nothing in the permit or permit record ties the NSPS or NESHAP monitoring, testing or reporting requirements—or correlates the NSPS or NESHAP limits—to specific, actual PM2.5 or PM10 emission rates or the MAERT PM limits.

TCEQ also lists several boilerplate responses that again have nothing to do with the frequency problem—non-substantive responses that it repeats in purporting to respond to the problems that Petitioners highlighted with the monitoring for units other than the FCCU:

- TCEQ states that the "MRRT requirements listed in the ARS [applicable requirements summary] are sufficient to demonstrate compliance with applicable state and federal regulations." RTC at PDF p. 56. These state and federal regulations are irrelevant to the problem here—inadequate monitoring for permit 2501A's PM limits for the FCCU (and inadequate monitoring for the NSR-permit limits for other units discussed below).

- TCEQ states: "Emission rates for various pollutants . . . are calculated using the methodology summarized in the NSR permit application representation including using stack testing data, manufacturer's specifications, applicable work practice standard, engineering estimates, mass balances, TCEQ guidance, and EPA's Compilation of Air Emission Factors (AP-42)." *Id.* How the emission limits were (very generally) first established has nothing to do with the adequacy of monitoring for the FCCU's PM limits (or the adequacy of monitoring for the other units discussed below).

- TCEQ asserts: "Validation and stability of emission factors used in the emission calculations may be ascertained by the public by various methods such as use of MRRT (which assists in controlling the performance and reducing variances of the manufacturing process), analyzing PCC deviation reports for the unit over a time period of interest, conducting stack testing per EPA approved procedures, analyzing emissions inventory reports submitted by the site and determining impact (if any) of recent NSR amendment projects that may affect the units performance." *Id.* at 56-57. TCEQ ignores that the very problem is that the "MRRT" requirements

are inadequate here. Nor does TCEQ explain how deviation reports, emissions inventory reports, or NSR amendment projects could possibly solve the monitoring problems discussed above (or the problems discussed below for other units). Finally, it is laughable that TCEQ apparently suggests that the public could "conduct[] stack testing."

- TCEQ "notes that emission calculation methodologies represented by the applicant in an NSR permit application must be consistent with the emission calculation methodologies used by the applicant to report emissions inventory data to TCEQ." *Id.* at 57. The fact that emission calculation methods for emissions inventories may be "consistent with" methods for first establishing limits is irrelevant to the monitoring problems here.

- TCEQ states that its "Office of Compliance and Enforcement (OCE) enforces compliance with state's environmental laws to address any non-compliance and enforcement issues." *Id.* Yet again, this is irrelevant to the monitoring problems here. Further, if Valero's monitoring is inadequate, that very well could result in the refinery underestimating and underreporting emissions—which could mean that the FCCU (and other units discussed below) are actually emitting above their permit limits, while current (inadequate) monitoring shows emissions below those limits.

- Finally, TCEQ points to the fact that the "Title V permit holder is required to file a permit compliance certification (PCC) report annually to certify compliance with the applicable requirements listed in the FOP O1381" and "EPA requires permit holders to electronically file reports and emissions data for the FCCU required under 40 CFR Part 63, Subpart UUU." *Id.* But so what? As noted above, inadequate monitoring could result in missed violations of permit limits. And, again, nothing in the permit or permit record ties NESHAP (or NSPS) requirements to the very specific hourly and annual PM limits for the FCCU (or the very specific hourly and annual NSR-permit limits for other units discussed below).

B. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the Hourly and Annual Limits for the Refinery's Flares.

In its Title V order, EPA required TCEQ to do the following regarding the monitoring and emission calculation methods for the refinery's flares: (1) revise the permit(s) to identify any emission factors and destruction/conversion efficiencies used to calculate emissions; (2) provide justifications for the destruction and conversion efficiencies in the permit record; (3) revise the permit(s) to clarify how compliance is determined for each pollutant, including which continuous monitors are used; and (4) for the VOC limits, specify in the permit(s) which VOCs and gases are monitored by the composition analyzers and flow monitors, respectively (noting that NESHAP Subpart CC contains certain requirements for flare vent gas composition monitoring and flow monitoring—but stressing that the permit must identify the connection between the permit 2501A limits and the Subpart CC requirements, and that the permit record should provide a basis for the connection). Valero Houston Order at 40-42. For the VOC limits, EPA added: "[T]he Petitioners have demonstrated that the record is unclear as to whether the permit contains adequate conditions

and work practice standards to assure that Valero is meeting the 98 or 99 percent destruction efficiency." *Id.* at 41.

In response to EPA's order, TCEQ revised permit 2501A (at SC 38.D) to provide that Valero, in addition to using continuous flow monitors and composition analyzers (which permit 2501A already mentioned), "shall install" "reduced sulfur analyzers" "that provide a record of the vent stream flow and composition to the flare."[56] TCEQ also revised SC 38.F to provide:

> Hourly mass emission rates shall be determined and recorded using the above flow monitors, reduced sulfur analyzers, and composition analyzers readings and the emission factors used in the permit amendment application, PI-R dated February 8, 2012. The emission calculations are also referenced from the TCEQ publication titled "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" for MAERT compliance demonstration.
> Monitoring requirements and emission calculation information for the flares are identified in Attachment G.

As referenced in SC 38.F, TCEQ also added Attachment G to permit 2501A.

As Petitioners' comments explained (Sept. 2023 Comments at 24-37), the new proposed Title V permit and revised permit 2501A still do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with hourly and annual limits for VOCs, SO2, NOx, and CO from the refinery's two flares—30FL1 (the main refinery flare) and 30 FL6 (the "ULSD," or ultra low sulfur diesel flare). Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c),[57] the proposed permit's monitoring, emission calculation, and other requirements cannot ensure compliance with the following limits from permit 2501A, all of which are in terms of combined emissions from the two flares: 255 lbs/hour and 393.3 tons/year VOCs; 1,402 lbs/hour and 115.6 tons/year SO2; 462.4 lbs/hour and 139.5 tons/year CO; and 64.02 lbs/hour and 19.3 tons/year NOx. *See* Permit 2501 MAERT at "30FL1 and 30FL6"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating March 22, 2023 version of permit 2501A into the Title V permit).[58]

The monitoring and emission calculation methods from revised permit 2501A and the Title V permit cannot ensure compliance with the hourly and annual limits for the flares—and TCEQ has not "submit[ed] a permit revised to meet" EPA's objections on flare monitoring, 42 U.S.C. § 7661d(c)—for many reasons. We address these problems pollutant-by-pollutant:

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[56] The only new language in SC 38.D is the addition of "reduced sulfur analyzers."

[57] Because permit 2501 lists certain monitoring or other related requirements for the flares but those requirements cannot ensure compliance with these various limits, § 70.6(c)(1) requires TCEQ to supplement 2501A's original monitoring and other requirements. Again, the relevant version of permit 2501A is the March 2023 version appended to the current proposed permit.

[58] Footnote 4 in the MAERT provides: "Compliance with annual emission limits (tons per year) is based on a 12 month rolling period."

VOCs. Attachment G to permit 2501A states the following on monitoring VOCs from the flares: "CEMS. Pilot flame presence monitored continuously (Special Condition 38.B). Continuous flow monitor and composition analyzer record of the vent stream flow and composition to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.). Vent gas heat content is measured daily." And Attachment G provides this regarding calculating short-term VOC emissions from the flares: "The emission rate is calculated based on measured flow rates and measured VOC content. VOC emissions are based on a destruction efficiency of 99% for C2's and C3's, and 98% for C4+."[59]

Revised permit 2501A and the new proposed Title V permit cannot ensure compliance with the hourly and annual VOC limits for the flares—and EPA must take over the Title V permit as to this VOC monitoring, 42 U.S.C § 7661d(c)—for three reasons.

First, TCEQ has not resolved EPA's objection that the "record is unclear as to whether the permit contains adequate conditions and work practice standards to assure that Valero is meeting the 98 or 99 percent destruction efficiency." Valero Houston Order at 41. Put more directly, the permit does not contain adequate conditions and work practice standards to ensure that the flares are destroying 98 and 99 percent of VOCs, as Valero is allowed to assume in calculating VOC emissions, depending on the particular VOC. As we explained in our previous petition (at 56-57) and as explained in Dr. Sahu's June 2021 declaration (at ¶¶ 16-18, 27), compliance with the NESHAP Subpart CC operating requirement for flares cannot ensure 99% destruction efficiencies, since the NESHAP requirements were designed to, at best, achieve 98% efficiency. *See, e.g.*, 80 Fed. Reg. 75,178, 75,211 (Dec. 1, 2015).[60] Since the actual destruction efficiencies are below the 99 percent that Valero is assuming for "C2's and C3's," the actual flare VOC emissions for "C2's and C3's" are higher than Valero's calculations assume. In other words, for all periods, Valero is underestimating the flares' emissions of VOCs with one to three carbon atoms.[61]

EPA recently emphasized the same thing in a July 2024 letter to TCEQ, stressing: "TCEQ's justifications for the use of a 99% VOC DRE [destruction and removal efficiency] assumption are not supported by the latest scientific data." July 15, 2024 Ltr. from D. Garcia to C. Chism at PDF p. 2.[62] EPA elaborated:

> Through the development of the Petroleum Refinery MACT and Ethylene Production MACT rulemakings, EPA explicitly identified monitoring and operating requirements that can ensure flares continuously achieve a level of

[59] For VOCs and the other criteria pollutants from the flares, Attachment G provides that annual emissions are calculated as follows: "Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis."

[60] There, EPA, in its final rule, stated: "The agency believes … that this [net heating value in the combustion zone] operating limit is appropriate, reasonable and will ensure that refinery flares meet *98-percent destruction efficiency* at all times when operated in concert with the other suite of requirements refinery flares need to achieve (*e.g.,* flare tip velocity requirements, visible emissions requirements, and continuously lit pilot flame requirements)." *Id.* (emphasis added).

[61] Permit 2501A only addresses "C2's and C3's" and does not mention what destruction efficiency Valero is to assume for VOCs with one carbon atom.

[62] EPA is obviously in possession of this letter, but the letter is also available online here: https://www.epa.gov/system/files/documents/2024-07/2024.07.15.epa-comments-on-tceq-flare-assumptions.pdf.

> 98% control of organic HAP and VOC. The petroleum refinery and ethylene production source category standards *did not*, however, identify monitoring and operating requirements that would ensure steam-assisted, air-assisted, or non-assisted flares will continuously achieve 99% VOC DRE . . .
>
> As a general matter, to ensure a particular control efficiency, a source must ensure that a particular NHVcz [net heating value in the combustion zone] is attained, which can vary minute by minute depending on a variety of factors. Such variability necessitates specific monitoring to assure continuous compliance. When in continuous compliance with the operating and monitoring provisions of the Petroleum Refinery and Ethylene Production MACT standards, sources with assisted flares can ensure that they will reliably achieve 98% DRE as established in the regulations, not 99% DRE as claimed by TCEQ. However, using the relationship between Combustion Efficiency (CE), NHVcz, and DRE, EPA believes that the 99% DRE level could be substantiated through the development and implementation of enhanced operating requirements including, but not limited to, a minimum NHVcz limit that is greater than the 270 Btu/scf that has been determined to assure 98% DRE.

Id. at 3-4. (emphasis in original). Here, neither the proposed Title V permit nor permit 2501A contains any enhanced operating requirements that could possibly assure 99 percent destruction of VOCs.

In addition, as we also explained in our previous petition (at 56-57), this refinery's flares have struggled to comply with the minimum combustion-zone net heating value from Subpart CC's 40 C.F.R. § 63.670(e). For example, in the first half of 2019, flare 30FL1 violated this combustion-zone requirement for 221 different 15-minute block periods, and flare 30FL6 violated the requirement for 86 different 15-minute block periods. Valero's First Half 2019 Subpart CC Compliance Report, at PDF pp. 5-11 (attached to June 2021 Title V Petition as Exhibit 11 and reattached here as Exhibit H. In the second half of 2019, 30FL1 violated this requirement for 82 different 15-minute block periods, and flare 30FL6 violated the requirement for 249 different 15-minute block periods. Valero's Second Half 2019 Subpart CC Compliance Report, at PDF pp. 10-15 (attached to June 2021 Title V Petition as Exhibit 12 and reattached here as Exhibit I).

TCEQ stated that the flares "are compliant with…MACT CC…rules." 8/18/23 TCEQ Resp. to EPA Objection at 7. Although (based on compliance reports through 2021, which we obtained through a records request to TCEQ)[63] the flares had fewer violations of Subpart CC's operating limit for combustion-zone net heating value in 2020 and 2021, the flares were still violating that limit during this period. For example, in the first half of 2020, flare 30 FL1 experienced three violations of the combustion-zone net heating value requirement. Valero's First Half 2020 Subpart CC Compliance Report, at PDF pp. 10-11 (attached to June 2021 Title V Petition as Exhibit 13 and reattached here as Exhibit J. In the first half of 2021, that same flare

[63] Perhaps not coincidentally, TCEQ is not posting the refinery's semiannual NESHAP Subpart CC compliance reports online in the Commission's "Records Online" database. TCEQ posts other semiannual compliance reports from the refinery in Records Online.

experienced six violations of this operating limit. Ex. K, Excerpts from Valero's First Half 2021 Subpart CC Compliance Report, at PDF pp. 11-12. And in the second half of 2021, flare 30FL1 violated the net-heating value limit 24 times, and flare 30 FL6 violated that limit four times. Ex. L, Excerpts from Valero's Second Half 2021 Subpart CC Compliance Report, at PDF pp. 11-12. Some of these second half 2021 violations—along with earlier violations—were far below the minimum combustion-zone net heating value of 270 Btu/scf. For example, two of the violations from the second half of 2021 were for periods where the net heating value was less than half of the 270 Btu/scf minimum, and 13 violations were for periods where the heating value was less than two-thirds of the minimum (or 180 Btu/scf). *Id.* Even if the flares have not violated this limit from 2022 to present (we have not seen the compliance reports, since they are not available to the public on TCEQ's Records Online website), that the flares have repeatedly violated the limit in the past shows that they are capable of violating it again.

For each 15-minute period that Valero does not comply with the combustion-zone net heating value requirement, Valero is underestimating VOC emissions from the flares: permit 2501A provides that the company is to assume 98-99% destruction efficiencies in its VOC emission calculations, and compliance with the Subpart CC flare operating requirements is necessary to ensure 98 percent destruction of VOCs. Valero should only be allowed to assume 98% destruction for both light and heavy compounds during those periods where the flares are meeting the net heating value limit and other operating limits from § 63.670. For any period where the flares are not meeting these limits, a much lower destruction percentage must be used.

Ensuring proper destruction efficiencies is especially important for Valero's tall, stack flares because these flares (like most refinery flares) use steam-assist systems (Valero's 2019 Flare Management Plan at PDF p. 15),[64] which will reduce the net heating value in the combustion zone and thus reduce destruction efficiencies. Ex. G, March 2019 Sahu Decl., at ¶27. *See also* 79 Fed. Reg. 36,880, 36,905 (June 30, 2014). In addition, over-steaming invariably reduces flame stability and thus dramatically reduces the destruction efficiency in this way as well. March 2019 Sahu Decl. ¶27.

Each overestimated percentage point of destruction efficiency can make a huge difference in actual emissions. March 2019 Sahu Decl. ¶27. For example, if one assumes that raw flare gases to be flared contain 100 lbs of VOCs, the difference in VOC emissions between a 90% and a 98% destruction efficiency is five-fold (10 lbs VOCs versus 2 lbs VOCs).

The hourly VOC limit for the flares shows that the flares can emit large amounts of VOCs over short periods of time—and that the flares' annual VOC limit could easily be exceeded in any given rolling 12-month period. If the flares emitted at their 255 lbs/hour limit for 3,100 hours, they would emit 395.25 tons of VOCs—above their annual limit of 393.3 tons/year.

Second, TCEQ has not even attempted to resolve EPA's objection that TCEQ must specify in the permit(s) which VOCs are monitored by the composition analyzers. As we explained in our previous petition (at 58) and as discussed in Dr. Sahu's 2021 declaration (at paragraph 19), it is unclear whether the composition analyzers are measuring all VOCs in the waste gas—or only a

[64] The flare management plan was attached to our June 2021 Title V petition as Exhibit 5 and is reattached here as Exhibit M.

subset of the VOCs. Valero's 2019 flare management plan does not list any VOC composition analyzers among the flares' monitoring equipment. *See* 2019 Flare Management Plan at Tables 3.5.1-2 (PDF pp. 19-21) (listing specifications for various pieces of monitoring equipment, but not including VOC composition analyzers). If Valero's analyzers used for purposes of VOC emissions calculations are only measuring some subset of VOCs—instead of all VOCs in the waste gas, then Valero's calculations would be underestimating VOCs from the flares. Permit 2501A's hourly and annual limits are for all VOCS from the flares—not just some subset of VOCs. EPA has already "agree[d] with the Petitioners that VOC emissions may be underestimated if the analyzers are not measuring all VOCs in the waste gas." Valero Houston Order at 41.

Although EPA stated that NESHAP Subpart CC's requirements for flare vent gas composition monitoring "may provide the information that the Petitioners highlight," EPA was clear that, "[i]f TCEQ is relying upon other requirements such as those found in the NSPS or NESHAP in order to assure compliance with the emission limits found in the MAERT, then the Permit must clearly state this connection and the permit record should provide a basis for this connection." Valero Houston Order at 42. TCEQ has failed to provide this connection in the permit(s) or explain the basis for the connection with respect to the composition monitoring.

Third, despite EPA's specific objection that TCEQ must specify in the permit(s) which gases are monitored by the flow monitors, TCEQ has failed to do so. As we explained in our previous petition (at 58) and as discussed in Dr. Sahu's 2021 declaration (at paragraph 20), it is unclear whether the flow monitors are measuring all the gases entering the flares, including sweep and purge gases. Valero uses sweep and purge gases,[65] but it is unclear from the permits and Valero's flare management plan whether the flow monitors are measuring VOCs in the sweep and purge gases. In particular, the version of the flare management plan available to the public does not include any diagrams that would allow the public to determine whether the monitors are measuring the sweep and purge gases, since TCEQ has withheld the plan's Appendices A-B (which include a flow diagram, P&IDs, and flare tip drawings) on claims on confidentiality. If Valero is not measuring the purge and sweep gases (and thus not taking into account any VOCs from these gases in its emissions calculations), then Valero would be underestimating VOC emissions from the flares. EPA has already "agree[d] with the Petitioners that VOC emissions may be underestimated if . . . the flow monitors are not measuring all gases." Valero Houston Order at 41.

Although (as noted above) EPA stated that NESHAP Subpart CC's requirements for flow monitoring "may provide the information that the Petitioners highlight," EPA was clear that, "[i]f TCEQ is relying upon other requirements such as those found in the NSPS or NESHAP in order to assure compliance with the emission limits found in the MAERT, then the Permit must clearly state this connection and the permit record should provide a basis for this connection." Valero Houston Order at 42. TCEQ has failed to provide this connection in the permit(s) or explain the basis for the connection with respect to flow monitoring.

