

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR**

IN THE MATTER OF	*	PETITION FOR
	*	OBJECTION
Clean Air Act Title V Operating Permits Nos.	*	
3141-V0, 3142-V0, 3143-V0, 3144-V0, 3145-	*	
V0, 3146-V0, 3147-V0, 3148-V0, 3149-V0,	*	Permit Nos. 3141-V0, 3142-V0,
3150-V0, 3151-V0, 3152-V0, 3153-V0, 3154-	*	3144-V0, 3145-V0, 3146-V0, 31
V0	*	V0, 3149-V0, 3150-V0, 3151-V
	*	3153-V0, 3154-V0
for FG LA, LLC (Formosa)	*	
	*	
Issued by the Louisiana Department of	*	
Environmental Quality	*	

**PETITION TO OBJECT TO 14 PROPOSED TITLE V OPERATING PERMITS
FOR FG LA, LLC's CHEMICAL COMPLEX IN ST. JAMES PARISH, LOUISIANA**

Pursuant to Clean Air Act § 505(b)(2), 42 U.S.C. § 7661d(b)(2), and 40 C.F.R. § 70.8(d), RISE St. James, Louisiana Bucket Brigade, Sierra Club, Center for Biological Diversity, Healthy Gulf, Earthworks, No Waste Louisiana, and 350 New Orleans (Petitioners) hereby respectfully petition the Administrator of the U.S. Environmental Protection Agency to object to the following draft Title V air operating permits prepared by the Louisiana Department of Environmental Quality (LDEQ) for FG LA, LLC's (Formosa) 14-plant chemical complex planned for construction in the historic, predominantly African American community of Welcome in St. James Parish, Louisiana:

- 3141-V0 Ethylene 1 Plant
- 3142-V0 Ethylene Glycol 1 Plant
- 3143-V0 High Density Polyethylene 1 Plant
- 3144-V0 Linear Low Density Polyethylene Plant
- 3145-V0 Propylene Plant
- 3146-V0 Polypropylene Plant
- 3147-V0 Logistics Plant
- 3148-V0 Utility 1 Plant
- 3149-V0 Central Wastewater Treatment Plant
- 3150-V0 Ethylene 2 Plant
- 3151-V0 Ethylene Glycol 2 Plant
- 3152-V0 High Density Polyethylene 1 Plant
- 3153-V0 Low Density Polyethylene Plant
- 3154-V0 Utility 2 Plant

Formosa seeks to manufacture ethylene and propylene, and produce polyethylene, propylene, along with ethylene glycol primarily to produce plastics at this chemical complex. This complex is in the heart of “Cancer Alley,” a region that stretches along the Mississippi River from Baton Rouge to New Orleans. Cancer Alley is so-named because it experiences the highest cancer risk in the nation due to the number and density of industrial facilities. The complex would operate just one-half mile from the residential community of Union across the Mississippi River, and approximately one mile upriver from the Fifth Ward Elementary School and residences in the community of Welcome. The project’s massive air pollution emissions would vastly add to the significant environmental and health burden that African American communities in and around St. James already bear from the existing plants.

As Petitioners demonstrate below, the draft permits fail to assure compliance with numerous applicable requirements of the Clean Air Act, necessitating an EPA objection. 42 U.S.C. § 7661d(b)(2) (The Administrator “shall issue an objection ... if the petitioner demonstrates to the Administrator that the permit is not in compliance with the requirements of the ... [Clean Air Act].”); *see also* 40 C.F.R. § 70.8(c)(1). The Administrator must grant or deny a petition to object within 60 days of its filing. 42 U.S.C. § 7661d(b)(2).

PETITIONERS

RISE St. James is a faith-based environmental and social justice organization working to save its community.

Louisiana Bucket Brigade is an environmental health and justice organization working with communities that neighbor the state’s oil refineries and chemical plants.

Sierra Club is one of the oldest and largest national nonprofit environmental organizations in the country, with approximately 3.5 million members and supporters dedicated to exploring, enjoying, and protecting the wild places and resources of the earth; practicing and promoting the responsible use of the Earth’s ecosystems and resources; educating and enlisting humanity to protect and restore the quality of the natural and human environment; and using all lawful means to carry out these objectives. One of Sierra Club’s priority national goals is promoting and improving air quality. In particular, Sierra Club seeks to reduce the unnecessary and often harmful use of fossil fuels in facilities like the proposed Formosa Chemical Complex.

The Center for Biological Diversity (“Center”) is a non-profit organization with more than 1.4 million members and online activists throughout the United States, including over 9,000 in Louisiana. The Center’s mission is to ensure the preservation, protection and restoration of biodiversity, native species, ecosystems, public lands and waters and public health. The Center believes in and advocates for environmental justice for all species, including people. In furtherance of these goals, the Center seeks to reduce U.S. greenhouse gas emissions and other air pollution to protect biological diversity, the environment, and human health and welfare.

Healthy Gulf was founded in 1994 and has more than 25,000 members and supporters in all five Gulf states committed to uniting and empowering people to protect and restore the natural resources of the Gulf Region.

Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the impacts of oil, gas, mining, and petrochemical development while seeking sustainable solutions. For more than 25 years, Earthworks has worked to advance policy reforms, safeguard land and public health, and improve corporate practices. Its team works with local communities, partner organizations, public agencies, and elected officials to advance these goals nationwide, including in Louisiana. Earthworks has 212 supporters living in Louisiana, including in St. James Parish.

No Waste Louisiana is an alliance of local chapters dedicated to supporting waste prevention policies and community practices of reduction, reuse, and refill, moving Louisiana away from the landfill and protecting our neighborhoods, bayous, and parks from pollution.

350 New Orleans' mission is to support initiatives that raise consciousness and promote sound policy around climate change. 350 New Orleans was created because the climate crisis poses unprecedented threats to life, and coastal Louisiana is especially vulnerable. It supports frontline communities in "Cancer Alley" in their fight for clean air, soil, water and a livable climate.

LEGAL FRAMEWORK & REQUIREMENTS

The Clean Air Act requires any person wishing to construct a new major stationary source of air pollutants to apply for and obtain a Title V permit before commencing construction. 42 U.S.C. § 7661b(c); *see also* LAC 33:III.507.C.2. The Clean Air Act requires each state to develop and submit to EPA an operating permit program intended to meet the requirements of Title V of the Act. 42 U.S.C. § 7661a(d)(1) for EPA's approval. The state of Louisiana submitted a title V program governing the issuance of operating permits on November 15, 1993, and revised this program on November 10, 1994. 40 C.F.R. part 70, Appendix A. EPA granted full approval to Louisiana's title V operating permits program in 1995. 60 Fed. Reg. 47296 (September 12, 1995); 40 C.F.R. part 70, Appendix A. This program, which became effective on October 12, 1995, is codified in LAC, Title 33, Part III, Chapter 5. Louisiana's approved Title V program is incorporated into the Louisiana Administrative Code at LAC 33:III, Chapter 5.