As discussed below, TCEQ now states that all gases entering the flares are measured by the flow monitors. RTC at PDF p. 59. That's not good enough: TCEQ has not revised the permit(s) to make clear that the flow meters/monitors measure all gases entering the flares. *See* Valero

[65] *See* Valero's 2019 Flare Management Plan at PDF p. 11 (discussing sweep and purge gases).

Houston Order at 35-36 ("While TCEQ does identify the monitoring that is being used in its RTC, that does not satisfy the requirement for the Permit itself (not merely a mention in the record) to 'set forth' monitoring requirements to assure compliance with permit terms and conditions.").

SO2. Attachment G to permit 2501A states the following on monitoring SO2 from the flares: "CEMS. H2S concentration measured in the vent gas. Continuous flow monitor record of the vent stream flow to the flare every 15 minutes, with hourly averages recorded." Attachment G also states this regarding calculating short-term SO2 emissions from the flares: "Mass emission rates are calculated using the H2S concentration and the vent flow rate to the flare." Also, as noted above, SC.38.F also provides for all pollutants from the flares:

> Hourly mass emission rates shall be determined and recorded using the above flow monitors, reduced sulfur analyzers, and composition analyzers readings and the emission factors used in the permit amendment application, PI-R dated February 8, 2012. The emission calculations are also referenced from the TCEQ publication titled "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" for MAERT compliance demonstration.
> Monitoring requirements and emission calculation information for the flares are identified in Attachment G.

Revised permit 2501A and the new proposed Title V permit cannot ensure compliance with the hourly and annual SO2 limits for the flares for four reasons.

First, permit 2501A does not require Valero to take into account all sulfur compounds when calculating SO2 emissions from the flares, which would result in underestimation of emissions. Instead, Attachment G only requires Valero to calculate SO2 emissions "using the H2S concentration and the vent flow rate to the flare." There are additional sulfur compounds beyond H2S that would add to SO2 emissions from the flares.

In response to our previous comments on the earlier draft Title V permit (the version before EPA objected to the permit), TCEQ stated that "Total Sulfur SOLAs are installed" on the flares, "providing continuous measurements of the…SO2 hourly emissions." Indeed, Valero's flare management plan states that each of the two flares has a "SOLA II Total Sulfur Analyzer" installed (Valero's 2019 Flare Management Plan at PDF pp. 21-22), and TCEQ revised permit 2501A's SC 38.F to specify that Valero is to use "reduced sulfur analyzers" (which are the same thing as "total" sulfur analyzers) to measure sulfur compounds from the flares. It makes no sense, then, that Attachment G only requires Valero to calculate SO2 emissions "using the H2S concentration." TCEQ must revise permit 2501A to require Valero to use the total/reduced sulfur analyzers in calculating SO2 emissions from the flares.

In its response to comments, TCEQ now states that it is an "inadvertent error" that Attachment G provides that Valero only uses H2S (and not total sulfur concentration) to calculate SO2 emissions. TCEQ, however, has failed to revise the permit to fix this error. *See* Valero Houston Order at 35-36 ("While TCEQ does identify the monitoring that is being used in its RTC,

that does not satisfy the requirement for the Permit itself (not merely a mention in the record) to 'set forth' monitoring requirements to assure compliance with permit terms and conditions.").

Second, TCEQ has not even attempted to resolve EPA's objection that the permits must identify any conversion efficiencies being used to calculate flare emissions: the permits still fail to specify a conversion efficiency for SO2.[66] Valero presumably uses an assumed conversion efficiency, *i.e.*, percentage of sulfur from the waste gases that is oxidized to SO2 in the flares. This is because the total sulfur SOLAs that (said TCEQ in its previous response to comments) are installed at the flares would necessarily be located at the flare inlets, upstream of the point where the waste gases pass through the flares and before the flares convert a certain percentage of the sulfur present in the waste gases to SO2.[67]

Permit 2501A's SC 38.F states that "emission calculations are…referenced from the TCEQ publication titled 'New Source Review (NSR) Emission Calculations – Sample Calculations for Flares' for MAERT compliance demonstration." That publication, assuming we found the correct one on TCEQ's website,[68] states (at page 8) that the emission factor for SO2 from flares should be "100 percent S in fuel to SO2." If this is the conversion efficiency that Valero is required to use (which is completely unclear from permit 2501A and the Title V permit), the permit itself must state this.

Third, as explained in our previous Title V petition (at 58-59), any assumed conversion efficiency that Valero is using in its calculations of SO2 emissions from the flares may be underestimating the percentage sulfur that is converted to SO2, thus underestimating the SO2 emissions. Unless Valero can prove that the actual conversion efficiency in the flares is different, for purposes of SO2 emissions calculations, Valero must be required to assume that 100 percent of the sulfur compounds in the flare waste gases are converted to SO2. In fact, as discussed above TCEQ's publication titled "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" requires the same.

EPA's Title V order specifically required TCEQ to justify any conversion efficiency to be used in the flare emission calculations, and TCEQ has failed to do this for SO2 from the flares. Thus, TCEQ has failed to resolve this objection from EPA.

Fourth, as discussed in our Title V petition (at 59), the method that TCEQ previously identified in its response to comments for monitoring and calculating SO2 emissions (Total Sulfur SOLAs) cannot ensure compliance with the flares' hourly and annual SO2 limits because the upper bound of total sulfur concentration that Valero's SOLAs can measure is too low. Valero's 2019 flare management plan indicates that the SOLAs (which the plan refers to as "high-range sulfur" monitors) can only measure sulfur in the waste gases at concentrations up to 5,000 ppmv. 2019 Flare Management Plan at Tables 3.5.1-2 (PDF pp. 21-22). Depending on the upstream units that

[66] Thus, EPA must take over the Title V permit as to this issue—as well as the flare SO2 monitoring issue that immediately follows this one.
[67] Relatedly, Attachment G states that, to calculate SO2 emissions, Valero measures H2S concentration in the "vent gas," which would also be upstream of the point where the waste gases pass through the flares. As discussed above, however, only measuring H2S to calculate SO2 emissions would result in underestimation of SO2 emissions.
[68] Petitioners believe TCEQ is referring to the document available here: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf.

are sending waste gases to the flares and other conditions at the refinery, however, the sulfur content of the gases could be far above 5,000 ppmv. For example, Dr. Sahu is aware of another refinery that has waste gases with total sulfur contents over 650,000 ppmv.[69] If the waste gases treated by Valero's flares have sulfur contents above the current 5,000 ppmv upper bound of the SOLAs, then Valero's calculations of SO2 emissions from the flares using the SOLAs' current span would be significantly underestimating the SO2 emissions. Since Valero may not know what the highest total sulfur concentration may be in each of the two flares' waste gases, the SOLA instruments should be set to a span of 1,000,000 ppmv, which could possibly be subsequently reduced based on data collected over a reasonable time period (no less than three years).

Strong monitoring and emission calculation provisions for SO2 from the flares are important because (among other reasons) the hourly SO2 limit for the flares shows that the flares can emit large amounts of SO2 over short periods of time—and that the flares' annual SO2 limit could easily be exceeded in any given rolling 12-month period. If the flares emitted at their 1,402 lbs/hour limit for just 170 hours (a little over seven days), they would emit 119.17 tons of SO2—above their annual limit of 115.6 tons/year.

CO. Attachment G states this regarding monitoring CO from the flares: "CEMS. Pilot flame presence monitored continuously (Special Condition 38.B). Continuous flow monitor and composition analyzer record of the vent stream flow and composition to the flare every 15 minutes, with hourly averages recorded (Special Condition 38.D.). Vent gas heat content is measured daily." Attachment G states this regarding calculating short-term CO emissions: "Measured flow rates and heating value are used to calculate the heat input in MMBtu/hr. TCEQ flare emission factor (lb/MMBtu) from 'Flares and Vapor Oxidizers (October 2000 RG-109) Table 4' is multiplied by the heat input to determine the mass emission rate."

Revised permit 2501A and the new proposed Title V permit cannot ensure compliance with the hourly and annual CO limits for the flares for six reasons.

First, TCEQ has failed to resolve EPA's objection that the permit(s) must identify any relevant emission factors.[70] EPA specifically objected that, for the flare "emission factors to be properly incorporated into the Permit, information necessary to identify their location must be included in the Permit." Valero Houston Order at 41. But the relevant lb CO/mmBtu emission factor alluded to in Attachment G for calculating CO emissions is unclear and (that Petitioners can tell) not publicly accessible. "Flares and Vapor Oxidizers (October 2000 RG-109)" does not appear to be available on TCEQ's website. Without seeing this guidance document, there is no way to know what the relevant emission factor is. The permit(s) must provide a link to any relevant guidance in the permit(s) and/or specify the relevant lb/mmBtu CO emission factor—the latter of which would be far preferable because it would provide more clarity in the permit as to how CO emissions are to be calculated.

Second, relatedly, TCEQ has not resolved EPA's objection that the permit(s) must identify the relevant emission factors because it is unclear from permit 2501A whether Valero is supposed

[69] That refinery installed a sulfur analyzer with a range up to 1 million ppmv. 2021 Sahu Decl. at ¶22.
[70] Thus, EPA must take over the Title V permit as to this issue—as well as the flare CO monitoring issue that immediately follows this one.

to use a CO emission factor from the 2000 guidance— "Flares and Vapor Oxidizers (October 2000 RG-109)"— or an emission factor from later guidance. Revised permit 2501A (at SC 38.F) states:

> Hourly mass emission rates shall be determined and recorded using the above flow monitors, reduced sulfur analyzers, and composition analyzers readings and the emission factors used in the permit amendment application, PI-R dated February 8, 2012.[71] The emission calculations are also referenced from the TCEQ publication titled 'New Source Review (NSR) Emission Calculations – Sample Calculations for Flares' for MAERT compliance demonstration.

This language conflicts with Attachment G. The 2000 guidance referenced in Attachment G and the guidance "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" referenced in SC 38.F—the latter of which was last updated in 2021 (not 2000)[72]—are two different guidance documents.

Further, "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" (at p. 8) lists four different CO emission factors for flares, depending on whether the flares are steam-assisted or not and whether they are "low Btu" or "high Btu." If Valero is supposed to be using an emission factor from this document, it is unclear which of these emission factors is the relevant one (though presumably one of the two emission factors for steam-assisted flares would apply, since this refinery's flares are steam-assisted).

Third, EPA has concluded that emission factors generally should not be used to determine compliance with emission limits because they reflect an average of emissions from different facilities. *See, e.g.*, *In the Matter of Tesoro Refining and Marketing*, Order on Petition No. IX-2004-6 ("Tesoro Order") at 32 (March 15, 2005). ("Because emission factors essentially represent an average of a range of facilities and of emission rates, they are not necessarily indicative of the emissions from a given source at all times; with a few exceptions, use of these factors… to determine compliance with permit requirements is generally not recommended."). Given that emission factors represent an average emission rate from different facilities, this means that roughly half of those facilities were emitting above the average and the other half of facilities emitting below the average. In other words, the CO emissions from Valero's flares could, at any given time, easily be much higher than emissions predicted by emission factors.

Fourth, relatedly, TCEQ has not explained (must less rationally explained) how the relevant CO emission factor (whatever that factor actually is) can accurately estimate emissions from the flares. Petitioners' previous petition argued that the relevant CO emission factor may be inadequate to ensure compliance (June 2021 Petition at 56), and EPA's order instructed TCEQ that "the permit and/or permit record should be updated to include TCEQ's justification for why

[71] As we explained in our previous Title V petition (at 54) and EPA noted (Valero Houston Order at 40), not even TCEQ could locate the emission factors from Valero's "permit amendment application."

[72] TCEQ appears to be referring to this document when it refers to "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares"— https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf. Again, as discussed above, the permit(s) must, at the least, provide a link for any relevant guidance and emission factors.

the monitoring is adequate to demonstrate compliance with the emission limits"—and that, "when a state receives public comments raising legitimate challenges to the sufficiency of [a] monitoring provision, the EPA expects TCEQ to engage with these comments and explain the basis for its decisions." Valero Houston Order at 62. TCEQ has failed to do this for the relevant CO emission factor (again, it is unclear what the relevant emission factor even is), and thus TCEQ has failed to resolve this objection by EPA.

Fifth, even if emission factors could ensure compliance with the CO limits (they cannot), if the CO emission factor that Valero is supposed to use is originally from AP-42 and from before 2015, this old, non-updated emission factor cannot ensure compliance with the flare CO limits, as we explained in our previous Title V petition (at 56). In 2015, EPA updated emission factors for CO emissions from flares because the old emission factors yielded inaccurate emissions results.[73] If Valero uses an old, pre-2015 version of the CO emission factors, this non-updated version of AP-42 emission factors cannot possibly ensure compliance with the flares' hourly and annual CO limits.[74] Even the updated CO emission factor for flares is rated "poorly" for representativeness. *See* AP 42, Fifth Edition, Volume I ("AP-42"), Chapter 13.5, Table 13.5-2.

Sixth, measuring vent gas heat content daily, as required by Attachment G, is not sufficient to ensure compliance with the hourly and annual CO limits—especially the hourly limits. Vent gas heat content can change over short periods of time. If there are spikes in heat content during periods other than the one small portion of each day when Valero measures heat content, this would result in higher CO emissions than Valero is estimating. Vent gas heat content can easily be measured on a 15-minute basis using composition data that Valero is already required to measure on a 15-minute basis for calculating the flares' VOC emissions.

Strong monitoring and emission calculation provisions for CO from the flares are important because (among other reasons) the hourly CO limit for the flares shows that the flares can emit large amounts of CO over short periods of time—and that the flares' annual CO limit could easily be exceeded in any given rolling 12-month period. If the flares emitted at their 462.4 lbs/hour limit for just 605 hours, they would emit 139.88 tons of CO—above their annual limit of 139.5 tons/year.

NOx. Attachment G lists the same monitoring and calculation methods for NOx as it does for CO. Revised permit 2501A and the new proposed Title V permit cannot ensure compliance with the hourly and annual NOx limits for the flares for six reasons.

First and second, as with CO from the flares, (1) the relevant lb/mmBtu emission factor alluded to in Attachment G for calculating NOx emissions is unclear and apparently not publicly accessible, and (2) given conflicting language in SC 38.F, it is unclear from permit 2501A whether Valero is supposed to use a NOx emission factor from the 2000 guidance—"Flares and Vapor Oxidizers (October 2000 RG-109)"—or an emission factor from later guidance.

As with CO, the later guidance identified in SC 38.F, "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares," lists (at p. 8) four different "thermal"

[73] *See* https://www.epa.gov/air-emissions-factors-and-quantification/new-and-revised-emissions-factors-flares-and-new-emissions

[74] Available at: https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_02-05-18.pdf

NOx emission factors for flares, depending on whether the flares are steam-assisted or not and whether they are "low Btu" or "high Btu." The guidance "New Source Review (NSR) Emission Calculations – Sample Calculations for Flares" also lists (at p. 8) a separate NOx emission factor for "fuel" NOx. If Valero is supposed to be using an emission factor from this document, it is unclear which of these emission factors is the relevant one.

Thus, TCEQ has failed to resolve EPA's objection that the permit(s) must identify any relevant emission factors. *See* Valero Houston Order at 41 ("For these [flare] emission factors to be properly incorporated into the Permit, information necessary to identify their location must be included in the Permit.").

Third, as with CO from the flares, emission factors should not be used to determine compliance with emission limits because they reflect an average of emissions from different facilities.

Fourth, TCEQ has not explained (much less rationally explained) how the NOx emission factor can accurately estimate emissions from the flares. Petitioners' previous petition argued that the relevant NOx emission factor was inadequate to ensure compliance (June 2021 Petition at 59), and EPA's order instructed TCEQ that "the permit and/or permit record should be updated to include TCEQ's justification for why the monitoring is adequate to demonstrate compliance with the emission limits"—and that, "when a state receives public comments raising legitimate challenges to the sufficiency of [a] monitoring provision, the EPA expects TCEQ to engage with these comments and explain the basis for its decisions." Valero Houston Order at 62. TCEQ has failed to do this for the relevant NOx emission factor (again, it is unclear what the relevant emission factor even is), and thus TCEQ has failed to resolve this objection by EPA.

Fifth, even if emission factors could ensure compliance with the NOx limits (they cannot), if the emission factor for NOx that Valero is using is originally from AP-42, the AP-42 emission factor for NOx from flares is outdated and inaccurate, as we explained in our petition (at 59). In particular, the AP-42 NOx emission factor is based on limited testing of propylene flares of very small sizes in the early 1980s.[75] Those flares tested almost 40 years ago bear no resemblance to the flares located at Valero's refinery, which do not burn only propylene.

Sixth, as with CO from the flares, measuring vent gas heat content daily, as required by Attachment G, is not sufficient to ensure compliance with the hourly and annual NOx limits—especially the hourly limits. Vent gas heat content can change over short periods of time. If there are spikes in heat content during periods other than the one small portion of each day when Valero measures heat content, this would result in higher NOx emissions than Valero is estimating. As noted above, vent gas heat content can easily be measured on a 15-minute basis using composition data that Valero is already required to measure on a 15-minute basis for calculating the flares' VOC emissions.

Strong monitoring and emission calculation provisions for NOx from the flares are important because (among other reasons) the hourly NOx limit for the flares shows that the flares

[75] *See* AP 42 Chapter 13.5, Table 13.5-1 (stating NOx emission factor based on tests using crude propylene containing 80% propylene and 20% propane and citing 1983 flare efficiency study from "Reference 1").

can emit large amounts of NOx over short periods of time—and that the flares' annual NOx limit could easily be exceeded in any given rolling 12-month period. If the flares emitted at their 64.02 lbs/hour limit for just 605 hours, they would emit 19.37 tons of NOx—above their annual limit of 19.30 tons/year.

While the Valero flares are subject to certain NESHAP and NSPS requirements, these alone cannot ensure compliance with the very specific hourly and annual limits in the MAERT, given all the problems discussed above. Importantly, nothing in the permit or permit record ties the NSPS or NESHAP requirements to specific VOC, CO, SO2, or NOx hourly or annual emission rates or the MAERT flare limits or explains how the NSPS or NESHAP monitoring can be used to determine specific, actual emissions of the various pollutants listed in the MAERT for the flares. Further, these NESHAP and NSPS provisions do not include any limits for the pollutants listed in the MAERT.

1. EPA should require the monitoring and emission calculation requirements for the flares to be revised in specific ways.

To remedy the above-described problems and ensure compliance with the hourly and annual VOC, SO2, CO, and NOx limits for the flares, EPA should require the Title V permit and/or permit 2501A to be revised as follows:

- As EPA has already noted, the permit must specify any assumed conversion efficiency that Valero uses in its calculations of SO2 emissions, as well as clearly identify the emission factors Valero is using to calculate CO and NOx emissions.

- As EPA has also already noted, any conversion efficiency for SO2 and the emission factors for CO and NOx from the flares must be justified in the permit record.

- With regard to VOC emissions from the flares, the easiest and best way to remedy these problems is to require Valero to directly monitor the flare VOC emissions using techniques such as extractive sampling (followed by analysis) or via Video Imaging Spectral Radiometry (VISR), using a product such as MANTIS.[76] Directly monitoring in this way would result in more accurate VOC emissions estimates than emissions calculated using assumed destruction efficiencies. Using assumed destruction efficiencies cannot account for the variability of flare VOC emissions that can result when actual VOC destruction efficiencies vary unpredictably from the constant value assumed for calculation purposes. Thus, direct monitoring is the method most likely to ensure compliance with the flares' MAERT limits for VOCs.

- If EPA chooses not to require direct monitoring for VOCs (it should), the permit(s) must, at the least, require Valero's VOC emission calculations to use much lower destruction efficiencies (at the very highest, 93.9%)[77] for any 15-minute period

[76] https://www.providencephotonics.com/flare-monitoring.

[77] As part of the rulemaking for the petroleum refinery sector NESHAP risk and technology review, EPA —before the 2015 Subpart CC requirements (including the minimum combustion-zone net heating value from §63.670(e))

when Valero is not meeting the combustion zone net heating value requirement from 40 C.F.R. § 63.670(e) or other operating limits from § 63.670.[78] The 99% destruction efficiency for lighter compounds that the permit currently calls for must not be allowed to be used in calculations—and 98% destruction efficiency should instead be required to be used in emissions calculations for lighter compounds, except for those periods when Valero is not meeting the combustion zone net heating value requirement from 40 C.F.R. § 63.670(e), visible emission requirement from § 63.670(c) or other operating limits from § 63.670 (when a much lower destruction efficiency must be required to be used).

- If EPA chooses not to require direct monitoring for VOCs, the permit(s) must also ensure that Valero measures both (a) all VOCs coming into the flare inlet, not just some subset of VOCs (such as only "highly reactive" VOCs"); and (b) all gases coming into the flare inlet, including sweep and purge gases.

- The permit(s) must require Valero to take into account all sulfur compounds—not just H2S—when calculating SO2 emissions from the flares.

- Also regarding SO2, Valero must assume that all (*i.e.*, 100%) of the total sulfur compounds in the waste gases being treated by the flares are converted to SO2. The permit(s) must also require Valero to ensure that its total sulfur SOLAs do not have an upper measurement bound that is below the possible sulfur content of the waste gases entering the flare. If the SOLAs are currently not capable of measuring the actual sulfur concentrations of the waste gases because of an insufficiently lower upper bound of the measurement range, then Valero must be required to set the span value of the SOLAs at a level that will for sure be capable of measuring all sulfur entering the flares, *i.e.*, have a span value of 1,000,000 ppmv. Based on the measured sulfur concentration values, the span value could be subsequently reduced if data collected over a reasonable time period, not less than three years, shows that sulfur values are below 1,000,000 ppmv.

- For CO from the flares, the permit(s) should, at a minimum, require that emissions calculations use an emission factor value that is the highest measured value from the limited testing done to support the current EPA AP-42 emission factor for CO instead of the AP-42 factor itself.

- Similarly, for NOx from the flares, the permit(s) should, at a minimum, require that emissions calculations use an emission factor value that is the highest measured value from the limited testing done to support the current EPA AP-42 emission

were promulgated—evaluated test data for 38 steam-assisted flares submitted by the American Petroleum Institute, National Petrochemical and Refiners Association, and the American Chemical Society, and determined their average destruction efficiency was 93.9%. EPA, Petroleum Refinery Sector Rule: Flare Impact Estimates, 5 (Jan. 16, 2014).

[78] Like failure to meet the minimum combustion zone net heating value from §63.670(e), opacity violations from flares also signal that desired destruction efficiencies are not being achieved. 2021 Sahu Decl. ¶28.

factor for NOx instead of the AP-42 factor itself, which is clearly inapplicable here.

- To calculate CO and NOx emissions, the permit(s) must require Valero to measure heat content in the vent gas on a 15-minute basis. Valero could do this using composition data that Valero is already required to measure on a 15-minute basis.

Strong monitoring and reporting requirements for these flares—including direct monitoring of VOC emissions—are especially important for several different reasons. First, as shown by the flare's annual limits, these units emit large amounts of ozone precursors (NOx and VOCs) and fine particulate matter precursors (NOx and SO2). Ensuring that ozone precursors from the flares remain below the permitted limits is especially important given that the Houston region is designated nonattainment for the ozone NAAQS. Second, the flares have had regular compliance problems, as shown by the flares' struggles to comply with the minimum combustion-zone net heating value requirement from 40 C.F.R. § 63.670(e).

Third, as discussed above, environmental justice concerns here counsel in favor of strong monitoring and emission calculation requirements for the flares. In particular, strong monitoring of VOC emissions from the two flares is necessary to protect community members living in the densely-populated neighborhoods near Valero's refinery—neighborhoods that were, up until recently, on an Air Pollution Watch List for benzene[79]—from the harmful effects of this hazardous air pollutant. Valero previously indicated that, at least in 2004-05, benzene emissions constituted, on average, 1.23% of the VOCs emitted by the flares. *See* Aug. 2007 MSS Application at Table G-1[80] ("Benzene emissions were based on the average fraction of benzene in the total VOC combustion reported in 2004-2005 EI, 1.23%"). If that same percentage still applies today, permit 2501A allows the flares to, combined, emit over three pounds of benzene every hour (1.23% of the flares' combined hourly VOC limit of 255 lbs/hour) and 4.834 tons of benzene per year (1.23% of the flares' combined annual VOC limit of 393.3 tons/year). And any VOC emissions above the MAERT limits would only increase the benzene that the nearby communities are exposed to. To ensure that there is no increased exposure and risk from benzene emissions from these flares, direct VOC monitoring is needed. *See* Granite City Order at 4-6 (because of "potential environmental justice concerns," "[f]ocused attention to the adequacy of monitoring and other compliance assurance provisions [was] warranted").

Fourth, strong monitoring and emission calculation methods are also important because, as discussed above, the hourly limits for the various pollutants emitted by the flares show that the flares' annual limits for those pollutant could be exceeded in any given rolling 12-month period. *See* 2021 Sahu Decl. at ¶29 (discussing SO2).

Although Valero has a flare gas recovery system, permit 2501A does not actually require that the system be operated. Valero's 2019 flare management plan (at PDF p. 25) states that the recovery system is not operated during maintenance (for an average of 14 days a year) or when the system is shut down (for an average of 52 days a year). Thus, gases are sent to the flares (and not the recovery system), on average, over nine weeks a year. Not only is this approximately 18% of the time, on a gas volume basis it represents substantial quantities of gases that are allowed to

[79] https://www.tceq.texas.gov/toxicology/apwl/list.html.
[80] This application is attached to our present petition as Exhibit N.

be flared. March 2019 Sahu Decl. ¶18. Further, as also shown by Valero's 2019 flare management plan, the flare recovery system is ineffective, even when it is in use. The plan (at PDF p. 13) indicates that it is possible that the system, when it is actually used, may not have sufficient capacity to handle all instances of leaking pressure relief devices, stating: "*If the PRD were to relieve to the flare in sufficient quantity to exceed the capacity of the FGRU*, operational monitoring will be utilized to determine the source of the flaring and determine the corrective action." (Emphasis added).

2. TCEQ's response to comments is inadequate to address the problems with the permit's monitoring and emission calculation requirements for the flares.

TCEQ's response to comments cannot resolve the problems that Petitioners identified, in their comments on the revised Title V permit, regarding the monitoring and emission calculation methods for the flares:[81]

- TCEQ states that "conditions 3, 5, 6, 38, 40, 44, 66 lists the MRRT requirements for the flares that are sufficient to demonstrate compliance with the applicable requirements." RTC at PDF p. 57. TCEQ fails to explain how any of these provisions can ensure compliance with 2501A's very specific hourly and annual limits for the flares or how these conditions somehow resolve the problems we discuss above.

  Regardless, these special conditions cannot ensure compliance with those limits. Special Conditions 3-5 only generally list the various NSPS and NESHAP Subparts (without detailing any of the specific provisions of those Subparts) that are applicable to all the various units and processes covered by Permit 2501A, and they do not list any provisions specific to the flares. As discussed above, the specific NSPS and NESHAP provisions applicable to the flares cannot ensure compliance with the lbs/hour and annual limits applicable to the flares through permit 2501A. (Thus, the fact that TCEQ revised permit 2501A to include all applicable requirements from NSPS Subpart Ja and NESHAP Subpart CC, RTC at PDF p. 57, is irrelevant.)

  SC 6 focuses on hydrogen sulfide from refinery fuel gas—not the flare limits at issue in this petition. SC 38, which does discuss flare monitoring, is also inadequate, for all the reasons discussed above. SC 40 only deals with occasional inspections and observations, which can in no way ensure compliance with the specific limits at issue here. SC 44 authorizes higher emissions from certain units during periods of maintenance, startup and shutdown. And SC 66 only requires "semiannual reports as described in 40 CFR Subpart A, paragraph 60.7."

[81] TCEQ's RTC goes on for pages and pages with responses that, for the most part, in no way attempt to actually address the problems that EPA identified in its Title V order and that Petitioners identified in their comments on the revised permit. The same is true for the monitoring for all the other units at issue in this petition. That TCEQ has done this—thus forcing Petitioners to address these non-responses in this petition—is antithetical to the Title V notice-and-comment, public participation process.

- TCEQ states that "flare units are equipped with a CEMS to continuously monitor CO, SO2, NOx and O2." RTC at PDF p. 58. TCEQ is presumably referring to units upstream of the flares, since the flares themselves are not equipped with CEMS. Monitoring at other units (upstream of the flares or not) cannot possibly ensure compliance with the flares' limits.

- TCEQ also repeats the same non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 25-27, these boilerplate responses in no way resolve the inadequacy of the monitoring here.

We address the rest of TCEQ's (non-)response to comments pollutant-by-pollutant:

VOCs. As noted above, TCEQ has not even attempted to resolve EPA's objection that TCEQ must specify in the permit(s) which VOCs are monitored by the composition analyzers. Nor does TCEQ substantively address Petitioners' argument that Valero must not be allowed to assume 98 percent destruction for these periods when the flares are not complying with the 40 C.F.R. § 63.670 flare operating requirements.

TCEQ states: "Regarding the assumed VOC destruction/removal efficiency (DRE) of the flares, TCEQ's practice is based on longstanding guidance that, when properly operated in accordance with permit requirements and the provisions of 40 CFR § 60.18, 99 percent DRE should be attained for compounds up to three carbons, and 98 percent DRE for compounds with four or more carbons." RTC at PDF p. 60. As discussed above, not even compliance with the updated flare operating requirements from § 63.670 can result in 99 percent destruction of VOCs. As noted above, EPA recently discussed in detail why TCEQ is improperly allowing sources to assume 99 percent destruction from flares. *See* July 15, 2024 Ltr. from D. Garcia to C. Chism at PDF p. 2.[82] EPA's conclusions and reasoning there apply equally here.

Further, compliance with § 60.18 cannot ensure 98 percent reduction in VOCs, as EPA has found in multiple rulemakings starting with the 2014-15 refinery NESHAP risk and technology review. *See, e.g.,* 79 Fed. Reg. at 36,905 ("Recent studies on flare performance . . . indicate that these General Provision requirements are inadequate to ensure proper performance of refinery flares, particularly when assist steam or assist air is used."); 80 Fed. Reg. at 75,189 (agreeing "that studies have shown that many refinery flares are operating less efficiently than 98 percent").

TCEQ also asserts that the flares are "compliant with" NESHAP Subpart CC. RTC at PDF p. 57. TCEQ ignores the problems (discussed above) the flares have experienced complying with the § 63.670 operating limits. Further, TCEQ provides no evidence that the flares are currently in compliance with these requirements.[83]

In addition, as discussed above, TCEQ states that all gases entering the flares are measured by the flow monitors. RTC at PDF p. 59. But TCEQ has failed to revise the permit(s) to make clear

[82] https://www.epa.gov/system/files/documents/2024-07/2024.07.15.epa-comments-on-tceq-flare-assumptions.pdf.
[83] As noted above, TCEQ has failed to post the refinery's Subpart CC compliance reports from recent years in the Commission's Records Online database.

that the flow meters/monitors must measure all gases entering the flares. *See* Valero Houston Order at 35-36 ("While TCEQ does identify the monitoring that is being used in its RTC, that does not satisfy the requirement for the Permit itself (not merely a mention in the record) to 'set forth' monitoring requirements to assure compliance with permit terms and conditions.").

SO2. TCEQ has not even attempted to three of Petitioners' four arguments regarding why the monitoring and emission calculation methods for SO2 from the flares are inadequate.

Regarding the problem that permit 2501A does not require Valero to take into account all sulfur compounds when calculating SO2 emissions from the flares, TCEQ states that, "due to an inadvertent error . . , Total Sulfur concentration (and not H2S) and vent flow rate to the flare are measured to calculate mass emission rates." RTC at PDF p. 59. As discussed above, this does not fix this problem, since TCEQ has failed to revise the permit to make clear that Valero must take into account all sulfur compounds. *See* Valero Houston Order at 35-36 ("While TCEQ does identify the monitoring that is being used in its RTC, that does not satisfy the requirement for the Permit itself (not merely a mention in the record) to 'set forth' monitoring requirements to assure compliance with permit terms and conditions.").

CO and NOx. TCEQ failed to address any of Petitioners' arguments regarding why the monitoring and emission calculation methods for CO and NOx from the flares are inadequate.

C. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the Hourly and Annual VOC Limits for the DAF Unit.

EPA's Title V order directed TCEQ as follows regarding the DAF unit from the refinery's wastewater treatment system:

> TCEQ must revise the Permit to include monitoring sufficient to demonstrate compliance with the hourly and annual VOC emission limits including what test methods and calculation procedures are required. TCEQ should consider whether additional direct or parametric monitoring, such as hourly monitoring of throughput, would be necessary to assure ongoing compliance with the hourly VOC emission limits . . . Further, TCEQ must amend the permit record to include the rationale to demonstrate that the monitoring, recordkeeping, and reporting is sufficient to assure compliance with the hourly and annual VOC emission limits.

Valero Houston Order at 45. EPA's order also stated: "In its response, TCEQ stated that VOC emission rates are calculated based on continuous influent flow. However, TCEQ failed to identify where in the Permit there is a requirement to install and maintain a continuous influent flow monitor." *Id.* at 44.

Permit's 2501A's Attachment G provides this regarding monitoring VOCs from the DAF unit: "Monthly samples to determine the VOC concentration in the wastewater and the measured average monthly wastewater flow rate are obtained per Special Condition 37." And this regarding calculating short-term VOCs: "Monthly VOC concentration and flowrate input to existing

Toxchem model."[84] In addition, SC 37 of permit 2501A provides: "Wastewater grab samples shall be taken at least monthly to determine the VOC concentration in the wastewater. The samples shall be taken in a representative portion of the wastewater stream upstream and downstream of the Dissolved Air Floatation Unit (DAF). The wastewater VOC concentrations and flow rates shall be used to demonstrate compliance with the allowable emission rates. Sampling procedures shall be approved by the TCEQ Regional Director."

As Petitioners' comments explained (Sept. 2023 Comments at 37-41), the new revised Title V permit and revised permit 2501A still do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with hourly and annual VOC limits for the DAF unit. Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the proposed Title V permit's monitoring, emission calculation, and other requirements cannot ensure compliance with permit 2501A's 5.51 lbs/hr and 24.15 tons/year VOC limits for the DAF unit.[85] *See* Permit 2501A MAERT at "DAF Unit" under the heading "Wastewater"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating March 22, 2023 version 2501A into the Title V permit).

Revised permit 2501A and the proposed Title V permit cannot ensure compliance with the DAF unit's VOC limits for seven reasons:

First, monthly sampling of VOC concentration cannot ensure compliance with the hourly limit—or the annual limit either. As we explained in our previous petition (at pages 68-69) and as Dr. Sahu explained in his March 2019 declaration (at ¶¶ 37-39), influent concentration can change quickly and frequently and affect VOC emissions from uncovered DAF units, such as Valero's.[86] As we also explained in our previous petition (at 70) and Dr. Sahu's March 2019 declaration (at ¶ 42), daily sampling must instead be required to establish the VOC concentration at the influent to the DAF unit. If daily sampling shows that VOC concentrations are relatively constant (*i.e.*, they don't vary by more than a specified, rational, and justified percentage from day to day), then the frequency of sampling could be reduced to weekly.

EPA too has recognized, as noted in Table 7-5 of the agency's Emissions Estimation Protocol for Petroleum Refineries,[87] that there are several variables—including influent concentration, flow rate, temperature and wind speed—that can change quickly and frequently and affect VOC emissions from uncovered DAF units. See also March 2019 Sahu Decl.¶ 38. Depending on these "critical inputs" (as EPA calls them) variables and other time- and facility-specific variables (none of which are required to be measured or taken into account under the

[84] Attachment G says this about how annual emission rates are calculated: "Monthly VOC emission rates are summed on a rolling 12-month basis."
[85] Because permit 2501A lists certain monitoring or other related requirements for VOC emissions from the DAF unit but those requirements cannot ensure compliance with the unit's hourly and annual VOC limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.
[86] In the U.S., most refinery DAF units are covered and vented to control devices, which makes monitoring much easier, assuming the integrity of the cover is proper and that the monitoring is done at the outlet of the control device. March 2019 Sahu Decl. ¶36.
[87] Available here: https://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf.

proposed Title V permit and permit 2501A), the DAF unit's VOC emissions can and will vary greatly from hour to hour. March 2019 Sahu Decl. ¶¶34-39.

Regarding Toxchem, the model Valero uses to estimate emissions from the DAF unit, EPA, in a March 2022 Title V order, recognized that "[a]ccuracy of TOXCHEM is largely dependent on the accuracy of site-specific inputs…" *Order Granting Petitions for Objection to Permits, In the Matter of ExxonMobil Fuels & Lubricant Company, Baton Rouge Refinery, Reforming Complex and Utilities Unit*, Petition Nos. VI-2020-4, VI-2020-6, VI-2021-1, VI-2021-2 (March 18, 2022) ("Exxon Baton Rouge Order") at 34. Since monthly sampling of VOC concentration cannot accurately reflect the concentration, this means that Valero's TOXCHEM calculations will not be accurate.

As noted above, in its order objecting to the Title V permit for the Valero Houston refinery, EPA specifically instructed TCEQ to "consider whether additional direct or parametric monitoring, such as hourly monitoring of throughput, would be necessary to assure ongoing compliance with the hourly VOC emission limits." Valero Houston Order at 45. TCEQ has completely failed to do this. Thus, TCEQ has not "submit[ed] a permit revised to meet" EPA's objection on this issue, and EPA must take over the Title V permit regarding the frequency of sampling for VOC concentration.

Second, relatedly, TCEQ has not explained—much less rationally explained—how monthly monitoring of VOC concentration can assure compliance with the DAF unit's hourly and annual VOC limits. In the Exxon Baton Rouge Order, EPA recognized that, for VOCs from wastewater treatment units, the "necessary frequency of monitoring can . . . depend on the variability of emissions." Exxon Baton Rouge Order at 36. There, EPA concluded:

> [T]he Petitioners have demonstrated that the permit record is *unclear as to whether monthly monitoring of VOC concentrations is sufficiently frequent to assure compliance with the annual VOC emission limit*…It could be the case here that the decades of information at LDEQ's disposal indicate consistently low variability, such that more frequent sampling is not necessary. Or, it could be the case that this data show significant (albeit well-understood) variability, in which case more frequent sampling might be necessary. However, *without a clear explanation and supporting quantitative information from LDEQ, it is impossible to know*…Therefore, the EPA grants [this claim] because the permit record does not adequately justify LDEQ's decision to require monthly VOC sampling…

Id. at 36-37 (emphasis added). Here too, TCEQ has not provided a clear explanation or supporting quantitative data regarding variability of emissions to justify only requiring monthly VOC sampling.