Title V permits are the primary method for enforcing and assuring compliance with the Clean Air Act's pollution control requirements for major sources of air pollution. Operating Permit Program, 57 Fed. Reg. 32,250, 32,258 (final July 21, 1992). Each Title V permit must list all applicable federally-enforceable requirements and contain enough information to determine how applicable requirements apply to units at the permitted source. The Clean Air Act makes clear that Title V permits must "include enforceable emission limitations and standards . . . and such other conditions as are necessary to assure compliance with *applicable requirements* of [the Clean Air Act and applicable State Implementation Plan ("SIP")]." 42 U.S.C. § 7661c(a) (emphasis added); *see also Sierra Club v. EPA*, 536 F.3d 673 (D.C. Cir. 2008).

The regulations make clear that the term "applicable requirement" is very broad and includes, among other things, "[a]ny term or condition of any preconstruction permit" or "[a]ny standard or other requirement provided for in the applicable implementation plan approved or promulgated by EPA through rulemaking under title I of the [Clean Air] Act." 40 C.F.R. § 70.2; *see also* LAC 33:III.507.A.3 ("Any permit issued under the requirements of this Section shall incorporate all federally applicable requirements for each emissions unit at the source."). Indeed,

the term “applicable requirements” includes the duty to obtain a construction permit that meets the requirements of the Act’s Prevention of Significant Deterioration (“PSD”) program. *See* 42 U.S.C. § 7475. Thus, Title V permits must incorporate the terms and conditions of the PSD permit because they are applicable requirements.

Clean Air Act regulations command that “each applicable State Implementation Plan . . . shall contain emission limitations and such other measures as may be necessary to prevent significant deterioration of air quality.” 40 C.F.R. § 51.166. Louisiana SIP provisions that incorporate the Clean Air Act’s PSD requirements are in LAC 33:III.509. 40 C.F.R. § 52.970(c) (identifying EPA approved regulations in the Louisiana SIP); *see also* 40 C.F.R. §§ 52.999(c) and 52.986. The Louisiana PSD regulations apply to the construction of a “major stationary source,” which include certain listed sources, like the plants that Formosa plans to construct, which “ha[ve] the potential to emit[] 100 tons per year or more” of any PSD regulated pollutant (except greenhouse gases). LAC 33:III.509.B. PSD regulated pollutants include, among others, nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), volatile organic compounds (VOC), carbon monoxide (CO), and greenhouse gases. *Id.*

Major stationary sources as defined under LAC 33:III.509.B must meet the state’s PSD requirements under LAC 33:III.509.J-R. LAC 33:III.509.A.2. “No new major stationary source or major modification to which the requirements of Subsection J-Paragraph R.5 of this Section apply shall begin actual construction without a permit that states that the major stationary source or major modification will meet those requirements.” LAC 33:III.509.A.3. Such requirements include, among other things, the following:

- Application of “best available control technology [“BACT”] for each regulated NSR pollutant [i.e., PSD pollutant] that [the source] would have the potential to emit in significant amounts;” LAC 33:III.509.J.2.
- Demonstration by the “owner or operator of the proposed source . . . that allowable emission increases from the proposed source [], in conjunction with all other applicable emissions increases or reductions, including secondary emissions, would not cause or contribute to air pollution in violation of: a. any national ambient air quality standard in any air quality control region; or b. any applicable maximum allowable increase over the baseline concentration in any area.” LAC 33:III.509.K.1.

See also 42 U.S.C. § 7475(a).

The Title V operating permit program does not generally impose new substantive air quality control requirements, but does require that permits contain monitoring, recordkeeping, reporting, and other measures to assure compliance with existing applicable emission control requirements. 57 Fed. Reg. 32250, 32251 (July 21, 1992). The part 70 regulations contain monitoring rules designed to satisfy this statutory requirement.

As a general matter, permitting authorities must take three steps to satisfy the monitoring

requirements in the EPA's part 70 regulations. First, a permitting authority must ensure that monitoring provisions contained in applicable requirements are properly incorporated into the Title V permit. 40 C.F.R. § 70.6(a)(3)(i)(A). Second, if the applicable requirements contain no periodic monitoring, permitting authorities must add 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). Third, if the applicable requirement has associated periodic monitoring but the monitoring is not sufficient to assure compliance with permit terms and conditions, a permitting authority must supplement monitoring to assure compliance. *See* 40 C.F.R. § 70.6(c)(1).

In the PSD context, EPA is required to “look to see whether the Petitioner has shown that the state did not comply with its SIP-approved regulations governing PSD permitting or whether the state’s exercise of discretion under such regulations was unreasonable or arbitrary.” *In re Louisville Gas and Electric Company, Trimble County, Kentucky, Title V/PSD Air Quality Permit # V-02-043 Revisions 2 and 3*, Order Responding to Issues Raised in April 28, 2008 and March 2, 2006 Petitions, and Denying in Part and Granting in Part Requests for Objection to Permit, (August 12, 2009), at 5 (citing *In re East Kentucky Power Cooperative, Inc. (Hugh L. Spurlock Generating Station) Petition No. IB-2006-4*, Order on Petition (August 30, 2007); *In re Pacific Coast Building Products, Inc.*, Order on Petition (December 10, 1999); *In re Roosevelt Regional Landfill Regional Disposal Company*, Order on Petition (May 4, 1999)). This inquiry includes determining whether the permitting authority “(1) follow[ed] the required procedures in the SIP; (2) [made] PSD determinations on reasonable grounds properly supported on the record; and (3) describe[d] the determinations in enforceable terms.” *In re Consolidated Environmental Management, Inc.—Nucor Steel Louisiana*, Order on Petition Numbers VI-2010-05, VI-2011-06 and VI-2012-07 (January 30, 2014) (Nucor III Order) at 5 (citing *In the Matter of Wisconsin Power and Light, Columbia Generating Station*, Order on Petition No. V-2008-01 (October 8, 2009) at 8). *See also Alaska Dep’t of Env’tl Conservation v. EPA*, 540 U.S. 461 (2004) (upholding U.S. EPA’s authority to block a PSD permit where the state permitting authority’s BACT determination was unreasonable).

In reviewing a Title V petition, the Administrator must object where petitioners “demonstrate” that the permit “is not in compliance with the requirements of [the Clean Air Act], including the requirements of the applicable implementation plan.” *See* 42 U.S.C. § 7661d(b)(2); *see also* 40 C.F.R. § 70.8(c)(1).