As noted above, EPA specifically objected that "TCEQ must amend the permit record to include the rationale to demonstrate that the monitoring, recordkeeping, and reporting is sufficient to assure compliance with the hourly and annual VOC emission limits." Valero Houston Order at 45. TCEQ has not even attempted to provide this rationale, which also shows that EPA must take over the permit on the issue of the frequency of monitoring for VOC concentration.

Third, as we explained in our previous petition (at 68-70), the permit does not require Valero to use hourly flow measurements in its calculations, and thus the flow measurements are too infrequent to ensure compliance with the hourly VOC limit, as well as the annual limit. As noted above, flow rate can change quickly, and EPA has recognized in its Emissions Estimation Protocol for Petroleum Refineries that flow rate is a "critical input." Further, permit 2501A only mentions using "average monthly wastewater flow rate" in calculations, leaving it unclear how often flow is measured in the first place to determine the monthly average rate—despite EPA's order explicitly noting that "TCEQ failed to identify where in the Permit there is a requirement to install and maintain a continuous influent flow monitor."

Fourth, as we explained in our previous petition (at 68-70), the permit fails to require Valero to measure certain other critical inputs—much less measure them frequently enough. These inputs include temperature, total pressure, diffused air flow rate and wind speed, all of which should be measured at least hourly. Table 7-5 of EPA's Emissions Estimation Protocol for Petroleum Refineries notes that temperature, total pressure, wind speed and diffused air flow rate (and influent concentration and flow rate) are all "critical input" variables. As noted above, these variables can change quickly and frequently and affect VOC emissions from uncovered DAF units (such as Valero's). As also noted above, based on these time- and facility-specific variables, the DAF unit's VOC emissions can and will vary greatly from hour to hour. March 2019 Sahu Decl. ¶¶34-39. Because Valero is not required to take these variables into account when calculating VOC emissions from the DAF unit, the requirements from permit 2501A are inadequate to ensure compliance with both the hourly limit and the annual limit, especially for a source with such high VOC emissions. *Id.*

Fifth, as we also explained in our previous petition (at 69) and as explained in Dr. Sahu's March 2019 declaration (at ¶40), leaving it up to Valero to determine what is a "representative portion of the wastewater stream" for sampling VOC concentration is also inadequate to ensure compliance with the unit's limits. EPA has noted that "measuring VOC concentrations and flow rates at appropriate locations within the wastewater treatment train is important if these inputs to TOXCHEM and resulting VOC emissions are to be accurately quantified." Exxon Baton Rouge Order at 35. EPA added: "Without permit terms requiring the monitoring of VOC concentration and wastewater flow at appropriate locations *(*e.g.*,* upstream of key emission points), there can be no assurance that ExxonMobil is accurately quantifying emissions for purposes of demonstrating compliance with the VOC limits…" *Id.* Here too, the permit must require monitoring of VOC concentration at specific, appropriate points upstream—and also downstream—of the DAF unit.

Sixth, as we explained in our previous petition (at 70), the permit must identify whether Valero is using any emission factors or assumed destruction efficiencies in its VOC calculations for the DAF unit. If Valero uses inaccurate, outdated, or otherwise flawed emission factors or destruction efficiencies, those emission factors and/or assumed efficiencies must be updated so that they produce accurate emissions calculations.

Given the environmental justice concerns present here (as discussed above), strong monitoring requirements for VOCs from the DAF unit are especially important because the data that Valero submitted in response to the Information Collection Request ("ICR") for EPA's 2015

refinery NESHAP risk and technology review shows that the DAF unit is one of the largest sources of hazardous air pollutants at the refinery—listing it as emitting 1.36 tons/year of benzene, 1.08 tons/year of xylenes and 0.915 tons/year of toluene, among other HAPs.[88] Because benzene, xylenes and toluene are all VOCs, reducing VOCs from the DAF unit will also reduce these particular HAPs and other HAPs that are VOCs. March 2019 Sahu Decl. ¶34.

1. EPA must require the Title V permit and/or permit 2501A to be revised in specific ways to remedy the VOC monitoring and emission calculation problems for the DAF unit.

As our previous petition explained (at 70) and as discussed in Dr. Sahu's March 2019 declaration (at ¶ 42), to remedy these problems and ensure compliance with the DAF unit's hourly and annual VOC limits, EPA must require the Title V permit and/or permit 2501A to be revised in several specific ways: the permit(s) must require the continuous (at least hourly) measurement of the temperature, total pressure, wastewater flow rate, diffused air flow rate, and wind speed. In addition, daily sampling must be required to establish the VOC concentration at specific spots at the influent to—and downstream of—the DAF unit. If daily sampling shows that VOC concentrations are relatively constant (*i.e.*, they don't vary by more than a specified, rational, and justified percentage from day to day), then the frequency of sampling could be reduced to weekly. Using these "critical" inputs from Table 7-5 to EPA's Emissions Estimation Protocol for Petroleum Refineries and the other variables listed in that table, Valero should be required to calculate the hourly VOC emissions using Toxchem. The permit(s) must specify any emission factors or assumed destruction efficiencies that Valero uses to calculate VOC emissions. If Valero uses inaccurate, outdated, or otherwise flawed emission factors or destruction efficiencies, those emission factors and/or destruction efficiencies must be updated so that they produce accurate emissions calculations. Additionally, there must be rational explanation regarding how the monitoring and emission calculation methods for the DAF unit— including (but not limited to) the frequency of monitoring of VOC concentration—can assure compliance with the DAF unit's hourly and annual VOC limits.

2. TCEQ's response to comments is inadequate to resolve the problems with the permit's monitoring and emission calculation requirements for VOCs from the DAF unit.

TCEQ's response to comments does not resolve the problems with the monitoring and emission calculation methods for VOCs from the DAF unit. To begin with, it's important to note that TCEQ did not even attempt to address the six problems with the DAF monitoring and emission calculation methods discussed above, all of which we raised in our comments on the revised Title V permit.

[88] The data that Valero originally submitted to the ICR indicated that the DAF unit emitted 5.98 tons per year of benzene, but TCEQ's previous response to comments (at 72) stated that Valero later submitted a "rectified/corrected" number of 1.36 tons/year of benzene. TCEQ, on that same page of the previous response to comments, stated that Valero's "error impacted other DAF pollutants as well, and not just benzene," but TCEQ did not dispute that the ICR data listed the DAF unit at emitting 1.08 tons/year of xylenes and 0.915 tons/year of toluene (numbers that were listed in our original comments on the DAF unit's monitoring requirements).

TCEQ states that it "previously determined that the short-term emissions using the monthly VOC concentration, flowrate, and Toxchem model as specified in the table above satisfied BACT and ensure compliance with the hourly and annual emission rates." RTC at PDF p. 61. TCEQ ignores that, if the NSR permit's monitoring and emission calculation methods are insufficient to ensure compliance with that permit's limits, Title V requires TCEQ to supplement those methods with monitoring sufficient to ensure compliance with these NSR limits. *See, e.g.*, 40 C.F.R. § 70.6(c)(1); 42 U.S.C. §§ 7661c(a), 7661c(c). This is especially so when the public raises concerns with a previously-issued NSR permit's monitoring, as Petitioners have done here.

TCEQ also states: "Emission calculations and monitoring requirements to demonstrate compliance with PBR 106.4 and PBR 106.261 requirements are documented in application representation for Registered PBR 139439 that is accessible as WCC content ID 1234412, page 72 of 86 through 86 of 86." In this petition argument, however, Petitioners are not addressing the monitoring for these PBRs; Petitioners are pointing out the problems with the monitoring and emission calculation methods for the DAF unit's hourly and annual VOC limits from permit 2501A.

D. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the PM and Opacity Limits for Boilers 1-4.

EPA's Title V order objected as follows regarding monitoring for the PM and opacity limits for boilers 1-4:

> TCEQ is relying upon an initial stack test to demonstrate compliance with the hourly and annual PM limits and annual visual opacity monitoring to demonstrate compliance with the continuous opacity limit.
>
> Regarding opacity, the EPA has historically found that biannual and quarterly Method 9 visual observations are inadequate to assure compliance with opacity limits that apply continuously…TCEQ has not provided any justification for why a single visual observation conducted annually would be sufficient to determine compliance with an opacity limit that applies at all times or how that single observation would yield reliable data from the relevant time period that is representative of the source's compliance with the Permit…
>
> The Petitioners have also demonstrated that TCEQ has not provided sufficient justification for why an initial stack test without future mandated stack tests, or any apparent parametric monitoring, would be adequate for demonstrating compliance with hourly and annual PM emission limits. In its response, TCEQ cites to Permit No. 124424, Special Condition 23, noting that it limits future firing if the boilers are unable to reach the maximum firing rate during testing. However, TCEQ does not address whether the initial stack test resulted in any firing limitations. Additionally, if the initial stack test did not result in any limitations, TCEQ did not address how a single stack test with no additional stack testing required can ensure ongoing compliance with hourly and annual limits.

> TCEQ stated that the firing rate is an operational limitation. However, TCEQ does not provide what that operational limitation is nor where it would be found in the Permit or other document that is properly incorporated by reference.

Valero Houston Order at 48. EPA instructed TCEQ to "revise the Permit to include monitoring sufficient to determine compliance with the hourly and annual PM limits and the continuous opacity limit, including any parametric monitoring on which the state is relying to ensure compliance." *Id.* at 49.

In response to EPA's objections, TCEQ revised NSR permit 124424 to add SC 10.D, which provides: "Monitoring requirements and emission calculations information for the boilers are identified in Attachment A."[89] Attachment A states this about PM monitoring for the boilers: "Fuel gas heat content is measured daily. Fuel flow to the boiler is measured continuously." For calculation of short-term PM emissions, Attachment A states: "Measured flow rates and heating value are used to calculate the heat input in MMBtu/hr. A PM emission factor in lb/MMBtu determined from the stack test is multiplied by the heat input to determine the mass emission rate."[90] TCEQ added no new opacity monitoring for the boilers to permit 124424; SC 11 still provides only that opacity "shall be determined by the U.S. Environmental Protection Agency (EPA) Test Method 9 during the initial compliance testing and at least once per year thereafter." TCEQ has not revised permit 124424 since Petitioners submitted their September 2023 comments on these revised provisions. *See* Proposed Permit at p. 206 (incorporating Feb. 6, 2023 version of permit 124424).

The new proposed Title V permit and revised permit 124424 still do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with PM and opacity limits for boilers 1-4. Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the monitoring, emission calculation, and other requirements cannot ensure compliance with the hourly and annual PM2.5 and PM10 limits and opacity limits for boilers 1-4 (more commonly referred to in the permit materials as boilers 81BF01, 50BF02, 50BF03, and 50BF04), which are listed in NSR permit 124424.[91] *See* Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating Feb. 6, 2023 version of permit 124424 into the Title V permit).

Although the MAERT for the most recent version of permit 124424 (the version that TCEQ issued on February 6, 2023 in response to EPA's Title V order) is not publicly available on TCEQ's Records Online website, Petitioners assume that this most recent MAERT still has the same PM limits for the boilers as the previous version of permit 124424, issued in July 2020. The July 2020 MAERT included an annual PM2.5 limit of 30.41 tons/year, and identical PM and PM10 limits of

[89] Permit 124424 lists this condition as SC 10.E, but it should instead be 10.D: the permit skips from SC 10.C to 10.E.

[90] Attachment A says this about calculating annual PM emissions from the boilers: "Monthly emission rates are calculated as the sum of the hourly emission rates and monthly total are summed on a rolling 12- month average."

[91] Because permit 124424 lists certain monitoring or other related requirements for PM and opacity from the boilers but those requirements cannot ensure compliance with the PM and opacity limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.

30.41 tons/year, that applied collectively to boilers 1-4. Ex. O, July 2020 Version of Permit 124424. The July 2020 MAERT also included varying hourly PM limits—3.66 lbs/hr PM/PM2.5/PM10 for each of boilers 1-3 and 2.05 lbs/hr PM/PM2.5/PM10 for boiler 4. *Id.* SC 11 of the February 2023 version of permit 124424 lists an opacity limit of 5% averaged over a six-minute period for each of the four boilers. Ex. P, Feb. 2023 Version of Permit 124424. That limit applies at all times.

As Petitioners' comments explained (Sept. 2023 Comments at 41-46), new proposed Title V permit and revised permit 124424 cannot ensure compliance with the hourly and annual PM limits and opacity limit for the boilers for three reasons:

First, TCEQ has not even attempted to address EPA's objection that the Commission must "revise the Permit to include monitoring sufficient to determine compliance with . . . the continuous opacity limit"—or the objection that "TCEQ has not provided any justification for why a single visual observation conducted annually would be sufficient to determine compliance with an opacity limit that applies at all times." *See* Valero Houston Order at 48-49.[92] As EPA noted, it has previously concluded that biannual and quarterly Method 9 visual observations are inadequate to assure compliance with opacity limits that apply continuously. And here, Valero is required to conduct Method 9 observations less frequently than that—only once per year.

Further, visual opacity monitoring cannot be conducted at night or under weather conditions (*e.g.*, dark clouds) that make it impossible or difficult to detect visible emissions through observation. Thus, visual monitoring cannot ensure compliance with the continuously applicable opacity limit during these periods.

Second, TCEQ has not adequately addressed EPA's objections regarding the PM limits. As EPA put it, "TCEQ has not provided sufficient justification for why an initial stack test without future mandated stack tests, or any apparent parametric monitoring, would be adequate for demonstrating compliance with hourly and annual PM emission limits." Valero Houston Order at 48. EPA added: "[I]f the initial stack test did not result in any [firing rate] limitations, TCEQ did not address how a single stack test with no additional stack testing required can ensure ongoing compliance with hourly and annual limits." *Id.* And EPA instructed TCEQ to "revise the Permit to include monitoring sufficient to determine compliance with the hourly and annual PM limits . . . , including any parametric monitoring on which the state is relying to ensure compliance." *Id.* at 49.[93]

A lb/mmBtu emission factor determined by initial stack testing cannot possibly ensure compliance with the annual PM limits, much less the hourly PM limits, for the same reasons that initial testing alone cannot ensure compliance with these limits. As we explained in our previous petition (at 73, citing Dr. Sahu's March 2019 declaration at ¶¶ 43-45), boiler performance degrades over time. Thus, the boilers' lb/mmBtU emission rates have surely changed since the initial testing,

[92] Thus, EPA must take over the Title V permit as to the boilers' opacity monitoring.
[93] TCEQ has "fail[ed]" to "submit a permit revised to meet" EPA's objections as to the boilers' PM monitoring. Thus, 42 U.S.C. § 7661d(c) requires EPA to take over the Title V permit as to the boilers' PM monitoring.

which occurred years ago[94]—and permit 124424 allows previous stack testing (*i.e.*, before the time 124424 was issued to authorize construction of boiler 4 and other units) to satisfy the requirement for initial testing. *See* Permit 124424 at SC 23.B-C. Nor has TCEQ explained (or even attempted to explain, despite our comments on this issue) how an emission factor determined by initial stack testing can ensure compliance with the boilers' PM limits. An emission factor from initial stack testing (and annual visual observations) cannot substitute for the use of CEMS and more frequent stack testing.

As quoted above, in its objection on the boilers monitoring and emission calculation methods, EPA stated:

> In its response, TCEQ cites to Permit No. 124424, Special Condition 23, noting that it limits future firing if the boilers are unable to reach the maximum firing rate during testing. However, TCEQ does not address whether the initial stack test resulted in any firing limitations…
>
> TCEQ stated that the firing rate is an operational limitation. However, TCEQ does not provide what that operational limitation is nor where it would be found in the Permit or other document that is properly incorporated by reference.

Valero Houston Order at 48. TCEQ has again dodged this issue. Rather than addressing whether there is any operational firing rate limitation or identifying it in the permit, the Commission opaquely stated:

> Maximum firing rate limitations are not necessary to be included in the NSR permit since the initial stack testing for these units has already occurred and the test dates are documented in NSR Permit 2501A SC 55.C. In addition, the test boiler firing rates were included in the stack testing reports which are accessible to the public.

8/18/23 TCEQ Resp. to EPA Objection at 8. If the boilers have any firing rate operational limitations, this must be clearly stated in the permit. Given TCEQ's August 2023 response and given that TCEQ has not addressed this issue at all in its response to comments, Petitioners assume that the boilers have no firing rate operational limitations.

Third, even if a lb/mmBtu emission factor from testing years ago could ensure compliance (it cannot), measuring fuel gas heat content daily is too infrequent to ensure compliance with the boilers hourly and annual PM limits. This is especially so when the hydrogen content of fuel gas varies over a short time, which happens periodically. Instead, the boilers' fuel gas heat content should be measured at the same frequency that Valero measures heat content for its process controls (in no case less frequently than once per day).

[94] As we explained in our previous petition (at 72), TCEQ issued permit 124424 in May 2016 to authorize Valero to construct a new alkylation unit and other units, including boiler 4. Boilers 1-3 already existed at that time.

As we explained in our previous petition (at 74-75), strong PM monitoring requirements for the boilers (in particular boiler no. 4) are especially important to confirm that the PM emissions increases resulting from the alkylation unit expansion project that TCEQ authorized in permit 124424 do not trigger major PSD. Both TCEQ and Valero stated that the PM2.5 emissions increase resulting from the alkylation project would be 9.32 tons/year and that the resulting PM10 increase would be 10.88 tons/year—and Valero's application states that new boiler No. 4 would be responsible for the overwhelming majority of that increase, with projected PM2.5 and PM10 emissions of 8.96 tons/year.[95] These numbers are very close to the applicable major source thresholds for triggering the need to conduct a netting test for major PSD applicability—10 tons/year PM2.5 and 15 tons/year PM10. *See* 40 C.F.R. § 51.166(b)(23). In addition, Valero based its PM emissions-increase calculations on only 75% of the relevant AP-42 emission factors, claiming that stack testing for identical units supported the use of this lower emission factor. Adequate monitoring is particularly necessary to confirm that the real-world emissions from the boilers justify the use of this reduced emission factor.

(With respect to the alkylation unit/boiler 4 project, the requirements from 30 TAC § 116.127 that Valero calculate and maintain a record of the annual emissions, in tons per year, on a calendar year basis for either five or 10 years—and report if annual emissions from the project exceed the baseline emissions by a significant amount—are themselves applicable requirements under Title V because they are "requirement[s] provided for in the applicable implementation plan." *See* 40 C.F.R. § 70.2's definition of "applicable requirement"; 30 TAC § 122.10(2). Thus, the proposed Title V permit must ensure compliance with these requirements, but it fails to do so for the same reasons that it fails to ensure compliance with the PM limits from permit 124424.).

1. EPA should require the Title V permit and/or permit 124424 to be revised to mandate the use of PM CEMS at the boilers, among other things.