PROCEDURAL BACKGROUND

On September 28, 2015, Formosa submitted applications for Title V/ Part 70 air operating permits and a Prevention of Significant Deterioration (PSD) permit to construct and operate 14 separate plants for its planned chemical complex. LDEQ Statement of Basis (SOB), p. 2, EDMS 11687336. Formosa submitted revised applications and additional information for the various sources through January 7, 2019. *Id.* Each of the 14 plants would alone be a major source of criteria pollutants. All of the 14 plants were reviewed under LDEQ PSD regulations at LAC

33:III.509.B. The plants are also major source of Toxic Air Pollutants (TAPs) pursuant to LAC 33:III, Chapter 51.¹

Under section 505(a) of the Act, 42 U.S.C. § 7661d(a), and 40 C.F.R. § 70.8(a), the relevant implementing regulation, states with approved Title V programs are required to submit each proposed Title V operating permit to EPA for review. On or about May 31, 2019, LDEQ submitted the draft Title V permits to EPA for its review. EPA had 45 days from receipt of the draft permits to object to LDEQ's final issuance of the permits if it determines the permits are not in compliance with applicable requirements of the Act. EPA did not object to the proposed Title V Permit within its 45-day review period, which ended on July 15, 2019.²

Section 505(b)(2) of the Act, 42 U.S.C. § 7661d(b)(2), provides that if EPA does not object to a Title V permit, any person may petition the Administrator—within 60 days of the expiration of EPA's 45-day review period—to object to the permit. *See also* 40 C.F.R. § 70.8(d). Petitioners file this Petition within 60 days after the expiration of the Administrator's 45-day review period.

Petitioners comply with the Act's procedural requirements. That is, the petition must “be based only on objections to the permit[s] that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period).” 42 U.S.C. § 7661d(b)(2).³ Petitioners base this petition on the comments prepared by Earthjustice and experts Dr. Ranajit Sahu and Todd Cloud and submitted to LDEQ on August 12, 2019, EDMS 11819373, Attachment 1. Petitioners also base this petition on the comments prepared by Environmental Integrity Project (EIP) and submitted to LDEQ on August 12, 2019, EDMS 11817937, Attachment 2.⁴ Petitioners, thus, meet the procedural requirements for this petition.⁵

Petitioners also incorporate Dr. Sahu's and Mr. Cloud's comments (Attachment 1) and EIP's comments (Attachment 2) into this petition as they provide additional support and additional

¹ *See* Statement of Basis at 3.

² *See* EPA Region 6, Operating Permit Timeline for Louisiana, <https://www.epa.gov/caa-permitting/operating-permit-timeline-louisiana>.

³ As of the date of this filing, LDEQ has not issued a response to petitioners' and other parties' objections made during LDEQ's public-comment period on Formosa's PSD and 14 Title V permits. Petitioners reserve their right to file additional comments, including new or supplemental Title V petitions, relating to LDEQ's responses to comments or modifications of the draft permits.

⁴ Environmental Integrity Project's comments are pdf pages 29-80 of EDMS 11817937. Attachment 2 includes just those pages.

⁵ Despite receiving significant and timely public comments on the draft permits detailing how the permits fail to comply with the requirements of the Clean Air Act, LDEQ chose not to withdraw the draft permits from EPA's review. Petitioners therefore submit this petition asking the EPA to object to the permits by the public petition deadline of September 16, 2019 (i.e., 60 days after the end of EPA's 45-day review period), without having received LDEQ's response to comments.

grounds for an EPA objection to the Title V.

According to LDEQ's Electronic Document Management System ("EDMS"), which provides online public access to facility files, LDEQ has not issued a final decision on Formosa's Title V permit applications, nor has it responded to public comments on the proposed permits.

GROUNDS FOR OBJECTIONS

I. THE PROPOSED TITLE V PERMITS FAIL TO ASSURE COMPLIANCE WITH EMISSION LIMITS DUE TO THE FAILURE TO REQUIRE CONTINUOUS EMISSIONS MONITORING AND OTHER MONITORING AND ENFORCEMENT MEASURES.

Consistent with the Act, LDEQ Title V regulations provide that the agency "shall incorporate into each permit sufficient terms and conditions to ensure compliance with all state and federally applicable air quality requirements and standards at the source and such other terms and conditions as determined by the permitting authority to be reasonable and necessary." LAC 33:III.501.C.6. The proposed Title V permits do not delineate methods to ensure many of Formosa's sources of emissions are complying with their permitted limits.

The proposed Title V permits, without justification, frequently fail to include continuous emissions monitoring (CEMS). Congress made clear that in Title V permits, "continuous emissions monitoring need not be required *if* alternative methods are available that provide sufficiently reliable and timely information for determining compliance." 42 U.S.C. § 7661c(b) (emphasis added); *see also* 40 C.F.R. § 70.6(a)(3)(i) (requiring that any monitoring "requirements shall assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement."). LDEQ failed to justify its decisions not to require continuous emissions monitoring, including for large sources of air pollution.

Dr. Sahu concludes that CEMS for Formosa's combustion sources is technically available and would "reduce uncertainty in confirming emissions in order to assure compliance with limits."⁶ Since the use of CEMS allow LDEQ and the public to assess compliance with emission limits, LDEQ must require such monitors as measures to avoid or mitigate adverse environmental impacts whenever available. In addition, LDEQ must require stack testing as suggested by Dr. Sahu (Sahu Report at 5.3) where LDEQ determines that CEMS are not available, with parameter monitoring to assure compliance between stack tests.⁷ Again, since these measures would help assure compliance with the emissions discussed, LDEQ must require such measures or justify its decision to depart from them.

⁶ Petitioners' Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1, at pp. 65–68.

⁷ *Id.* at p. 69.

In addition, as Dr. Sahu details in Sections 5.1-5.7 of his expert report,⁸ many conditions in the proposed permits are not practically enforceable. Permit limits must be both legally and practically enforceable (i.e., enforceable as a practical matter). *See In the Matter of Yuhuang Chemical Inc. Methanol Plant*, Order on Petition No. VI-2015-03 at 14 (August 31, 2016). As EPA has explained, in order to be enforceable as a practical matter, the permit must, among other things, “clearly specify how emissions will be measured or determined for purposes of demonstrating compliance.” *Id.* To accomplish this, “limitations must be supported by monitoring, recordkeeping, and reporting requirements sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action.” *Id.* (emphasis added).

Each of the proposed Title V permits includes the following Louisiana Air Emission Permit General Condition: “Failure to install, properly operate, and/or maintain all proposed control measures and/or equipment as specified in the application and supplemental information shall be considered a violation of the permit and LAC 33:III.501.” LAC 33:III.551, Table 1, I. But this condition is meaningless unless all inputs and assumptions from the application are made enforceable and include proper monitoring and recordkeeping. As Dr. Sahu discusses, the Title V permits must contain explicit conditions for all assumptions used to calculate the potential to emit where there are no requirements for Continuous Emissions Monitors (CEMS). Sahu Report at 5.1.

Following are the examples listed by Dr. Sahu to illustrate specific unenforceable permit conditions that apply to where such conditions appear in each of the 14 Title V permits:

Example 1

[LAC 33:III.507.H.1.a] (LDPE GRP 0015, Condition 186). “Equipment/operational data monitored by technically sound method continuously.”

On its face, this requirement is completely vague and therefore meaningless. The “technically sound method” should be specified.

Example 2

[LAC 33:III.2103.B] (Logistics EQT 0006, Condition 113) “Maintain working pressures sufficient at all times under normal operating conditions to prevent vapor or gas loss to the atmosphere.”

This is another vague condition which could be made enforceable by simply noting the pressure values – i.e., using numbers instead of words.

Example 3

⁸ Petitioners’ Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1.

[LAC 33: III.5109.C.2] Ammonia only: “Develop a standard operating procedure (SOP) within 120 days after achieving or demonstrating compliance...”

This condition appears in several permits, where SCR is used to control NO_x from combustion sources and ammonia is the reagent used in the SCR process. The condition seems backwards. The SOP for safe storage and handling of ammonia should be developed before any ammonia is brought onto the facility and not “120 days after achieving compliance...” Furthermore, given the location and proximity to residences and an elementary school, the SOP should be subject to public comment before it is finalized.

Example 4

[LAC 33.III.2901.D] “Discharges of odorous substances at or beyond property lines which cause a perceived odor intensity of six or greater on the specified eight point butanol scale as determined by Method 41 of LAC 33:III.2901.G are prohibited.”

This condition appears in most of the permits, if not all of them. Yet, it is not clear how the prohibition will actually be enforced. Formosa should be required to install fence-line monitoring for various organic compounds (which can cause odors). Such fence-line monitoring coupled with odor verification can provide an enforceable approach to limiting odors as required by this regulation. As written, this condition is unenforceable as a practical matter and therefore meaningless. To the extent that this condition is reactive – i.e., it comes into effect after an odor is detected, such as by a complaint from the public, the cause of that odor has to persist for hours and days before the inspection to verify the odor can even occur. By then it is typically too late because odors from chemical plants are episodic in nature both as to source and varying meteorological conditions. In general, due to the lag in reacting to an odor complaint and then not being able to verify it, such complaints, even though completely legitimate, are often dismissed since they could not be verified. Fence-line monitoring will provide actual data which can be correlated to odor compliance.

Example 5

[LAC 33:III.1103] “Emissions of smoke which pass onto or across a public road and create a traffic hazard by impairment of visibility defined in LAC 33:III.111 or intensifies an existing traffic hazard condition are prohibited.”

[LAC 33:III.1303 B] “Emissions of particulate matter which pass onto or across a public road and create a traffic hazard by impairment of visibility or intensify an existing traffic hazard condition are prohibited.”

These related (one for smoke and the other for particulate matter) general conditions appear in every one of the Title V permits.

As written these conditions are only likely to come into effect in the event of a significant release from a facility – such as during a fire or explosion. As far as allowing such conditions to persist under routine circumstances, any emissions of smoke or particulate matter across the facility boundary should be prohibited – and not just when the smoke creates or exacerbates a traffic problem. Detectable smoke or particulate matter (for example by members of the public or by observable visibility by plant staff) must be prohibited.

Example 6

[LAC 33:III.1305.A] “Prevent particulate matter from becoming airborne by taking all reasonable precautions including, but not limited to, those specified in LAC 33:III.1305.A.1 through A.7.”

The language is vague, including in the referenced A.1 through A.7 portions of the regulation. To make this condition enforceable, generally written “reasonable precautions” should be strengthened to make them quantitative to the extent possible. That provides specific direction to the facility as to what should be done and it also makes the condition enforceable.

Example 7

[LAC 33:III.2113.A] “Maintain best practical housekeeping and maintenance practices at the highest possible standards to reduce the quantity of organic compounds emissions. Good housekeeping includes, but is not limited to, the practices listed in LAC 33:III.2113.A.1 through A.5.”

The language is vague, including in the referenced A.1 through A.5 portions of the regulation. To make this condition enforceable, generally written “reasonable precautions” should be strengthened to make them quantitative to the extent possible. That provides specific direction to the facility as to what should be done and it also makes the condition enforceable.

For these, and the specific reasons provided in Dr. Sahu’s attached expert report, EPA must object to Formosa’s Title V permits.

In addition, Petitioners refer EPA to the comments submitted by EIP at page 4 of its comment letter (Attachment 2) and reassert here the fact that the draft PSD and Title V permits do not take into account the impact that ammonia injection or ammonia slip from Selective Catalytic Reduction devices used to control NO_x emissions may have on the formation of condensable particulates. EPA must object to the permits on this basis and require LDEQ to include enforceable limits on ammonia slip, which EPA has found can significantly increase condensable particulate emission.

Furthermore, and also as EIP asserts in its comments on page 4, the permit materials do not identify the test method that will be used to quantify particulates, and suggest that Formosa plans to exclude certain sulfates when measuring condensables, perhaps through the use of Method 8. Likewise, Petitioners are concerned that this approach will introduce a low bias to measurement of condensable particles, based on the use of test methods that have not been approved by the EPA. EPA should therefore object to the permits on the basis that they fail to clearly explain the test methods required to measure condensable particulates from gas burning units.

Notwithstanding the problems with the BACT analysis for greenhouse gases (carbon dioxide equivalent or CO₂e) discussed below and in EIP's comments, the permits include specific design features and operational controls aimed at improving thermal efficiency and, by recovering and reusing waste heat, reducing fuel consumption and CO₂e emissions. These measures are not sufficient to achieve BACT for greenhouse-gas-emitting sources. But even still, as EIP explains in its comments on pages 5-7, these measures are not enforceable. The Title V permits must be revised to establish operating parameters to ensure that combustion is efficient and waste heat or condensate is recycled. The permits must also include continuous monitoring and the requirement to disclose and correct deviations when Formosa does not meet the parameters. Furthermore, as EIP points out on page 7 of its comments, the draft permit identifies BACT pollution control methods that can limit CO₂e from the pyrolysis furnaces and cogeneration turbines, but, again the draft permit also do not identify operating parameters or performance indicators needed to track and implement these efficiency improvements on a continuous basis.

In addition, to reiterate EIP's comments at pages 8-10, while LDEQ acknowledges that BACT for steam-assisted flares requires the continuous monitoring of steam flow to the flare tip, it does not provide operating limits to ensure required combustion efficiencies are met. For steam-assisted flares at Formosa's planned complex, it is thus necessary to not only monitor steam flow rates on a continuous basis, but also to limit the steam-to-vent gas ratios. As EIP explains, the Title V permits must be revised to establish operating parameters to maximize combustion efficiency, including the continuous monitoring of NHV_{cz} and steam-to-vent gas ratio. These should be included as enforceable conditions within the permit at levels that represent BACT, and require disclosure and correction of deviations when parameters are not met.