As we explained in our previous petition (at 75) and as discussed in Dr. Sahu's March 2019 declaration (at ¶ 48), to remedy the above problems with monitoring for the boilers' hourly and annual PM limits and the continuously applicable opacity limit—and to ensure that the alkylation/boiler 4 project does not result in the need to conduct the netting test for major PSD applicability (and thus ensure compliance with the requirements from 30 TAC § 116.127)—EPA should require the Title V permit and/or permit 124424 to be revised as follows:

- Require PM CEMS and continuous flow and temperature measurements for compliance with the filterable portions of Valero's PM limits.

- Because PM CEMS only measures filterable PM: (a) require annual stack testing for condensable PM; (b) establish a filterable/condensable ratio from the most recent stack test (or as an average of the results from the most recent test and all prior tests, as these tests begin to accumulate over time); (c) establish hourly filterable and condensable operating limits that reflect the relative proportions from the most recent stack test (or the average across tests discussed in (b) above); and

[95] We attached Exhibits 17-18 to our previous Title V petition in support of the statements in this particular paragraph. We refer EPA to these exhibits to our previous petition.

(d) require Valero to meet those filterable and condensable operating limits as shown by hourly PM CEMS results.[96]

2. TCEQ's response to comments is inadequate to resolve the problems with the permit's monitoring for PM and opacity from boilers 1-4.

TCEQ's response to comments does not resolve the problems with monitoring for PM and opacity from boilers 1-4. To begin with, it's important to note that TCEQ did not even attempt to substantively address any of the problems with the boilers' monitoring discussed above, all of which we raised in our comments on the revised Title V permit.

TCEQ states: "MRRT requirements to demonstrate compliance with PM and PM opacity requirements under NSPS Db are . . . documented in the ARS table." RTC at PDF p. 61. To the extent TCEQ is asserting that the NSPS Db requirements can somehow ensure compliance with permit 124424's PM and opacity limits for boilers 1-4, these NSPS requirements can in no way ensure compliance with these limits since nothing in the permit or permit record ties the NSPS requirements to specific, actual PM emission rates or opacity levels or to the permit's very specific PM and opacity limits. In its Title V order, EPA clearly stated: "To the extent that TCEQ is relying on the requirements of NSPS Db to demonstrate compliance with the PM limits found in NSR Permit 124424 . . . , the Permit must clearly state this connection and the permit record must provide a basis for this connection." Valero Houston Order at 49. TCEQ has not even attempted to provide this connection.

TCEQ also repeats the same non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 26-27, these boilerplate responses in no way resolve the inadequacy of the monitoring here.

E. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with Hourly Annual VOC Limits for Fugitive Emissions.

In objecting to the monitoring and emission calculation methods for permit 2501A's hourly and annual VOC limits for fugitive emissions, EPA concluded:

> After reviewing these [permit] conditions, the EPA finds that they do not provide clarification on how the VOC emissions are calculated. Specifically, Special Conditions 3 through 5 only list general NSPS and NESHAPs that are applicable to the facility but neither the Permit nor permit record provide details on how they are used to demonstrate compliance with the NSR Permit 2501A emission limits. Condition 39 cites requirements for a leak detection and repair program and does contain calculations for determining VOC emissions [but the calculation methods are] limited only to components on a delay of repair list, not to all components likely to leak. Conditions 40 and 45

[96] If these particular boilers complied with these CEMS and stack testing requirements, they may not need separate monitoring for the opacity limit. But any monitoring less stringent than what Petitioners discuss above would mean that Valero would need to continuously monitor opacity from the boilers (which would not address assuring compliance with the PM limits though).

> provide additional monitoring requirements but either do not include VOC emissions or are limited to the subset of piping and components that require repairs.

Valero Houston Order at 50. EPA added: "…TCEQ does have a fugitive guidance document for the chemical sector. If TCEQ is relying upon this document for the source to use to demonstrate compliance with the VOC limits, then that needs to be clearly cited in the Permit." *Id.* at 51 (citation to guidance omitted).

In response to EPA's objection, TCEQ stated:

> [T]o address monitoring requirements for hourly and annual VOC fugitive emissions, the ED notes emissions from fugitive component leaks are minimized through the 28VHP Leak Detection and Repair (LDAR) program as detailed in the SC 41 of NSR Permit No. 2501A. The LDAR requirements in the permit specify the parameter monitored (e.g., using EPA approved Test Method 21), the frequency of monitoring and averaging times.
> In addition, SC 41.M and Attachment G in NSR permit 2501A… and SC 15.M and Attachment G [sic][97] in NSR permit 124424... have been changed to require emissions for fugitive monitoring are [sic] calculated using the TCEQ publication titled "Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance".

8/18/23 TCEQ Resp. to EPA Objection at 8-9. Despite TCEQ's assertion otherwise, permit 2501A's SC 41.M and Attachment G do not reference TCEQ's "Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance." SC 41.M only provides: "Monitoring requirements and emission calculation information for fugitives are identified in Attachment G." Attachment G provides the following regarding monitoring fugitive VOC emissions:

> Use EPA Method 21 to monitor for leaks from seals on pumps, compressors, agitators, and valves on piping components in light liquid and gas VOC service quarterly. Gas or hydraulic check new and replaced connectors prior to returning to service, or monitor with Method 21 within 15 days of returning to service. LDAR Program 28 VHP has a leak definition where repair action is required at 500 ppmv for valves and connectors and 2000 ppmv for pumps, compressors, and agitators. Check connectors weekly using audio, visual or olfactory (AVO) senses to observe leaks. Record results and corrective action taken. Monitoring will be conducted as required by the permit conditions.

And then Attachment G provides this regarding calculating short-term VOC emissions: "Emissions will be equal to component count, correlation equations, and EPA industry-appropriate emission factors. Location - TCEQ Online Records Content ID 5768852 Pg.49, PI-1 received 5/2/2013 for NSR Project Number 193432." And this regarding calculating annual VOC emissions: "Emissions will be equal to component count and permit representations. Location - TCEQ Online Records Content ID 5768852 Pg.49, Pl-1 received 5/2/2013 for NSR Project

[97] This should be Attachment A for permit 124424.

Number 193432." In addition, permit 124424's Attachment A (at least the version available on TCEQ's Records Online website) does not even address fugitive emissions.

The new proposed Title V permit and revised permit 2501A still do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with fugitive emission limits at the refinery. Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the proposed permit's monitoring, emission calculation, and other requirements cannot ensure compliance with the 88.63 lbs/hr and 388.01 tons/year VOC limits for fugitive emissions listed in permit 2501A.[98] *See* Permit 2501A MAERT at "Fugitives"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating March 22, 2023 version of permit 2501A into the Title V permit). Nor can the proposed Title V permit or revised permit 124424 assure compliance with permit 124424's 3.74 lbs/hour and 16.36 tons/year VOC limits for "Alkylation Unit No. 2 Fugitive Components."[99] *See* Permit 124424 MAERT at "32FUG"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating Feb. 6, 2023 version of permit 124424 into the Title V permit).

As Petitioners' comments explained (Sept. 2023 Comments at 46-49), the new proposed Title V permit and revised permits 2501A and 124424 cannot ensure compliance with the underlying permits' hourly and annual fugitive VOC limits for four reasons:

First, TCEQ has not resolved EPA's objection that the Title V permit fails to specify how fugitive emissions are calculated and directing TCEQ to clearly identify the Commission's fugitive guidance in the permit if TCEQ is relying on it.[100] Permit 2501A still does not identify how Valero will calculate fugitive VOC emissions. Permit 124424 suffers from the same problem. In its order, EPA specifically stated that, "[i]f TCEQ is relying upon" its "fugitive guidance document for the chemical sector" "to demonstrate compliance with the VOC limits, then that needs to be clearly cited in the Permit." Valero Houston Order at 51. Although TCEQ claims that it revised the permits to reference the Commission's "Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance," the permits do not actually mention this guidance document. Permit 2501A's Attachment G references "Content ID 5768852 Pg.49," but, despite what Attachment G says, this document does not list the relevant "correlation equations," "EPA industry-appropriate emission factors," or "permit representations;" it only lists the hourly and annual VOC emission limits for certain fugitive emission point numbers (EPNs) permitted under various permits by rule (PBRs) and standard permits (SPs). *See* Ex. Q, Content ID 5768852 at PDF pp. 49-53; *see also id.* at 41-

[98] Because permit 2501A lists certain monitoring or other related requirements for fugitive emissions but those requirements cannot ensure compliance with these VOC limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.

[99] As noted above in the discussion of boiler monitoring, the MAERT for the most recent version of permit 124424 (the version that TCEQ issued on February 6, 2023 in response to EPA's Title V order) is not publicly available on TCEQ's Records Online website. Commenters assume that this most recent MAERT still has the same fugitive VOC limits as the previous version of permit 124424, issued in July 2020, which is attached here as Exhibit O.

[100] Only the fugitive VOC limits from permit 2501A (and not the fugitive limits from permit 124424) were at issue in the Valero Houston Order. As noted above, in responding to EPA's order, TCEQ also revised the monitoring and emission calculation provisions for the fugitive VOC limits from permit 124424, in addition to revising the provisions from permit 2501A. *See* 8/18/23 TCEQ Resp. to EPA Objection at 8-9. Petitioners' September 2023 comments addressed monitoring and emission calculation methods for the fugitive VOC limits from both permits 2501A and 124424.

42 (listing PBRs and SPs involving fugitive emissions). Further, that document does not identify what components are represented by the listed fugitive EPNs. And, as noted above, permit 124424's Attachment A (at least the version available on TCEQ's Records Online website) does not even address fugitive emissions. *See* Ex. P, Feb. 2023 Version of Permit 124424.

Second, even if the permits did identify "Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance" as containing the relevant calculation methods, that guidance document could not assure compliance with the hourly and annual fugitive VOC limits. To begin with, the guidance document only addresses "emissions from piping components and associated equipment including . . .valves, connectors, pumps, agitators, compressor seals, relief valves, process drains, and open-ended lines." Fugitive Guidance at 1.[101] The guidance makes clear that "[u]ncaptured emissions emanating from other sources such as cooling towers, oil/water separators, material stockpiles, and loading operations are not addressed in this document." *Id.* The guidance also "does not address emissions from maintenance, start-up and shutdown." *Id.* Thus, the guidance would not address all of Valero's fugitive emissions, even though the hourly and annual VOC limits at issue here (at least those from permit 2501A) are for all fugitive VOC emissions—not just emissions from the equipment and periods of operation covered by the guidance. Further, the guidance document contains average emission factors for several different industries, and TCEQ does not identify which specific emission factors Valero must use.

Third, if Valero is only required to multiply component count by certain emission factors (as noted in permit 2501A's Attachment G), this cannot ensure compliance with the fugitive VOC limits because it would presumably always keep Valero in compliance with these limits, rather than attempting to calculate the actual fugitive emissions.

Fourth, although TCEQ points to the LDAR requirements from permit 2501A's SC 41, this provision is inadequate for the same reasons we explained in our previous petition (at 77):[102] this provision mainly only requires quarterly monitoring using a gas analyzer, which is both too infrequent (especially for the hourly limit) and also likely to miss leaks from valves, pumps, seals and other equipment for the reasons detailed in Dr. Sahu's March 2019 declaration (at ¶¶ 49-51). EPA has recognized the deficiencies in such leak detection and repair (LDAR) programs.[103] The monitoring listed in Attachment G is insufficient for these same reasons, as is the fugitive monitoring from permit 124424's SC 15, which is apparently identical to permit 2501A's SC 41.

To remedy these problems and ensure compliance with the hourly and annual fugitive VOC limits from permits 2501A and 124424, the Title V permit and/or underlying NSR permits should be revised to require optical gas imaging (OGI), as discussed in detail in the March 2019 declaration of Dr. Sahu (at ¶¶51-52). To calculate fugitive VOC emissions, Valero should be required to use OGI to determine which components are leaking, the duration of leaks, and quantity of VOC emissions from leaks. Valero must also be required to take into account fugitive emissions from all parts of the refinery and all time periods of fugitive emissions.

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[101] Available at: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/fugitive-guidance.pdf.

[102] At the time of our petition, what is now SC 41 in permit 2501A was SC 39 (the Special Condition discussed in our previous petition at p. 77).

[103] *See* https://www.epa.gov/sites/production/files/2014-02/documents/ldarguide.pdf.

Strong monitoring and emission calculation requirements for the fugitive VOC emissions are important here due to the environmental justice concerns discussed above—especially given that many of the fugitive VOCs from the refinery are surely VOC HAPs—and the surrounding area's nonattainment status for the ozone NAAQS.

1. TCEQ's response to comments is inadequate to resolve the problems with the permit's monitoring for fugitive VOC emissions.

TCEQ's response to comments does not resolve the problems with monitoring and emission calculation for fugitive VOC emissions. To begin with, it's important to note that TCEQ did not even attempt to address our first three arguments discussed above.

Regarding our fourth argument, TCEQ argues that "monitoring requirements according to the 28VHP LDAR programs have been demonstrated to meet BACT" and that OGI "is not supported as a BACT or by any applicable state or federal regulation to demonstrate compliance." RTC at PDF p. 64. Regardless whether TCEQ has determined that quarterly monitoring is BACT and OGI is not (or whether TCEQ or federal regulations require the use of OGI), this does not change the fact that Title V imposes an independent duty to ensure that monitoring is sufficient to ensure compliance with underlying NSR limits. *See, e.g.*, 40 C.F.R. § 70.6(c)(1); 42 U.S.C. §§ 7661c(a), 7661c(c). TCEQ does not address the substance of our fourth argument—that quarterly monitoring is too infrequent to ensure compliance with the fugitive VOC limits (especially the hourly limit) and that using a gas analyzer is likely to miss leaks from valves, pumps, seals and other equipment. Further, Petitioners offered OGI as a possible solution to fix the monitoring and emission calculation problems with the permit. There could possibly be other solutions.

TCEQ also states that permit 2501A's "special conditions 3, 5, 41, 42, 47, 62, 66 lists [sic] the MRRT requirements for the fugitive emissions that are sufficient to demonstrate compliance with the applicable requirements" and that permit 124424's "special condition 15.A through 15.M, documents the conditions and MRRT requirements for the fugitive emissions." RTC at PDF p. 63. None of these conditions can ensure compliance with the very specific hourly and annual fugitive VOC limits. Permit 2501A's SC 3 and 5 only list general NSPS and NESHAP requirements applicable to the refinery, and EPA (as quoted above) has already determined that they cannot ensure compliance with the fugitive VOC limits here. Valero Houston Order at 50. Likewise, EPA (as also quoted above) has already determined that conditions 41, 42 and 47 (which were conditions 39, 40 and 45 as of the time of EPA's order) cannot ensure compliance with these limits. *Id.* Conditions 62 and 66 are only general recordkeeping and reporting provisions that in no way speak to the problems we identified above. Finally, as we note above, permit 124424's special condition 15 appears to be identical to permit 2501A's condition 41 (which, as discussed in this same paragraph and above is insufficient to ensure compliance).

TCEQ further states: "Monitoring for fugitive units authorized under [certain] PBR registration numbers . . .is also documented in the OP-PBRSUP dated December 20, 2023." RTC at PDF p. 63. In this particular section of this Title V petition, however, Petitioners are not addressing the monitoring for fugitive emission limits established by any PBRs. Instead, Petitioners are addressing the inadequate monitoring for the fugitive VOC limits from permits 2501A and 124424.

TCEQ also repeats, yet again, the same tired, non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. RTC at PDF pp. 63-64. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 26-27, these boilerplate responses in no way resolve the inadequacy of the monitoring here.

F. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the Hourly and Annual PM and VOC Limits for the Atmospheric Tower Heater.

As petitioners September 2023 Comments explained and as discussed in Dr. Sahu's October 2019 declaration, the proposed Title V permit does not include adequate monitoring, reporting, and recordkeeping, or emissions calculation requirements to ensure compliance with VOC and PM limits for the refinery's Atmospheric Tower Heater (23CB201). In objecting to the monitoring and emission calculation methods for PM and VOCs from the Atmospheric Tower Heater, EPA concluded: "The Petitioners have demonstrated that the Permit does not specify any monitoring or calculation methodology associated with the hourly and annual VOC and PM limits associated with the Atmospheric Tower Heaters [sic]." Valero Houston Order at 53. EPA directed TCEQ to revise the permit(s) to identify monitoring to ensure compliance with these limits and stressed that the "justification for this monitoring must be included in the permit record." *Id.* TCEQ has failed to revise the permit to address EPA's objection and adequately assure compliance with Title V requirements.

Revised permit 2501A's Attachment G provides the following regarding monitoring PM2.5/PM10 and VOCs from this heater: "Fuel gas heat content is measured daily. Fuel flow to the heater is measured continuously." Attachment G provides this about calculating short-term VOC emissions from the heater: "Measured fuel flow rates and heating value are used to calculate the heat input in MMBtu/hr. AP-42 Chapter 1.4 VOC emission factor of 0.00539 lb/MMBtu is multiplied by the heat input to determine the mass emission rate." And this about calculating short-term PM2.5/PM10 emissions: "Measured fuel flow rates and heating value are used to calculate the heat input in MMBtu/hr. AP-42 Chapter 1.4 PM emission factor of 0.00745 lb/MMBtu is multiplied by the heat input to determine the mass emission rate."[104]

As Petitioners explained in their September 2023 Comments, the proposed Title V permit and revised permit 2501A do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with VOC and PM limits for the Atmospheric Tower Heater (23BC201). *See* Ex. A Sept. 2023 Comments at 49-54. Specifically, in violation of 40 C.F.R. §§ 70.6(a)(3)(i)(B) and 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the proposed permit's monitoring, emission calculation, and other requirements cannot ensure compliance with permit 2501A's 1.93 lbs/hour and 8.43

[104] Attachment G provides that annual VOC and PM rates are calculated as follows: "Monthly emission rates are calculated as the sum of the calculated hourly emission rates and monthly totals are summed on a rolling 12-month basis."

tons/year limits for VOCs and 2.66 lbs/hour and 11.65 tons/year limits for PM2.5 and PM10.[105] *See* Permit 2501A MAERT at "Atmospheric Tower Heater"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating 2501A into the Title V permit).

The monitoring, reporting, recordkeeping, and emission calculation requirements for this heater cannot ensure compliance with the VOC and PM limits for four reasons.

First, emissions factors—much less these particular AP-42 emissions factors—cannot ensure compliance with the heater's VOC and PM limits. Use of these AP-42 emissions factors presents at least four problems:

- EPA has concluded that AP-42 emission factors generally should not be used to determine compliance with emission limits because they reflect an average of emissions from different facilities. *See, e.g.*, Tesoro Order at 32. (concluding that "[b]ecause emission factors essentially represent an average of a range of facilities and of emission rates, they are not necessarily indicative of the emissions from a given source at all times; with a few exceptions, use of these factors…to determine compliance with permit requirements is generally not recommended.").[106] Given that AP-42 emission factors represent an average emission rate from different facilities, this means that roughly half of those facilities were emitting above the average and the other half of facilities emitting below the average. In other words, the VOC and PM emissions from Valero's Atmospheric Tower Heater could easily be higher than emissions predicted by AP-42 emission factors.