Moreover, the planned complex includes two combined-cycle gas turbines (turbines) as part of the Utility 2 plant that will produce electricity and process steam. But as EIP points out in its comments on pages 10-11, the permit must be revised to require additional monitoring to ensure that emission limits are met, and non-routine emissions are adequately quantified. In addition, low-load operations should be included with the restrictions on startup, shutdown, and malfunction operations for the combustion turbines. Also, while the draft permit requires continuous monitoring of NO_x emissions from the turbines, similar monitoring is not required for CO and VOCs. As EIP pointed out on page 11 of its comments, EPA has noted that CO and VOC emissions are affected by gas turbine operating load conditions, and can increase due to reduced fuel efficiencies and incomplete combustion. The emission rates will be affected not only by the quality of combustion, but also by the effectiveness of the oxidation catalyst. The

permit currently only requires stack testing to assess compliance, which is not sufficient to determine continuous compliance with BACT limits at varying operating conditions. In order to ensure that the oxidation catalyst is meeting BACT emission limits, continuous monitoring CO and VOC must be required. As EIP further explains, continuous emission monitoring is similarly important for reporting of excess emissions, due to increase emission rates during low-load, startup, shutdown and malfunctions.

Furthermore, as EIP details on pages 11-12 of its comments, the permit be revised to require Formosa to adequately record and report the number of hours the turbines are operating at low-load conditions, including non-SSM operations. Monitoring and reporting must be adequate to reflect the elevated emissions for CO and VOCs, and the low-load operations must be limited similarly to the annual limit for SSM hours or include low-load within this limitation.

Finally, for the reasons that EIP expresses in its comments on pages 7-8, the PSD and Title V permits need to make clear that the exemptions for emissions caused by startups, shutdowns, or malfunctions that are contained in any of the NESHAP rules listed in Attachment A to EIP's comment that apply to the planned complex are no longer valid following the D.C. Circuit's 2008 decision. *See Sierra Club v. EPA*, 551 F.3d 1019, 1027–28 (D.C. Cir. 2008).

II. FORMOSA FAILED TO COMPLY WITH AIR QUALITY IMPACT REQUIREMENTS.

A. Formosa Failed to Demonstrate That its Proposed Complex Will Not Cause or Contribute to Air Pollution, in Violation of PSD Requirements.

Formosa's refined modeling shows exceedances of the NAAQS. Statement of Basis, p. 65, EDMS 11687336. That is, the PM_{2.5} 24-hour maximum modeled concentration, plus background, is 51.66 µg/m³, which exceeds the NAAQS limit of 35 µg/m³. *Id.* In addition, the NO₂ 1-hour maximum modeled concentration, plus background, is 422.53 µg/m³, which vastly exceeds the NAAQS limit of 189 µg/m³. *Id.* at 66. Further, Formosa's refined modeling for PM_{2.5} 24-hour shows increment consumption at receptor locations. *Id.* This modeling therefore shows clear exceedances of the NAAQS, along with increment consumption.

Formosa, attempting to avoid the plain result of these modeled violations—Nonattainment New Source Review permitting—utilized an extralegal method set out in LDEQ's Air Quality Monitoring Procedures (AQMP) to purportedly demonstrate compliance. LDEQ AQMP, p. 2-5. Specifically, the AQMP provides that “if the maximum contribution from the proposed project is less than the significance level at the receptor(s) and time(s) of the potential exceedance(s), the proposed project will not cause nor significantly contribute to the potential NAAQS exceedance(s).” LDEQ AQMP, p. 2-6. Formosa determined that its contribution to the

exceedances of the NAAQS and Class II increment were below the relevant Significant Impact Levels (SILs) and that its complex therefore was in compliance. Statement of Basis, p. 65–66.⁹

The Clean Air Act unambiguously prohibits Formosa’s use of SILs. The Act’s and Louisiana’s PSD provisions require Formosa to demonstrate that the emissions from its proposed complex will “not cause, or contribute to” an exceedance of any NAAQS or any increment. *See* 42 U.S.C. § 7475(a)(3); LAC 33:III.509.K.1. Congress used mandatory and expansive language throughout § 7475(a) to make its directive clear and leave no gaps for EPA or LDEQ: “no” covered source may be constructed, “unless” that source “demonstrates” that it “will not” “cause, or contribute to,” “any” violation of the NAAQS or “any” increment. 42 U.S.C. § 7475(a)(3); *see Consumer Electronics Ass’n v. FCC*, 347 F.3d 291, 298 (D.C. Cir. 2003) (“the Supreme Court has consistently instructed that statutes written in broad, sweeping language should be given broad, sweeping application.”). Congress specifically used the terms “cause” and “contribute” together to ensure the PSD program would prevent increments and the NAAQS from being exceeded by considering all possible violations or contributions to violations. *Alabama Power Co. v. Costle*, 636 F.2d 323, 362 (D.C. Cir. 1979); H.R. Rep. No. 95-294, at 9; S. Rep. No. 95-127, at 11, 32 (1977). By including “or contribute to,” Congress unambiguously covered any triggering or worsening of a NAAQS or increment violation. *See North Carolina v. EPA*, 531 F.3d 896, 910 (D.C. Cir. 2008) (where statute uses disjunctive “or” to connect terms, terms have different meaning). Within the plain meaning of the Clean Air Act, Formosa has shown that its facility will contribute to NAAQS violations and exceedance of a Class II increment.

This result also is consistent with the purpose and broader structure of the PSD program. The “emphatic goal of PSD is to prevent [increments] from being exceeded,” as well as to prevent exceedances of NAAQS. *Alabama Power*, 636 F.2d at 362 (“On their face, these provisions establish the thresholds as limitations that are not to be exceeded”); *Sierra Club v. EPA*, 705 F.3d 458, 465 (D.C. Cir. 2013) (permitting authorities must “prevent violations by requiring demonstration that a proposed source or modification will not cause [or contribute to] a violation.”); *see also* 42 U.S.C. § 7473(b)(4) (defining “maximum allowable concentration” for pollutant as being no greater than NAAQS for that pollutant); *See also* H.R. Rep. No. 95-294, at 9 (1977), reprinted at 1977 U.S.C.C.A.N. 1077, 1087 (“The purpose of the permit is to assure that the allowable increments and [NAAQS] will not be exceeded as a result of emissions from any new or modified major stationary source.”). By allowing Formosa nonetheless to use SILs to avoid the consequences of those violations, LDEQ would be authorizing rather than preventing significant deterioration.

⁹ Specifically, Formosa completed additional modeling to “show [Formosa’s] NO₂ contribution to the maximum modeling concentration to be 0.019 µg/m³ which is below the 7.5 SIL and the PM_{2.5} contribution to the maximum modeling concentration is 0.052 µg/m³ which is below the 1.2 µg/m³ SIL.” Statement of Basis, p. 65. Also following this extralegal method, Formosa completed additional modeling to purportedly demonstrate that the proposed emissions from its proposed chemical complex do not cause or contribute to the modeled increment consumption at the receptor locations that showed increment consumption. “The results show [Formosa’s] PM_{2.5} contribution to the maximum modeled PM_{2.5} Increment [] is 0.00163 µg/m³ which is below the 1.2 µg/m³ SIL.” Statement of Basis, p. 66.

Formosa’s proposed use of the SILs also is illegal under the Clean Air Act, because it improperly allows the agency to wear blinders, focusing only on Formosa’s compliance with the SIL, rather than the quality of the area’s ambient air and any other impacts projected to occur, such as the construction of other sources. By ignoring this information, LDEQ impermissibly frees itself to issue permits to sources that will in fact violate the standards or increments—in fact, LDEQ could continue to issue these permits to new sources in the same area, one after the other, that each model NAAQS and Class II exceedances but individually contribute less than the SIL.

Finally, the illegality of the SILs is consistent with recent case law. The D.C. Circuit vacated EPA’s regulations establishing PM_{2.5} significant monitoring concentrations, which are closely analogous exemptions from statutory air monitoring, on the ground that they violate the “extraordinary rigid” language of the Clean Air Act on PSD preconstruction monitoring. *See Sierra Club v. E.P.A.*, 705 F.3d 458, 466 (D.C. Cir. 2013). The Court remanded the PM_{2.5} SIL, without reaching the same issue of whether the SILs are in violation of the Act’s language on procedural grounds. *Id.* at 464, 466.¹⁰ But as explained above, Section 7475 leaves no room for doubt. Neither Formosa nor any other major source that causes or contributes to a violation of the NAAQS or an increment can absolve itself of the violation.

Formosa attempts to defend LDEQ’s method of using SILs to demonstrate that the proposed project does not cause or contribute to an exceedance of the NAAQS as an EPA-approved practice. *See Formosa Supp. EAS*, pp. 5-6 (referencing an EPA April 17, 2018 memo). But, as explained, EPA’s practice is likewise illegal. EPA cannot authorize a violation of the NAAQS, and indeed any such attempt runs counter to the Act’s clear mandate that EPA set the NAAQS at a level that is “requisite to protect the public health,” with “an adequate margin of safety.” 42 U.S.C. § 7409(b)(1).¹¹ The Supreme Court has construed this mandate as requiring the NAAQS

¹⁰ The D.C. Circuit left open the possibility it could invalidate the SILs as unlawful under the Clean Air Act, just like significant monitoring concentrations, should the EPA persist in proposing them:

We disagree with the *Sierra Club* that it is necessary to decide the EPA’s authority to promulgate SILs at this point. To do so would require that we answer a question not prudentially ripe for determination. On remand the EPA may promulgate regulations that do not include SILs or do include SILs that do not allow the construction or modification of a source to evade the requirements of the Act as do the SILs in the current rule. In such an event, we would not need to address the universal disallowance of all *de minimis* authority. If the EPA promulgates new SIL provisions for PM_{2.5} and those provisions are challenged, we can then consider the lawfulness of those SIL provisions.

Sierra Club, 705 F.3d at 464.

¹¹ Attempting to inject ambiguity into the statute, EPA now argues § 7475(a)(3) is ambiguous because the Act does not define the terms “cause” or “contribute.” EPA, Legal Memorandum: Application of Significant Impact Levels in the Air Quality Demonstration for Prevention of Significant Deterioration Permitting under the Clean Air Act, 2 (Apr. 2018). But EPA undermines itself, for it also recognizes that “absence of a statutory definition does not by itself establish that a term is ambiguous.” *Id.*; *NRDC v. EPA*, 489 F.3d 1250, 1258 (D.C. Cir. 2007) (rejecting the argument from EPA that “Congress’s failure to provide a statutory definition” created ambiguity, and holding “[t]here is no such rule of law”).

to be set at levels “not lower or higher than is necessary – to protect the public health with an adequate margin of safety.” *Whitman v. Am. Trucking Ass’ns*, 531 U.S. 457, 475-76 (2001). Because by law the NAAQS must already reflect the absolute pollution limit requisite to protect health, EPA cannot specify that pollution levels higher than the NAAQS are permissible.

Formosa has not demonstrated that its PM_{2.5} emissions will “not cause, or contribute to” an exceedance of the PM_{2.5} 24-hour NAAQS or increment, nor has it demonstrated that its NO_x emissions will “not cause, or contribute to” an exceedance of the NO₂ 1-hour NAAQS. Instead, its modeling shows NAAQS and increment violations. LDEQ must not kick the can down the road through its extralegal grafting of the SILs and let Formosa off the hook. LDEQ must address the NAAQS and increment violations based on Formosa’s modeling and examine the regional sources.

B. Formosa Failed to Follow Mandatory Modeling Requirements, thus Invalidating its Air Quality Analysis.

Louisiana SIP regulations require Formosa to demonstrate that emissions from the proposed complex will not cause or contribute to an exceedance of any applicable PSD increment. *See* LAC 33:III.509.K.¹² This includes a demonstration that emissions from the proposed complex will not cause or contribute to an exceedance of applicable Class I PSD Increments for NO₂, SO₂, PM₁₀, and PM_{2.5} at the Breton Wilderness Class I Area. To make this demonstration, the regulations mandate that “[a]ll estimates of ambient concentrations required under this Subsection [i.e., LAC 33:III.509, Prevention of Significant Deterioration] shall be based on applicable air quality models, databases, and other requirements specified in Appendix W of 40 CFR Part 51 (Guideline on Air Quality Models).” LAC 33:III.509.L.1. There is no question, therefore, that Formosa was required to follow Appendix W requirements for its modeling, but it failed to do so.

The Breton Wilderness Class I area is approximately 180 kilometers away from Formosa’s proposed chemical complex. Formosa Class I Modeling Protocol, Sept. 7, 2018, at 1. Appendix W mandates the “screening approach” “[t]o determine if a compliance demonstration for NAAQS and/or PSD increments may be necessary beyond 50 km (i.e., long-range transport assessment).” 40 C.F.R. § Pt. 51, App. W, 4.2.c. The mandated screening approach has two steps. First, Formosa must “determine the significance of the ambient impacts at or about 50 km from [the proposed chemical complex]” “[b]ased on application in the near-field of the

¹² K. Source Impact Analysis

1. The owner or operator of the proposed source or modification shall demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions, including secondary emissions, would not cause or contribute to air pollution in violation of:
 - a. any national ambient air quality standard in any air quality control region; or
 - b. any applicable maximum allowable increase over the baseline concentration in any area.

appropriate screening and/or preferred model.” 40 C.F.R. § Pt. 51, App. W, 4.2.c.i. Formosa stipulated to a significant ambient impact on the Class I area at 50 km.¹³