- As noted above, permit 2501A requires the use of emission factors from AP-42 Chapter 1.4 for both VOCs and PM. Chapter 1.4 only lists emission factors for natural gas combustion,[107] but this heater is allowed to burn either natural gas or refinery fuel gas. *See* Permit 2501A SC 7.A. Thus, even if AP-42 emission factors could otherwise ensure compliance with the VOC and PM limits here (they cannot), the referenced AP-42 emission

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[105] Because permit 2501A lists certain monitoring or other related requirements for VOC and PM emissions from this heater but those requirements cannot ensure compliance with these limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.

[106] EPA added:

> The use of these emission factors may be appropriate in some permitting applications, such as establishing operating permit fees. EPA, however, has also stated that AP-42 factors do not necessarily yield accurate emissions estimates for individual sources This emission factor carries a "D" rating, which means that it was developed from a small number of facilities, and there may be reason to suspect that the facilities do not represent a random or representative sample of the industry. In addition, this rating means that there may be evidence of variability within the source population… It is this variability that renders the emission factor incapable of assuring continued compliance with the applicable standard over the lifetime of the permit. For all practical purposes, a single emission factor that was developed to represent long-term average emissions cannot [sic] forecast the occurrence and size of leaks in a collection of heat exchangers and is therefore not predictive of compliance at any specific time.

Id. at 32-33 (citations omitted).

[107] https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf.

factors cannot possibly ensure compliance during those periods when the heater is burning refinery fuel gas, which could be all times the heater is operating.

- To make matters even worse, the AP-42 emission factor for VOCs is only rated "C", and the factors for condensable and total PM are rated "D" (while the factor for filterable PM is rated "B"). Chapter 1.4 at Table 1.4-2. A "C" rating means that the emission factor is "average" and that "[a]lthough no specific bias is evident, it is not clear if the facilities tested represent a random sample of the industry." AP-42 Introduction at 9. A "D" rating means that the emission factor is "below average," that "test data [is] from a small number of facilities, and there may be reason to suspect that these facilities do not represent a random sample of the industry," and that "[t]here also may be evidence of variability within the source population." *Id.* at 10. In fact, Chapter 1.4's emission factor for condensable PM was based on only four different stack tests at boilers (and not any heaters). Emission Factor Documentation for AP-42 Section 1.4 at Table 3.4-1. And the VOC emission factor was based on testing at only five to nine different boilers (and not any heaters). *Id.* at pp. 3.10-11. As EPA explained in the Tesoro Order, the potential variability signaled by a "D" rating in particular "renders the emission factor incapable of assuring continued compliance with the applicable standard over the lifetime of the permit." Tesoro Order at 32-33.

- The emission factors from Chapter 1.4 have not been updated since March 1998—over 25 years ago. *Id.* at i.

Second, even if emissions factors could ensure compliance with the heater's VOC and PM limits (they cannot), the permit requires no stack testing at all—much less periodic stack testing (such as annual testing)—to confirm the appropriateness of using the relevant emissions factors for this particular heater. Even if initial testing could show that these AP-42 emissions factors initially accurately reflected emissions from this heater (there is no way to know, since TCEQ has not provided this information, assuming it exists), operating conditions could have changed over the course months or years such that emissions factors no longer accurately reflected emissions.

Third, even if the AP-42 emissions factors here could ensure compliance with the heater's VOC and PM limits (they cannot), measuring fuel gas heat content daily is too infrequent to ensure compliance with the heater's hourly and annual VOC and PM limits. This is especially so when hydrogen content of fuel gas varies over a short time, which happens periodically. Instead, the heater's fuel gas heat content should be measured at the same frequency that Valero measures heat content for its process controls (in no case less frequently than daily).

Fourth, despite EPA's explicit instruction that TCEQ justify monitoring for VOC and PM from this heater, TCEQ has failed to do so. After the Commissions revised the permit to identify AP-42 emissions factors would be applied to hourly and annual VOC and PM emissions, it failed to explain how, or show that, the AP-42 emissions factors accurately reflect emissions from the Atmospheric Tower heater. Nor has TCEQ explained why initial and periodic stack testing are unnecessary to confirm the accuracy of emissions factors here. *See* RTC at PDF p. 65-67.

Given the environmental justice issues present here (as discussed above), ensuring compliance with the PM and VOC limits for this heater is especially important because it would, in turn, better ensure that the heater limits its emissions of two hazardous air pollutants—

acenaphthylene and hexane—that it emits in significant amounts. The information that Valero submitted in response to EPA's Information Collection Request for the refinery sector Risk and Technology Review lists this particular heater as emitting 2.97 tons/year of acenaphthylene and 2.54 tons/year of hexane.[108] Because hexane is a VOC, strong monitoring/testing requirements for VOCs from the heater would ensure that hexane from the heater is adequately controlled. Further, as we explained in our previous petition (at 81-82) and in our most recent comments (Sept. 2023 Comments at 52-53), strong monitoring for condensable PM would ensure that Valero is reducing acenaphthylene from this heater.

1. EPA Should Require TCEQ to Revise the Title V Permit and/or Permit 2501A in Specific Ways to Remedy the Problems with VOC and PM Monitoring for the Atmospheric Tower Heater.

As Petitioners' comments (Ex. A, Sept. 2023 Comments at 53-54), previous petition (at 82), and Dr. Sahu's October 2019 declaration (Ex. D, at ¶ 113)[109] explained, to remedy the above problems and ensure compliance with the hourly and annual VOC and PM limits for the Atmospheric Tower Heater, EPA should require TCEQ to revise the Title V Permit and/or NSR Permit 2501A as follows:

- Require that a continuous opacity monitoring system (COMS) be installed, coupled with periodic stack testing for both filterable and condensable PM. During the stack testing, Valero should be required to establish an opacity-PM correlation to, in turn, establish an opacity monitoring limit that the heater would be required to comply with moving forward. As for the frequency of stack testing, the permit(s) should require as follows: if the stack testing shows PM emissions that are less than 80% of the PM limits, then testing could be conducted on an annual basis; if testing shows PM emission that are between 80 and 89% of the limits, testing should be required to be conducted semi-annually; and if testing shows PM emissions that are 90-plus percent of the limits, then testing should be required on a quarterly basis. In lieu of COMS, EPA could require PM CEMS, coupled with stack testing for condensable PM (since PM CEMS only measure filterable PM) at the frequencies mentioned above.

- For VOCs, require periodic stack tests, at the same frequencies discussed above for PM stack tests. The permit(s) should specifically require stack tests to cover a range of heater loads, including low and intermediate loads. This is needed because higher emissions of VOCs, including hexane, are more likely at intermediate or low loads than at high loads.

[108] *See* https://www.epa.gov/stationary-sources-air-pollution/comprehensive-data-collected-petroleum-refining-sector.
[109] Ex. D, Dr. Sahu's October 2019 declaration ("Oct. 2019 Sahu Decl.").

2. TCEQ's Response to Comments is (Yet Again) Inadequate to Address the Problems with the Permit's VOC and PM Monitoring and Emissions Calculation Methods for the Atmospheric Tower Heater.

TCEQ's response to comments does not even attempt to resolve or substantively address the problems that Petitioners identified in their comments on the revised Title V permit, regarding monitoring and emissions calculation methods for the Atmospheric Tower Heater. TCEQ states that it "respectfully disagrees with the "assertion [that the] 'Draft Permit's Monitoring Requirements Cannot Ensure Compliance with Hourly and Annual PM and VOC Limits for the atmospheric tower heater." RTC at PDF p. 65. Nowhere does TCEQ explain why it disagrees—despite Petitioners squarely putting forth the monitoring, emissions factors, and emissions calculations issues in their comments on the revised permit.

TCEQ also responds with various statements and assertions that have nothing to do with the above-described fundamental problems regarding PM and VOC emissions factors and monitoring. For example, TCEQ states that permit 2501A's "conditions 3, 5, 7, 8, 53, 61, 64, 66 lists MRRT requirements for the heater emissions that are sufficient to demonstrate compliance with the applicable requirements." RTC at PDF p. 65. None of these conditions resolve the issues created by the emissions factors and calculations TCEQ relies upon. Further, TCEQ has not explained how any of these conditions ensure compliance with specific hourly and annual PM and VOC emissions limits—nor how these conditions resolve the problems discussed above. As EPA stated in its 2022 Objection, conditions 3 and 5 "generally list NSPS and NESHAPs that are applicable to the facility, but. . . provide no specifics on calculating PM and VOC emissions from the tower heaters. . . ." Valero Houston Order at 53. Condition 53 addresses MSS requirements for the refinery generally and omits any reference to PM or VOC emissions. *See* Proposed Permit at 283-84. Condition 61 does not address atmospheric tower heater PM or VOC emissions. Condition 61 only requires periodic maintenance and accuracy tests (every three year) for atmospheric tower heater CEMS which expressly monitor only NOx, CO, and O2—not PM or VOC emissions. *Id*. At 293, 295. Condition 64 lists the Permittee's general obligation to maintain records including CEMS data and calibration checks for five-year periods for TCEQ inspection. *Id*. at 296. Condition 66 likewise only references general recordkeeping and reporting requirements. *Id*. at 299. Neither condition 61, 64, nor 66 create any specific requirements either for hourly or annual PM and VOC emissions from the atmospheric tower heater. *Id*. at 293-299.

Petitioners previous petition explained that Condition 7 cannot ensure compliance with the applicable VOC emissions limits because it does not address VOC emissions. *See* June 2021 Petition at 83. The only portion of Condition 7 that TCEQ could assert somehow furthers compliance with PM limits (Special Condition 7.A requirement to only burn refinery fuel gas or natural gas)[110] does not ensure compliance with PM limits, since the heater can still exceed hourly and annual PM limits while only burning refinery fuel gas or natural gas. *Id*. EPA also objected

[110] The other portions of Special Condition 7 deal with H2S/SO2 emissions (at 7.A), require this heater to comply with a NOx limit (at 7.C), and prohibit burning or combusting fuel oil (at 7.D). The fuel oil prohibition cannot ensure compliance with the PM and VOC limits for the same reasons that the requirement to burn only refinery fuel gas or natural gas cannot ensure compliance with these limits.

that condition 7 "contains no explanation for how [fuel type and opacity emissions requirements] correlate to compliance with PM and VOC limits." Valero Houston Order at 53.

TCEQ's reliance on Condition 8 as a compliance assurance mechanism is also inadequate. Condition 8 requires that opacity not exceed 5 percent over a six-minute period as determined by EPA Method 9 (visual observations). Proposed Permit at 262. This opacity requirement cannot ensure compliance with PM limits because it does not actually require Method 9 inspections on any set schedule or for any set period of time; it states only that Method 9 inspections are to be used to determine opacity. *Id*. Method 9 inspections performed intermittently (or not at all) without a specific periodic requirement or only a few minutes at a time cannot ensure compliance with hourly (or annual) PM limits. As Petitioners explained in their June 2021 Petition, Method 9 also cannot ensure compliance because Method 9 observations require ideal weather conditions. June 2021 Petition at 80. Further, in Title V orders, EPA has found that infrequent Method 9 observations cannot assure compliance with opacity limits. *See In the Matter of EME Homer City Generation L.P. Indiana County, Pennsylvania,* Order on Petitions III-2012-06, III-2012-07, and III-2013-02 (June 30, 2014) at 44 (finding a Title V permit failed to sufficiently support the use of a weekly Method 9 observation to assure compliance with continuous opacity limits); *In the Matter of Pacificorp's Jim Bridger and Naughton Electric Utility Steam Generating Plants,* Order on Petition No. VIII-00-1 (Nov. 16, 2000) at 19 (quarterly observations)**;** *In the Matter of Tennessee Valley Authority, Bull Run, Clinton, Tennessee,* Order on Petition IV-2015-14 (Nov. 10, 2016) at 11 (finding that biannual Method 9 observations are inadequate to assure compliance with opacity limits and objecting to the permitting authorities failure to explain how such Method 9 observations could assure compliance with opacity limits).

TCEQ also repeats the same non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 26-27, these boilerplate responses in no way resolve the inadequacy of the Atmospheric Tower Heater PM and VOC monitoring and emissions calculations requirements.

G. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the Hourly and Annual Limits for the Refinery's Tanks.

In objecting to the monitoring requirements for VOC and benzene limits for several of the refinery's tanks, EPA concluded and directed TCEQ as follows:

> The Petitioners have cited to two monitoring provisions that specify how Valero is to calculate emissions for the tanks. The first of these methods uses the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Storage Tanks." *See* NSR Permit 2501A Special Condition 29.G. The Petitioners have demonstrated that this condition does not provide sufficient information to consider the guidance document properly incorporated by reference for the following two reasons. The permit condition includes the title but does not include a date of the publication to ensure the correct version is being used. The Permit also does not identify what calculations or sections of the guidance are applicable to the Facility.

> The next monitoring provision highlighted by the Petitioners requires Valero to calculate MSS emissions for the tanks using methods described in AP-42 and "the permit application." *See* NSR Permit 2501A Special Condition 46.F(4). The Petitioners have demonstrated that the Permit's reference to "methods described in the permit application"—without specifically identifying the application document, including the type of application, date of application, and/or location of specific provisions in the application *(e.g.,* page number)—is insufficient to properly incorporate this application material by reference…
>
> Without information explaining how the Facility is calculating VOC emissions for the tanks, the EPA is unable to determine if the selected monitoring is sufficient to demonstrate compliance with the Permitted emission limits.
>
> ***Direction to TCEQ:*** In response to this Order, TCEQ must revise the Permit to more clearly identify the location of the emission factors and calculations upon which the Permit relies for determining compliance. For the Permit to "set forth," "include," or "contain" monitoring to assure compliance with all applicable requirements, a special condition would need to include, at a minimum, the date of the application (if the relevant monitoring is found in an application) and specific location of the incorporated information, for example, by providing a page number from the application (again, if the relevant monitoring is found in an application). Additionally, TCEQ should ensure that this incorporated information is readily available. Alternatively, a more straightforward approach that would obviate these IBR-related concerns would be for TCEQ to directly include the emission factors and calculation methods being used to demonstrate compliance within the Special Conditions of the title V permit itself. When identifying the monitoring that is to be used to calculate the annual and hourly emissions, TCEQ should consider the arguments raised in the Petition and explain why the selected monitoring is sufficient to assure compliance with the relevant emission limits.

Valero Houston Order at 58.

Proposed permit 2501A's Attachment G provides this regarding monitoring VOCs from the tanks: "Per Special Condition 30.F., the average temperature, average material vapor pressure and throughput are recorded on a monthly basis." Attachment G provides that short-term and monthly VOC emissions "are calculated using (a) AP-42 Compilation of Air Pollutant Emission Factors, Chapter 7 - Liquid Storage Tanks' and (b) the guidance contained on the webpage entitled, 'NSR Guidance for Storage Tanks,' located at https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html." For maintenance, startup, and shutdown (MSS) emissions, permit 2501A's SC 48.F(4) provides

(as it did at the time of our petition): "The emissions associated with roof landing activities shall be calculated using the methods described in Section 7.1.3.2 of AP-42 'Compilation of Air Pollution Emission Factors, Chapter 7 - Storage of Organic Liquids' dated November 2006 and the permit application."

As Petitioners explained in their September 2023 Comments, the proposed Title V permit and revised permit 2501A do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with hourly and annual limits for VOCs and other pollutants from the tanks covered by permit 2501A, for either routine emissions or emissions during planned "MSS" (maintenance, startup, and shutdown) periods.[111] *See* Ex. A, Sept. 2023 Comments at 54-61. Failure of the permit(s) to include sufficient monitoring and other requirements to ensure compliance with these limits violates 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c).[112] The tanks at issue specifically listed in permit 2501A are Storage Tanks 22FB747, 42FB2802, 45FB6001-02, 45FB7403, 46FB6301, 90FB807, 91FB922, and 90FB735. The hourly VOC limits for routine emissions from these tanks range from 0.01 lbs/hour to 0.45 lbs/hour, and the annual VOC limits for these tanks range from 0.01 tons/year to 0.86 tons/year.[113] Permit 2501A MAERT at "Storage Tanks"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating 2501A into the Title V permit). Permit 2501A also lists (unlawful) MSS limits for VOCs (529.27 lbs/hour) and benzene (8.07 lbs/hour) from the tanks. Permit 2501A MAERT at "TANK-MSS."

As discussed below, and for the reasons discussed in the Dr. Sahu's October 2019 declaration (Ex. D, at ¶14-33), the proposed Title V permit and permit 2501A cannot ensure compliance with the storage tanks' hourly and annual VOC and other limits under 2501A for five reasons:

First, despite EPA's direction to TCEQ, the Commission has failed to clearly identify the location of emissions factors and calculations which the proposed Title V permit relies on to determine compliance.[114] *See* Ex. A, Sept. 2023 Comments at 56-57. For non-MSS emissions, it is unclear whether AP-42 emissions factors, emissions factors from TCEQ guidance, or some combination of the two apply. Permit 2501A's revised Attachment G provides that short-term and monthly VOC emissions "are calculated using (a) AP-42 Compilation of Air Pollutant Emissions Factors, Chapter 7 – Liquid Storage Tanks' *and* (b) the guidance contained on the webpage entitled, 'NSR Guidance for Storage Tanks.'" (Emphasis added).

[111] As we discussed in our previous petition (at 98-108) and in comments on the pending renewal of permit 2501A, permit 2501A's MSS provisions are unlawful and must be removed. Even if TCEQ did not remove the MSS provisions (it must), the insufficient emission calculation and monitoring requirements for the MSS tank limits must still be remedied.

[112] Because permit 2501A lists certain monitoring or other related requirements for the tanks but those requirements cannot ensure compliance with the tanks VOC and other limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.

[113] Per footnote 4 of the MAERT, the annual limits are calculated on a 12-month rolling basis.

[114] TCEQ has "fail[ed]" to "submit a permit revised to meet" EPA's objections as to emissions factors and calculations for the storage tanks. Thus, 42 U.S.C. § 7661d(c) requires EPA to take over the Title V permit as to the storage tanks' emissions factors and calculation.

TCEQ must revise the permit(s) to clearly identify the specific guidance from the webpage "NSR Guidance for Storage Tanks" that is to be used to calculate VOC emissions. That webpage links to numerous documents, including at least two different guidance documents covering estimating short term emissions from tanks (one for fixed-roof tanks, the other for floating-roof tanks). For each tank, TCEQ must revise the permit to identify the relevant guidance document(s) by name and date of publication. For both AP-42 emissions factors and TCEQ guidance documents, TCEQ must also (as EPA stated) "identify what calculations or sections of the guidance are applicable to the Facility." Valero Houston Order at 57-58.

For MSS emissions, TCEQ has totally ignored EPA's objection. As noted above, Permit 2501A's SC 48.F(4) provides that MSS emissions "associated with roof landing activities shall be calculated using the methods described in Section 7.1.3.2 of A-42 'Compilation of Air Pollutant Emissions Factors, Chapter 7 – Liquid Storage Tanks' dated November 2006 and the permit application." Proposed Permit at 281-282. As EPA stated, the permit's "reference to 'methods described in the permit application'-without specifically identifying the application document, including the type of application, date of application, and/or location of specific provisions in the application (e.g., page number)-is insufficient to properly incorporate this application material by reference." Valero Houston Order at 58. In addition, as EPA also stated, TCEQ "should ensure that this incorporated information is readily available—which TCEQ has failed to do. *Id*. at 58.

As EPA concluded, rather than incorporating the relevant calculation methods by reference for routine and MSS emissions, a "more straightforward approach that would obviate these IBR-related concerns would be for TCEQ to directly include the emission factors and calculation methods being used to demonstrate compliance within the Special Conditions of the title V permit itself." This approach would provide far more clarity to the public and regulators than incorporating the calculation methods by reference.

Second, to the extent that Valero is expected to use the 2006 AP-42 methods to calculate MSS emissions, those methods cannot ensure compliance with the tank limits because that version of AP-42 does not address short-term emissions from tanks—only annual emissions are addressed. In 2020, EPA revised AP-42 to account for short-term emissions from tanks for the first time.[115] The 2006 version of AP-42 does not include these changes. Therefore, the 2006 tank emissions calculation methods cannot determine emissions during short term MSS or degassing periods, when emissions can rapidly spike. Despite Petitioners addressing this issue in their 2023 Comments, TCEQ has failed to address the issue or provide justification for reliance on 2006 AP-42 for short term emissions in the proposed Title V permit.

In particular, the 529.27 lbs/hr MSS limit for VOCs shows that the tanks currently listed in permit 2501A can emit at a rate over a thousand times more than the highest hourly limit for an individual tank's "routine" emissions listed in permit 2501A (0.45 lbs/hour)—and more than 50,000 times the lowest such limit (0.01 lbs/hour). Put another way, permit 2501A's highest annual limit for VOCs from an individual tank is 0.86 tons/year. If that tank emitted at the MSS rate of 529.27 lbs/hour for just three and a half hours, it would exceed its annual limit. Further, several of the tanks listed in 2501A's MAERT have annual VOC limits of 0.01 tons/year (or 20 lbs/year). For these tanks, operating at the MSS rate for less than three minutes would result in exceedances

[115] *See* https://www3.epa.gov/ttn/chief/ap42/ch07/final/ch07s01.pdf.

of their annual limits. Thus, emissions from the tanks could easily vary by a degree that would cause an exceedance of the applicable limits and that variability should be accounted for in any method of calculating the tank emissions here. Ex. D, Oct. 2019 Sahu Decl. ¶¶22-23. The 2006 version of AP-42, however, cannot account for this short-term variability since the 2006 calculation methods do not estimate any short-term or MSS emissions, including emissions from degassing and tank landings. *Id*. at ¶ 23.

Third, methods from AP-42 (both the current version and the 2006 version), the guidance from TCEQ's "NSR Guidance for Storage Tanks" webpage, and the "permit application"[116] all require Valero to make certain assumptions to calculate emissions from the tanks, but the permits do not require these assumptions to be substantiated. *See* Ex. D, Oct. 2019 Sahu Decl. ¶24. Numerous inputs and/or assumptions involved in these calculation methods include: tank geometry; tank conditions; condition of the roof including the floating roof pan; the presence and conduction of roof penetrations such as guide poles; the condition of the specific tank components such as rim seals and guide pole seals; properties of the tank product and their variation with ambient conditions; specifically temperature; product throughput; wind speed (especially for external floating roof tanks); and many others. *Id*. To ensure that these assumptions and inputs for these various parameters are accurate and have not changed, Valero needs to confirm them at least quarterly to account for seasonal variability of—and other possible changes to—these parameters. *Id*. Valero must not be allowed to make assumptions regarding these many variables which can easily change in the span of a few weeks, without periodically confirming these assumptions so that the accuracy of emissions calculations can be verified. *Id*. Changes in these parameters and inputs over time can lead to much higher emissions from the tanks. *Id*.

Fourth, the permits' calculation methods for estimating tank emissions are wholly inadequate because permit 2501A only requires Valero to inspect floating roof tank components annually or less frequently, with the exception of occasions on which tanks are emptied or degassed (*see* Permit 2501A SC 30.C, requiring inspections and seal gap measurements in keeping with 40 C.F.R. § 60.113b), and such inspections are not frequent enough to assure that each tank seal is properly maintained.[117] Ex. D, Oct. 2019 Sahu Decl. at ¶25. A typical floating roof tank has numerous seals, including rim seals (primary and secondary) and seals at each roof penetration. Ensuring that each of these seals is functioning properly is not a trivial task. Unspecified and vague requirements to inspect tanks annually, with no accompanying and detailed checklist (tailored for each tank) provides no assurance at all that each potential seal will be inspected. Even small gaps in seals—for example, distortion of the tank itself or the floating roof, which can happen with age, geological settling, product expansion, precipitation accumulation on the roof pan, and expansion due to variations in ambient conditions such as temperature, high winds, hurricanes and the like—can result in large fugitive emissions. Thus, the permit's vague inspection requirement does nothing to assure good maintenance of each location where fugitive emissions can escape from the tanks—and thus cannot ensure that the tanks' emissions stay within their hourly and annual VOC

[116] For tank emission calculations, Petitioners are working from a November 21, 2007, submittal from Valero to TCEQ, updating Valero's 2006 application to establish MSS limits. That submittal is attached as Exhibit 21 to our June 29, 2021 Title V petition.

[117] *See also* Alex Cuclis, Why Emission Factors Don't Work at Refineries and What to Do About It ("Why Emission Factors Don't Work") at 18-19; available at https://www3.epa.gov/ttnchie1/conference/ei20/session7/acuclis.pdf Presentation/Paper for the EPA at the Emissions Inventory Conference in Tampa, Florida on August 13-16, 2012.

limits. Compounding this problem, § 60.113b only generally requires that problems with seals and other maintenance issues be addressed within 45 days of discovery (and even allows for a 30-day extension on top of that). 40 C.F.R. § 60.113b(a)(2), (b)(4). Failing to address these problems for 45 or 75 days can lead to very large quantities of fugitive VOC emissions. Ex. D, Oct. 2019 Sahu Decl. ¶25.

In addition, visual inspections are inadequate to detect the small gaps in seals that can lead to large tank emissions. Ex. D, Oct. 2019 Sahu Decl. ¶26. Optical imaging (such as FLIR cameras) is necessary to detect these small gaps in tank seals. *Id*. Thus, Valero should be required to use FLIR or similar optical imaging periodically, no less than quarterly, to detect storage tanks leaks. *Id*.

Fifth, the permits fail to require Valero to periodically verify the accuracy of the required calculation methods. Ex. D, Oct. 2019 Sahu Decl. ¶27. As noted above, the permit lists AP-42 emission factors as one of the methods for calculating emissions from the tanks. In addition, the calculation methods from the permit application and TCEQ's guidance from its "NSR Guidance for Storage Tanks" webpage are also based on AP-42. *Id.*

In addition to the problem (discussed above) that AP-42-based methods require operators to make numerous assumptions regarding calculation inputs, AP-42 calculation methods for tanks are inherently flawed and inaccurate. Ex. D, Oct. 2019 Sahu Decl. at ¶28-30. AP-42 calculation methods were developed many decades ago based on limited "testing" on a small number of small tanks, at a time when it was impossible to conduct direct measurements of large tanks' actual emissions to verify the accuracy of the calculation methods.

Direct measurements of tank VOC emissions, including by differential absorption light detection and ranging (DIAL), have shown that, even under the best of circumstances, AP-42 methods can grossly underestimate actual VOC emissions from tanks based in part on AP-42 methods' inability to fully capture the underlying processes that lead to emissions from tanks.[118] For example, the City of Houston's DIAL study at the Shell Deer Park Refinery showed that VOC emissions from tanks as calculated by AP-42 methods may be underestimated by a factor of as much as 132.[119] The study also showed that actual benzene emissions from tanks were underestimated by a factor of as much as 93.[120] Similarly, in a refinery measurement study in Alberta, actual emissions of VOCs were 30 times higher and actual emissions of benzene were 100 times higher than emissions calculated using AP-42 equations.[121] And multiple remote sensing studies have consistently found that actual fugitive emissions from storage vessels were 4-10 times

[118] *See* Why Emission Factors Don't Work; EPA, Critical Review of DIAL Emissions Test Data for BP Petroleum Refinery in Texas City, Texas, EPA 453/R-10-002, ES-2, Table 1 (Nov. 2010), available at https://www3.epa.gov/airtoxics/bp_dial_review_report_12-3-10.pdf; Loren Raun and Dan W. Hoyt, City of Houston, Bureau of Pollution Control and Prevention, Measurement and Analysis of Benzene and VOC Emissions in the Houston Ship Channel Area and Selected Surrounding Major Stationary Sources Using DIAL Technology to Support Ambient HAP Concentrations Reductions in the Community, 1, 92-94, Table 4.4(a) (Jul. 2011) ("Shell Deer Park DIAL Study"), available at http://www.greenhoustontx.gov/benzenereports.html.

[119] Shell Deer Park DIAL Study at 1, 92-94.

[120] *Id.*

[121] Memorandum from Brenda Shine, EPA, on Potential Low Bias of Reported VOC Emissions from the Petroleum Refining Industry to EPA Docket No. EPA-HQ-OAR-2003-0146 at 5-6 (July 27, 2007).

higher than reported.[122] The direct measurement methods discussed in this paragraph, such as DIAL, are far more accurate on the whole than AP-42 methods for calculating tank emissions. Ex. D, Oct. 2019 Sahu Decl. ¶29. In 2020, EPA made changes to the AP-42 methods for tanks. These changes, however, focused on adding calculation methods for short-term emissions and (other than for a very small number of specialty tanks, such as heated tanks) did not address the flaws that AP-42 methods generally have in calculating tank emissions. *Id*. at ¶30.

Adequate monitoring for these tanks is especially important given Harris County's nonattainment status for ozone (which VOCs are a precursor for)[123] and because, as shown by permit 2501A's MSS provisions, tank emissions at the refinery can rapidly spike to levels that would negatively affect air quality: as discussed above, permit 2501A's MAERT establishes extremely high (unlawful) lbs/hour limits for VOCs and benzene from "Tank MSS Activities"—529.27 lbs/hour for VOCs and 8.07 lbs/hour for benzene.[124]

TCEQ guidance has also made clear that tank emissions can be quite significant and affect air quality. A December 5, 2006 TCEQ memo from Dan Eden titled "Air Emissions During Tank Floating Roof Landings"[125] explained the following regarding tank floating roof landings: "If the liquid level in [a tank with a floating roof] is lowered to below the level of the floating roof support legs, the roof will rest (land) on the legs, or supports, rather than on the liquid, severely limiting the control efficiency of the floating roof. Air emissions from tanks are greater while the tank roof is landed and remain so until the tank is either completely emptied and purged of organics or the tank is refilled, and the roof is again floating."[126] That same memo also emphasizes that underreporting emissions from roof landings is "of particular importance" in the Houston region because "it may play a role in demonstrating attainment."[127]

1. EPA Must Require TCEQ to Revise the Title V Permit and/or Permit 2501A in Specific Ways to Remedy the Problems with Monitoring and Emissions Calculation Methods for Refinery Storage Tanks.

As Petitioners' comments (Ex. A, Sept. 2023 Comments at 61), previous petition (at 91-92), and Dr. Sahu's October 2019 (Ex. D, at ¶ 33) declaration explained, to remedy the above problems and ensure compliance with the hourly and annually limits for the tanks from NSR permit

[122] FluxSense, Pilot 60 Study to Quantify Industrial Emissions of VOCs, NO2, and SO2 by SOF and Mobile DOAS in the Carson Area, 4 tbl. E1. (Mar. 27, 2014).
[123] High ozone events are episodic in nature and can occur at irregular intervals. Nothing in permit 2501A or the Title V permit limits or prevents high VOC emissions from tanks' MSS activities from occurring prior to or during possible or expected high ozone days.
[124] Permit 2501A also contains hourly and annual limits for VOCs (5.21 lbs/hour and 3.28 tons/year) and benzene (0.04 lbs/hour and 0.03 tons/year) from "Thermal Oxidizer Controlled MSS activities," which apparently cover emissions associated with controlled degassing of the tanks.
[125] Dan Eden, *Interoffice Memorandum: Air Emissions During Tank Floating Roof Landings*, TCEQ (Dec. 5, 2006), https://www.tceq.texas.gov/assets/public/permitting/air/memos/tank_landing_final.pdf.
[126] *Id*. at 1.
[127] *Id*.

2501A's MAERT, EPA should require TCEQ to revise the Title V Permit and/or NSR permit 2501A to:

- Clearly identify specific emissions calculation methods to be used for calculating the tanks' emissions for both routine and MSS emissions.[128]

- Require, at least, use of the methodology in the 2020 revisions to the 2006 AP-42 methods for short-term emissions from the tanks, such as from tank cleaning, degassing, and roof landings.

- At least quarterly, require the collection of data to confirm each parameter that is an input or assumption for the calculation method(s) above. While there is no practical approach to collecting such data on an hourly basis, the more frequent the data collection, the better. If the collected data shows that previously-used inputs or assumptions are incorrect, the collected data should be used as the new input or assumption.

- Require inspections of tank seals using FLIR or similar optical imaging methods at least quarterly and require any gaps in seals to be remedied within three days.

- Require that direct verification of routine emissions from tanks containing high vapor pressure products (*i.e.*, with vapor pressures at or above 5 mm Hg- or 0.1 psia) be conducted using methods such as DIAL at least annually so that the AP-42-based/emission factor methods can be verified/calibrated. In addition, so that these emission calculation methods can be calibrated for planned short-term periods with high levels of emissions (such as from cleaning, degassing and landings) from all tanks (not just tanks with higher vapor pressures), require use of DIAL or other direct measurement methods for every other (*i.e.*, the first, third, fifth, and so on) planned period of short-term emissions. If such testing demonstrates that AP-42/emission factor methods are unreliable, Valero must be required to continue to use DIAL or a comparable direct monitoring method (to be conducted at least quarterly for routine emissions and in each instance for MSS emissions) to assure compliance with applicable emission limits— or to appropriately adjust the AP-42 based calculation methods.

[128] TCEQ has "fail[ed]" to "submit a permit revised to meet" EPA's objections to specify the relevant emissions factors and calculations for the storage tanks. Thus, 42 U.S.C. § 7661d(c) requires EPA to take over the Title V permit as to the storage tanks' emissions factors and calculation.

2. TCEQ's Response to Comments is (Yet Again) Inadequate to Address the Problems with the Permit's Monitoring and Emissions Calculation Methods for Refinery Storage Tanks.

TCEQ's response to comments does not even attempt to resolve the problems that Petitioners identified, in their comments on the draft permit, regarding monitoring and emissions calculation methods for refinery storage tanks. TCEQ states that it "respectfully disagrees with . . . assertion that 'Title V permit and revised permit 2501A do not include adequate monitoring, reporting, recordkeeping, or emissions calculation requirements to ensure compliance with hourly and annual limits for VOCs and other pollutants from the tanks. . . for either routine or emissions during planned 'MSS.'" RTC at PDF p. 67. Nowhere does TCEQ explain why it disagrees—despite Petitioners squarely putting forth the monitoring and emissions calculation issues in their previous comments and previous petition. *See* Ex. A, Sept. 2023 Comments at 54-61; June 2021 Petition at 84-93. TCEQ's response to comments plainly failed to provide an adequate response to either Petitioners comments or EPA's explicit objection that "TCEQ must . . . explain why the selected monitoring is sufficient to assure compliance, with relevant emissions limits." Valero Houston Order at 58.

TCEQ responds with various statements and assertions that have nothing to do with the fundamental problem regarding tank VOC and benzene monitoring and emissions calculations. For example, TCEQ states that permit 2501A's conditions 3, 5, 30, 31, 37, and 62 lists MRRT requirements for the tanks sufficient to demonstrate compliance with applicable requirements. TCEQ also asserts that Special conditions 44, 48, 49, 54, and 63 document MRRT requirements are sufficient to demonstrate compliance with the applicable requirements for MSS emissions from the tanks. RTC at PDF p. 67-70. None of these provisions resolve—or are even relevant to—the emissions monitoring and calculation problems we discuss above. Further, TCEQ has not explained how any of these conditions ensure compliance with specific hourly and annual storage tank emissions limits—nor how these conditions resolve the problems discussed above.

As explained above, Conditions 30, 48, and Attachment G are inadequate to resolve storage tank emissions monitoring and calculation problems. As addressed in Section V.F(2), EPA's Objection dismissed conditions 3 and 5 because they provide no specifics on calculating emissions. *See, e.g.*, RTC at PDF p. 53. Condition 31 also adds no substantive compliance assurance. Proposed Permit at 268. This Condition only generally requires that upon request from TCEQ personnel the Permittee must provide a sample or analysis of liquids stored in storage tanks associated with this permit, or allow such samples to be collected. *Id*. Similarly, TCEQ references Condition 37's monthly VOC grab sample requirement as a compliance assurance requirement and states, "Monitoring requirements and emissions calculation information are identified in Attachment G." Proposed Permit at 269. Fundamentally, this condition is irrelevant to because it relates to wastewater samples, not VOC emissions, and does nothing to resolve emissions monitoring and calculation problems in the proposed Title V permit. Further, even if the conditions were relevant, Attachment G does not include Condition 37's requirements for any storage tanks. Proposed Permit at 269. Finally, Condition 62 is inadequate to resolve issues with storage tanks' emissions monitoring and calculations because it only requires that storage tank records be kept for a specified period and does nothing to assure the accuracy of those records. Proposed Permit

at 295. The state and federal requirements referenced by these conditions are in no way adequate to ensure compliance with permit 2501A's emissions limits for storage tanks because nothing in the permit ties them to actual emissions rates or MAERT limits.

TCEQ cites Condition 44 among provisions that contribute to MSS compliance assurance. RTC at PDF p. 68. While Condition 44 addresses requirements to record MSS emissions from particular refinery units, it does not specifically address recordkeeping for storage tank emissions activities. It only states that "performance of each planned MSS activity not identified in Attachment D or E and the emissions associated with it shall be recorded" as described in SC 44.A-D. Proposed Permit at 275. This condition leaves it unclear to the Petitioners, the public, and the Permittee what storage tank MSS activities are expected and, therefore, are necessary to record. Further, the condition does nothing to resolve problems with storage tank emissions monitoring and calculation methods.

TCEQ also references Condition 49 which states, in part, "[i]f ventilation of the [storage tank] vapor space is controlled, the emissions control system shall meet the requirements of SC No. 46.B(1) through 46.B(4)." Proposed Permit at 282. However, Condition 46 only lists subparts B(1) through B(3). *Id*. at 278. TCEQ's reasons for omission of subpart B(4) are unclear; there is no way for Petitioners, the public, nor the Permittee to determine whether TCEQ intended for an additional compliance assurance requirement to exist. More fundamentally, this condition is irrelevant to the tank monitoring and emission calculation problems discussed above.

Condition 54 addresses emissions control devices required under the permit. Proposed Permit at 284-287. While Condition 54.B establishes Carbon Adsorption System ("CAS") requirements for VOCs, the Condition never explicitly references storage tanks. *See* Proposed Permit at 285. Further, Attachment G does not reference CAS use for storage tanks nor does any other provision in the proposed Title V permit. Accordingly, it is unclear whether CAS control devices are intended to be applied to refinery storage tanks. Finally, Condition 63 only incorporates a general requirement to maintain "records of MSS activities and emissions" as specified in Conditions 43 through 54. Proposed Permit at 296. This requirement does not address emissions monitoring and calculation problems identified in the proposed Title V permit.