Step 2 requires further assessment “[i]f a near-field assessment is not available or this initial analysis indicates there may be significant ambient impacts at that distance . . .” *Id.* This step 2 assessment required Formosa to consult with EPA Region 6 to determine the appropriate model.¹⁴ Appendix W specifically mandates that “applicants shall reach agreement on the specific model and modeling parameters on a case-by-case basis in consultation with the appropriate reviewing authority (paragraph 3.0(b)) and EPA Regional Office. 40 C.F.R. § Pt. 51, App. W, 4.2.c.ii (emphasis added). Formosa skipped this requirement. It never consulted with EPA “to reach agreement on the specific model and modeling parameters,” to use.¹⁵ *See id.*

Formosa’s error was particularly egregious here. EPA made certain to emphasize that the air quality model that Formosa used, the CALPUFF modeling system, was no longer EPA’s preferred model when it amended Appendix W in 2017. *See* 40 C.F.R. § Pt. 51, App. W, 4.2.c, App. A; Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter, 82 FR 5182-01 (final rule) (Jan. 17, 2017).^{16, 17} In revising Appendix W, EPA

¹³ *See* Email from K. Olson (Formosa Consultant) to A. Randall (LDEQ), Dec. 11, 2018, EDMS 11454853, <http://edms.deq.louisiana.gov/app/doc/view.aspx?doc=11454853&ob=yes&child=yes>.

¹⁴ 40 C.F.R. § Pt. 51, App. W, 4.2.c.ii.

¹⁵ Petitioners submitted a Freedom of Information (FOIA) request to EPA for “all records in the possession, custody, or control of EPA Region 6 that refer or relate to FG LA, LLC’s modeling protocol and consultation in connection with its Prevention of Significant Deterioration permit application and associated Class I increment modeling for its planned Chemical Complex in St. James, Louisiana.” FOIA Request, July 3, 2019, EPA-R6-2019-00783, <https://foiaonline.gov/foiaonline/action/public/submissionDetails?trackingNumber=EPA-R6-2019-007083&type=request>. EPA responded on July 18, 2019. Petitioners’ Comments, Attachment 1, Attach. C, Affidavit of Corinne Van Dalen, Ex. 1, Letter from Susanne Andrews, Acting Deputy Region Counsel to Corinee [sic] Van Dalen, July 18, 2018 (EPA final deposition for EPA-R6-2019-007083 showing no documents were withheld)). EPA released records to the public on July 19, 2019. *See* FOIA Online, <https://foiaonline.gov/foiaonline/action/public/submissionDetails?trackingNumber=EPA-R6-2019-007083&type=request>. These records are completely devoid of any document showing that Region 6 was “consulted in determining the appropriate and agreed upon screening technique to conduct the second level assessment.” *Id.* Likewise, EPA has no record that shows that Formosa “reach[ed] agreement on the specific model and modeling parameters on a case-by-case basis in consultation with the . . . EPA Regional Office,” as mandated by Appendix W. 40 C.F.R. § Pt. 51, App. W, 4.2.c.ii. *Id.*

¹⁶ <https://www.govinfo.gov/content/pkg/FR-2017-01-17/pdf/FR-2017-01-17.pdf>.

¹⁷ EPA’s revisions to Appendix W took effect May 22, 2017. Further Delay of Effective Dates for Five Final Regulations Published by the Environmental Protection Agency Between December 12, 2016 and January 17, 2017, 82 FR 14324-01 (Mar. 20, 2017). EPA gave permitting agencies discretion to continue to accept modeling protocols submitted in keeping with the old rule for one year, until May 22, 2018, *id.* at 5182, but Formosa submitted the instant protocol in September 2018, *see* Formosa Class I Modeling

stated that “EPA has fully documented the past and current concerns related to the regulatory use of the CALPUFF modeling system and believes that these concerns, including the well-documented scientific and technical issues with the modeling system, support the EPA’s decision to remove it as a preferred model in appendix A of the Guideline.” 82 Fed. Reg. at 5195. EPA referenced years of studies on the CALPUFF modeling system that raise piercing questions about the model’s reliability.¹⁸

The Interagency Workgroup on Air Quality Monitoring (the “Workgroup”), which includes EPA and Federal Land Manager representatives, has studied the CALPUFF modeling system since at least 1998.¹⁹ In a 2016 report, the Workgroup cited its own studies and outside reviews showing the ease with which modelers could manipulate the meteorological data component of the CALPUFF model, CALMET, that “has often resulted in an ‘anything goes’ process, whereby model control option selection can be leveraged as an instrument to achieve a desired modeled outcome, without regard to the scientific legitimacy of the options selected.”²⁰ Beyond the inconsistencies in meteorological data, the Workgroup explained that studies show CALPUFF fails to analyze the core chemical reactions necessary to accurately predict ozone formation from single sources.²¹

All of these issues can lead to model predictions that are off target. In 2012, EPA commissioned a detailed study of CALPUFF’s predictive accuracy, along with that of competing models, against data from field observation studies of emissions tracers taken in the United States and in Europe.²² This study also concluded that the CALPUFF model results were highly variable and CALMET parameters were in practice vulnerable to manipulation “to obtain a desired outcome in CALPUFF.”²³ The study also found there was no single set of “pass through” CALMET

Protocol, Sept. 7, 2018, EDMS 11776548,
<https://edms.deq.louisiana.gov/app/doc/view.aspx?doc=11776548&ob=yes&child=yes>.

¹⁸ See EPA, Resp. to Comments on Revisions to the Guidelines on Air Quality Models, Dkt No. EPA-HQ-OAR-2015-0310-0156, p. 69 (Dec. 20, 2016), *available at* <https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0310-0156>.

¹⁹ EPA, “Reassessment of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report: Revisions to Phase 2 Recommendations,” EPA-454/R-16-007, at p. iv (Dec. 2016), *available at* https://www3.epa.gov/ttn/scram/appendix_w/2016/IWAQM_Phase2_Reassessment_2016.pdf.

²⁰ *Id.* at p. 2.

²¹ *Id.* at p. 42.

²² See Environ Int’l., “Documentation of the Evaluation of CALPUFF and Other Long Range Transport Models Using Tracer Field Experiment Data,” EPA-454/R-12-003, at pp. 5–7 (Introduction) (May 2012), *available at* https://www3.epa.gov/ttn/scram/reports/EPA-454_R-12-003.pdf.

²³ Environ Int’l, *supra*, at p. 29–30 (Executive Summary, “Conclusions of LRT Dispersion Model Tracer Test Evaluation.”)

inputs that would ensure consistency and fully address CALPUFF's variability concerns.²⁴ Moreover, several other long-range-transport models proved more accurate in predicting tracer data than CALPUFF.²⁵ As the study noted in reviewing one European tracer analysis, all of the other "[f]our of the five [long-range-transport-assessment] models were able to reproduce the observed tracer bifurcation at the farther downwind distances," but, even after the researchers explored ways to manipulate the model, CALPUFF produced results that showed the plume traveling too far north.²⁶

The revised Appendix W requires case-by-case consultation with EPA to avoid these documented concerns with the CALPUFF modeling system. These concerns warrant particular scrutiny by EPA here because of the high volumes of relevant criteria pollutants Formosa would be permitted to release, in conjunction with the emissions from several other large major sources of air pollutants that have been proposed to be built in or near the Breton Wilderness's air shed.