TCEQ also repeats the same non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 26-27, these boilerplate responses in no way resolve the inadequacy of the Refinery Storage Tank monitoring and emissions calculations methods.

H. The Proposed Permit's Monitoring Requirements Cannot Ensure Compliance with the Hourly and Annual PM10 Limits for Refinery's Cooling Towers.

EPA objected to the monitoring and emissions calculation methods for PM10 from the cooling towers as follows:

> The Petitioners have demonstrated that the Permit is unclear regarding the monitoring of PM from the cooling towers…The Permit requires that the cooling towers be analyzed for particulate emissions by sampling for TDS. *See* NSR Permit

> 2501A Special Condition 28.D. However, the Permit does not explain what the correlation is between the measured TDS or its correlated conductivity, and the hourly PM10 limits. For instance, the Permit does not include any emission factors, assumptions or calculations that could be used to determine PM10 emissions…
>
> ***Direction to TCEQ:*** In response to this Order, TCEQ must revise the Permit to include monitoring sufficient to demonstrate compliance with the hourly and annual PM10 emission limits for the cooling towers. The justification for this monitoring must be included in the permit record…

Valero Houston Order at 60-61.

TCEQ revised permit 2501A to add SC 29.E regarding monitoring and calculating PM10 from six of the refinery's cooling towers. SC 29.E provides:

> Particulate Emission rates of PM, PM10, and PM2.5 shall be calculated using the measured TDS, the design drift rate and the daily maximum and average actual cooling water circulation rate for the short term and annual average rates. Alternately, the design maximum circulation rate may be used for all calculations. Emission records shall be updated monthly. Monitoring requirements and emission calculation information are identified in Attachment G.

Revised permit 2501A's new Attachment G provides this regarding monitoring PM from the cooling towers: "Total dissolved solids (TDS) in the cooling tower return is analyzed monthly per Special Condition 29.D.[129] Cooling tower drift eliminators are maintained and inspected at least annually per Special Condition 29.C." Attachment G provides this on calculating short-term PM emissions: "PM emissions are calculated using monitored or maximum design hourly flow rate, TDS results, represented drift eliminator %." The manufacturer's design drift eliminator control efficiency for each cooling tower is listed in Special Condition 29.C. And Attachment G provides this on calculating annual PM emissions: "PM emissions are calculated using monitored (annual average) or maximum design flow rate, TDS results, represented drift eliminator %." Permit 124424 contains virtually identical provisions addressing monitoring and calculating PM emissions for a seventh cooling tower, except that permit 124424 specifies that "cooling water circulation rate shall be measured at least hourly." *See* Permit 124424 SC 18.A, 18.D-I, Att. A.

As Petitioners September 2023 comments explained, the proposed Title V permit and revised permits 2501A and 124424 do not include adequate monitoring, reporting, recordkeeping, or emission calculation requirements to ensure compliance with PM10 limits for these seven cooling towers. *See* Ex. A, Sept. 2023 Comments at 61-66. Specifically, in violation of 40 C.F.R. § 70.6(c)(1), as well as the requirements from 42 U.S.C. §§ 7661c(a) and 7661c(c), the proposed permit's emissions monitoring, calculation, and other requirements cannot ensure compliance with the following hourly and annual limits listed in permit 2501A for PM10 emissions from the following six cooling towers: 14.05 lbs/hour and 61.54 tons/year from Cooling Tower No. 2 (27CWT2); 10.18 lbs/hour and 44.58 tons/year from Cooling Tower No. 7 (23CWT7); 0.54 lbs/hr

[129] SC 29.D allows Valero to choose either: (1) monthly sampling for TDS; or (2) quarterly TDS sampling coupled with daily conductivity monitoring using a TDS-to-conductivity ratio.

and 2.37 tons/year from Cooling Tower No. 3 (22CWT3); 0.14 lbs/hr and 0.59 tons/year from Cooling Tower No. 9 (44CWT9); 0.72 lbs/hr and 3.16 tons/year from Cooling Tower No. 10 (42CWT10); and 0.34 lbs/hr and 1.50 tons/year from Cooling Tower No. 11 (40CWT11). *See* Permit 2501A MAERT at "Cooling Towers"; Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating 2501A into the Title V permit). Nor can the proposed permit's requirements ensure compliance with permit 124424's 0.36 lbs/hour and 1.58 tons/year PM10 limits for Cooling Tower No. 12 (32CWT12[130] *See* Permit 124424 MAERT AT "32CWT12[131] Proposed Title V Permit's "New Source Review Authorization References" at p. 206 (incorporating 124424 into the Title V permit).

The proposed Title V permit and permit 2501A cannot ensure compliance with these PM_{10} limits for the cooling towers for seven reasons.

First, monthly TDS monitoring cannot ensure compliance with PM10 limits—either annual or hourly limits, but especially the hourly limits. The primary drivers of PM emissions from cooling towers are flow rate of the cooling water, the amount of TDS in the cooling water, and the drift rate. As we explained in our June 2021 Petition,[132] the TDS percentage in refinery cooling water can vary greatly from hour to hour, depending on cooling water quality (which can change due to additives to reduce algae and fungi in the cooling water system, anti-corrosion agents, and the like, all of which can increase TDS), what processes at the refinery the cooling water is being used for, and the TDS content in the water before additives are added and before it is used to cool processes at the refinery. Ex. D, Oct. 2019 Sahu Decl. ¶47; s*ee also* AP 42, Fifth Edition, Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources, Chapter 13.4 at Table 13.4-2 (listing summary statistics for TDS content in circulating water and listing range of TDS values of 380 - 91,000 ppm). The permit must instead require Valero to monitor TDS at least hourly.

Second, EPA must require TCEQ to eliminate the option from permits 2501A (at SC 29.D(2)) and 124424 (at SC 18.G(1)) for Valero to monitor TDS through daily conductivity monitoring using a TDS-to-conductivity ratio established through the average of nine weekly TDS-to-Conductivity ratios. Although permit 2501A's Attachment G and permit 124424's Attachment A state that TDS "is analyzed monthly," permit 2501A's SC 29.D(2) and permit 124424's SC 18.G(1) still provide that "TDS monitoring may be reduced to quarterly if conductivity is monitored daily and TDS is calculated using a correlation factor…" As Petitioners' June 2021 Petition explained, daily conductivity monitoring using a TDS-to-conductivity ratio cannot ensure compliance with the hourly limits due to the variability of TDS (as also explained in the paragraph immediately above). June 2021 Petition at 95-96. In addition, weekly monitoring to initially establish the TDS-to-conductivity ratio—and quarterly TDS sampling to validate that

[130] Because permits 2501A and 124424 list certain monitoring or other related requirements for PM10 emissions from the cooling towers but those requirements cannot ensure compliance with these PM10 limits, § 70.6(c)(1) requires TCEQ to supplement these monitoring and other requirements.

[131] As noted above in the discussion of boiler monitoring, the MAERT for the most recent version of permit 124424 (the version that TCEQ issued on February 6, 2023, in response to EPA's Title V order) is not publicly available on TCEQ's Records Online website. Commenters assume that this most recent MAERT still has the same PM10 limits for this cooling tower as the previous version of permit 124424, issued in July 2020.

[132] The various reasons that the cooling towers' PM10 monitoring and emission calculation methods are inadequate are also discussed in Dr. Sahu's October 2019 declaration at paragraphs 43-50.

ratio (as currently required by the permits)—are too infrequent to account for the variability in TDS in the cooling water.

Third, TCEQ has failed to establish that the manufacturer design assurance for drift eliminator control efficiency listed in permit 2501A's SC 28.C and permit 124424's SC 18.D are still accurate. This is especially important given the age of the drift eliminators. Based on the control efficiencies listed in the permits, which range from drift rates of 0.001% to 0.05%, these drift eliminators were likely installed years ago: modern drift eliminators result in much lower drift rates of 0.0005% or less. Over time, if not properly maintained, the baffles for drift eliminators can deteriorate, break, or wear out, and passages can become clogged with deposits. All of this can result in drift rates that are much higher than original manufacturer assurances.

Relatedly, although permit 2501A's SC 28.C and permit 124424's SC 18.D provide that the drift eliminators are to be "maintained and inspected annually," these provisions are too vague (since maintenance actions are not defined or specified)—and they require inspections that are too infrequent—to ensure that the drift eliminators are reducing drift at the rates originally represented by the manufacturers. TCEQ must require semi-annual inspections and maintenance of the drift eliminators, along with detailed requirements for maintenance per manufacturer's instructions.

Fourth, although EPA ordered TCEQ to "revise the Permit to include monitoring sufficient to demonstrate compliance with hourly and annual PM10 emissions rates," permit 2501A is unclear regarding the frequency of flow measurements for purpose of calculating PM emissions.[133] *See* Valero Houston Order at 61; Proposed Permit at 267. SC 29.E states that PM emissions are calculated using the "daily maximum and average actual cooling water circulation rate for the short term and annual average rates"—or, alternately, "design maximum circulation rate may be used for all calculations." Although Attachment G mentions "monitored hourly circulation rate" in discussing calculating VOC emissions from the towers, Attachment G provides that short-term PM emissions are calculated using "monitored or maximum design hourly flow rate"—and that annual PM emissions are calculated using "monitored (annual average) or maximum design flow rate." These PM-focused provisions don't explain how often the flow is measured, *i.e.*, whether flow is measured hourly or more or less frequently. As Petitioners' June 2021 Petition explained, cooling tower flow rates at refineries can fluctuate greatly from hour to hour because the need for cooling water (and, in turn, flow rate) varies depending on which refinery processes are being engaged. June 2021 Petition at 94. The permit must require at least hourly flow rate measurements.

Fifth, given the variation in flow rates, Valero must not be allowed to use design maximum circulation rates in its PM emissions calculations in lieu of measured flow rates. Hourly flow rates could easily exceed design maximum rates, which would lead to spikes in emissions above the level of emissions calculated using design rates.

Sixth, because of the fluctuation in flow rates, Valero must not be allowed to use annual average flow rates in its calculation of annual PM emissions. Using annual average flow rates would not capture large fluctuations in flow, which would in turn increase emissions. Instead, to

[133] As noted above, permit 124424, on the other hand, specifies that "cooling water circulation rate shall be measured at least hourly."

calculate rolling 12-month PM10 emissions, Valero must be required to sum all the relevant hourly emissions.

Seventh, despite EPA's explicit instruction that the "justification for [the cooling tower] monitoring must be included in the permit record," TCEQ has failed to do so. In particular, TCEQ has failed to justify: the frequency of monitoring for flow and TDS; the option to monitor TDS through conductivity monitoring; that the manufacturer design assurances for drift eliminator control efficiency are still accurate; that the maintenance and inspection provisions are adequate to ensure the listed drift rates; and that the option to use design maximum flow rates and using annual average flow rates can result in accurate calculations of PM10 emissions.

1. EPA Must Require TCEQ to Revise the Title V Permit and/or Permit 2501A in Specific Ways to Remedy the Problems with PM10 Monitoring and Emissions Calculation Methods for the Cooling Towers.

As Petitioners' comments (Ex. A, Sept. 2023 Comments at 65-66), previous petition (at 96-97), and Dr. Sahu's October 2019 declaration (Ex. D, at ¶ 50) explained, to remedy the above problems, EPA should require TCEQ to revise the proposed Title V Permit and/or NSR permit 2501A as follows:

- Require hourly measurement of cooling water flow rate to the cooling towers for purposes to determine compliance with the towers' PM10 limits and require Valero to use this hourly flow rate data in calculating hourly and annual PM10 emissions.

- Remove the option for Valero to use design maximum circulation rates in its PM10 emissions calculations in lieu of measured flow rates. Also remove the language stating that Valero is to use annual average flow rates in calculating annual PM10 emissions.

- Require semi-annual inspections and maintenance of the drift eliminators, along with detailed requirements for maintenance per manufacturer's instructions. In addition, EPA must establish in the permit record that the manufacturer assurances for the drift eliminators are accurate, given the age of the drift eliminators.

- Require Valero to monitor TDS at least hourly. Valero could do this using a TDS-to-conductivity correlation and by monitoring conductivity hourly. But to establish that correlation, Valero must be required to conduct at least daily concurrent TDS and conductivity measurements for 90 days or more. In addition, TDS and conductivity sampling to validate the correlation must be required to be conducted at least monthly.

- Remove the option to monitor TDS through daily conductivity monitoring using a TDS-to-conductivity ratio established through the average of nine weekly TDS-to-conductivity ratios.

- Justify the PM10 monitoring and emission calculation methods for the cooling towers.

2. TCEQ's Response to Comments is (Yet Again) Inadequate to Address the Problems with the Permit's PM10 Monitoring and Emissions Calculation Methods for the Cooling Towers.

TCEQ's response to comments does not even attempt to resolve the problems that Petitioners identified, in their comments on the revised permit, regarding monitoring and emissions calculation methods for the cooling tower. TCEQ states that it "respectfully disagrees with the . . . assertion [that the] 'Draft Permit's Monitoring Requirements Cannot Ensure Compliance with Hourly and Annual PM10 Limits for the refinery's cooling towers.'" RTC at PDF p. 70. Nowhere does TCEQ explain why it disagrees—despite Petitioners squarely putting forth the emissions monitoring and emissions calculation in their previous comments and petition on the revised permit.

TCEQ responds with various statements and assertions that have nothing to do with the fundamental problem regarding PM10 measurement and calculation methods. For example, TCEQ states that permit 2501A's condition 5 and 29 along with permit 124424 condition 18 "lists the MRRT requirements for the cooling tower emissions that are sufficient demonstrate compliance with the applicable requirements." RTC at PDF p. 65. Inadequacy of the requirements listed in permit 2501A condition 29 and permit 124424 condition 18 are addressed above. Further, TCEQ has not explained how any of these conditions ensure compliance with specific cooling tower PM10 hourly and annual emissions limits—nor how these conditions resolve the problems discussed above. And as explained in previous sections, condition 5 is inadequate because it provides no specifics on calculating emissions. *See* Valero Houston Order at 61.

TCEQ also repeats the same non-substantive, boilerplate responses that it copies and pastes regarding the monitoring for other units. As discussed above in addressing the inadequate monitoring for PM from the FCCU, *supra* at 26-27, these boilerplate responses in no way resolve the inadequacy of the Cooling Towers PM10- monitoring and emissions calculations requirements.

VI. IN VIOLATION OF 40 C.F.R. § 70.7(A)(5), TCEQ FAILED TO PROVIDE A REASONED EXPLANATION FOR WHY THE PROPOSED PERMIT ENSURE COMPLIANCE WITH THE LIMITS AT ISSUE HERE FOR THE FCCU, FLARES, DAF UNIT, BOILERS, FUGITIVE EMISSIONS, ATMOSPHERIC TOWER HEATER, TANKS, AND COOLING TOWERS.

In its order, EPA objected that TCEQ failed to adequately explain how the monitoring and emission calculation methods for the units discussed above can ensure compliance with the relevant limits. EPA explained:

> The title V regulations require that the permitting authority provide a statement setting forth the legal and factual basis for the draft permit conditions. *See* 40 C.F.R. § 70.7(a)(5). As detailed in response to the individual claims, the Petitioners have demonstrated that the permit record, including TCEQ's statement of basis and RTC, does not contain sufficient information to conclude that there is adequate monitoring to assure compliance with relevant emission limits…

> Because TCEQ's title V permit record, including TCEQ's RTC, does not clearly explain the basis for TCEQ's conclusion that the monitoring associated with the FCCU, flares, DAF Unit, boilers, fugitive emissions, atmospheric tower heater, tanks, and cooling towers assures compliance, the EPA grants this claim.
>
> ***Direction to TCEQ:…***The permit and/or permit record should be updated to include TCEQ's justification for why the monitoring is adequate to demonstrate compliance with the emission limits."

Valero Houston Order at 62.

As Petitioners' comments explained (Sept. 2023 Comments at 66-67), TCEQ has completely failed to resolve EPA's objection. TCEQ has failed to provide the necessary rationale in the many ways discussed above in our discussion of the inadequate monitoring and emission calculation methods for individual units and limits at the refinery. In fact, in several instances, TCEQ has ignored EPA's objections that the Commission must provide an explanation of how the permit can ensure compliance with specific limits—as discussed above.

In its response to EPA's objection provided with the draft revised Title V permit, TCEQ claimed that a "summary of the justification for why the monitoring is adequate to demonstrate compliance with the emission limits included in NSR permit 2501A/ PSDTX767M2, project 350865 is documented in technical review (WCC content ID 6476208) and Attachment G." 8/18/23 TCEQ Resp. to EPA Objection at 11. TCEQ further asserted: "For NSR permit 124424, project 350864 it is documented in technical review (WCC content ID 6442499) and Attachment A." *Id.* TCEQ repeats these same assertions in its response to comments. RTC at PDF p. 73. But neither permit 2501A's Attachment G nor permit 124424's Attachment A provide any justification for why the monitoring and emission calculation methods are adequate to assure compliance; these attachments just list (some of) the relevant monitoring and calculation methods. Nor do the two technical review documents identified by TCEQ provide any justification for why the monitoring and calculation methods are adequate to demonstrate compliance with the limits; these documents only list changes that TCEQ made to permits 2501A and 124424 to supposedly address EPA's objections. Contrary to TCEQ's assertion otherwise (RTC at PDF p. 73), TCEQ's statement of basis also does not address why the permit's monitoring, emission calculation reporting or other requirements are adequate to ensure compliance with the relevant limits discussed above.

Thus, in addition to the failure of the proposed Title V permit to ensure compliance with limits for the FCCU, flares, DAF unit, boilers, fugitive emissions, atmospheric tower heater, tanks and cooling towers, the permit and permit record are also deficient for the independent and separate reason that TCEQ has not adequately explained how the proposed Title V permit provisions can ensure compliance with these limits. TCEQ's failure to provide a reasoned explanation in the permit record for why it believes the permit conditions are sufficient to assure the refinery's compliance with these various limits violates 40 C.F.R. § 70.7(a)(5)'s requirement that permitting authorities "provide a statement that sets forth the legal and factual basis for the draft permit conditions."

Respectfully submitted this 19th day of August 2024, on behalf of Caring for Pasadena Communities, Texas Environmental Justice Advocacy Services (t.e.j.a.s.), and Sierra Club, Lone Star Chapter.

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LIST OF EXHIBITS

Exhibit	Title
A	Sept. 2023 Comments
B	EJScreen Community Report
C	Table D from PBR Supplemental Table dated August 3, 2023
D	Oct. 2019 Declaration of Dr. Ranajit Sahu
E	August 18, 2023, TCEQ Response to EPA Objection
F	June 2021 Declaration of Dr. Ranajit Sahu
G	March 2019 Declaration of Dr. Ranajit Sahu
H	Valero's First Half 2019 Subpart CC Compliance Report
I	Valero's Second Half 2019 Subpart CC Compliance Report
J	Valero's First Half 2020 Subpart CC Compliance Report
K	Excerpts from Valero's First Half 2021 Subpart CC Compliance Report
L	Excerpts from Valero's Second Half 2021 Subpart CC Compliance Report
M	Flare Management Plan
N	Aug. 2007 MSS Application
O	July 2020 Version of Permit 124424
P	Feb. 2023 Version of Permit 124424
Q	Content ID 5768852