Because Formosa failed to comply with the mandatory air modeling requirements in Appendix W, Formosa invalidated its Class I modeling and violated Louisiana Air Regulations and SIP provision governing estimates of ambient concentrations under LAC 33:III.509.L.1. Formosa, thus, failed to demonstrate that its proposed chemical complex will not cause or contribute to an exceedance of any Class I PSD increment as required by LAC 33:III.509.K. LDEQ must withdraw its approval of Formosa's Class I air modeling protocol and order Formosa to engage in consultation with EPA Region 6 and LDEQ to determine an "appropriate and agreed-upon" long-range-transport modeling protocol. *See* 40 C.F.R. Part 51, App'x W, 4.2.c.ii. Formosa must then submit the new modeling protocol for approval and public comment.

C. Formosa's Class II Air Quality Modeling violates Louisiana Regulations, EPA Guidance, and Deviates from Formosa's own Modeling Protocol in ways that Could Underestimate its Criteria Pollutants.

As explained by Petitioners' air quality modeling expert, Todd Cloud, Formosa violates applicable regulations and guidance in its NAAQS and Class II increment modeling.²⁷ The result of these errors is that Formosa could have significantly understated its modeled air quality impacts and exceedances of air quality standards. LDEQ must require Formosa to submit a revised NAAQS and Class II increment modeling protocol.

Most broadly, Formosa improperly submitted NAAQS and Class II increment modeling starting at the edge of its property line, rather than above the complex itself. This is inconsistent with

²⁴ *Id.*

²⁵ *Id.* at 31 (Executive Summary, "Conclusions of LRT Dispersion Model Tracer Test Evaluation."), 141 (Conclusions).

²⁶ *Id.* at 141.

²⁷ *See* Petitioners' Comments, Attachment 1, Attach. D, Affidavit of Todd Cloud (Cloud Aff.), Ex. 2, pp. 3–10.

Louisiana regulations that do not make any exception from the definition of “ambient air,” for portions of the source’s property.²⁸ Formosa’s decision almost certainly reduced modeled pollution concentrations.²⁹

Although Formosa’s exclusion of its property from the modeling was not allowed under state law, Formosa did not even follow EPA’s more permissive guidance that would allow “ambient air” to “begin[] at a fence line (i.e., controlled access) and not a property line” that is unpatrolled or ungated.³⁰ Without justification, Formosa placed its receptor grids at its more distant, property line boundaries that likely will not be enclosed from public access.³¹ This unjustified decision to extend outward the point at which Formosa begins to measure its air quality impacts very likely served to decrease the modeled concentrations detected for all criteria pollutants. LDEQ must therefore require Formosa to remodel the NAAQS and Class II increment from the source of emissions without excluding air above its facility.

Formosa’s Class II increment modelling of PM₁₀ and PM_{2.5} violates applicable regulations both in Formosa’s estimates of the available increment and its own increment consumption. This is particularly egregious because, even with these errors, Formosa modeled that it would exceed the allowable Class II increment for the 24-hour PM_{2.5} standard.

For one, it is unclear whether Formosa accurately estimated its own PM_{2.5} emissions in the model. In addition to the many potential inaccuracies in Formosa’s PM emissions calculations discussed in the expert report of Dr. Ranajit Sahu,³² Formosa provided no justification for its speciation of PM_{2.5} emissions as a percentage of its PM₁₀ emissions.³³ In some cases, Formosa projected PM_{2.5} emissions at less than 20 percent of its PM₁₀ emissions, even for combustion sources for which “PM10 and PM2.5 are generally equivalent.”³⁴ The result is that Formosa may have further “drastically underestimate[d] emissions and therefore ambient impacts.”³⁵ LDEQ

²⁸ LAC 33:III.111 (defining “ambient air” to mean, “the outdoor air or atmosphere which surrounds the earth”).

²⁹ *See id.* at 3.

³⁰ *Id.* at 3; *see generally*, Draft Guidance: Revised Policy On Exclusions from “Ambient Air,” USEPA (November 2018), https://www.epa.gov/sites/production/files/2018-11/documents/draft_ambient_air_guidance_110818.pdf

³¹ Petitioners’ Comments, Attachment 1, Attach. D, Cloud Aff., Ex. 2, p. 3.

³² Petitioners’ Comments, Attachment 1, Attach. E, Affidavit of Ranajit Sahu (Sahu Aff.), Ex. 1, Technical Comments on the Proposed FG LA Complex (Sahu Report).

³³ Petitioners Comments, Attachment 1, Attach. D, Cloud Aff., Ex. 2, 7.

³⁴ *Id.*

³⁵ *Id.*

must therefore require Formosa to provide detailed support for its PM_{2.5} estimates or re-model with higher projected PM_{2.5} emissions.

Formosa also failed to adhere to applicable regulations in calculating the PM₁₀ and PM_{2.5} increments consumed by other regional sources. Under 40 C.F.R. Part 51, Appendix W, Section 8.2.2,³⁶ Formosa was required to model “potential” emissions based on each source’s maximum permitted emission limit or “actual” emissions” calculated using the specific formula that multiplies the maximum allowable emission limit (or federally enforceable permit limit) times the actual operating level and actual operating factor, both of which represent the average over the most recent 2 years. Indeed, Formosa committed in its 2015 and 2018 modeling protocols to LDEQ that it would do just that, and gather off-property source emissions data based on “permit allowable emission rates.”³⁷

Instead of following the agreed protocol, Formosa provided historical, 2016 PM emissions for several large regional sources, including every PM_{2.5} source.³⁸ There is no evidence in the record that LDEQ knew or ever approved of Formosa’s decision to deviate from the method in Appendix W and to rely on historic emissions for other sources, let alone approved the change in writing.³⁹ Formosa also failed to document its method for determining which regional sources to include in the increment analysis for PM_{2.5},⁴⁰ leading to a concern that Formosa’s modeling of the increment could be under inclusive. Once again, this likely served to substantially understate existing PM₁₀ and PM_{2.5} emissions. This also violated Formosa’s obligation to obtain LDEQ approval for its modeling protocol. LDEQ must therefore require Formosa to create a documented inventory of other sources included in the Class II increment model. After completing supplemental modeling, Formosa must then be held to account for any NAAQS or Class II increment violations revealed.

Petitioners also refer EPA to the comments prepared by their expert Todd Cloud (Attachment 1, Attachment D, Ex. 2, EDMS 11819373 at pdf pp. 118-126) for additional information and grounds supporting an EPA objection based on Formosa’s flawed air quality analyses, modeling, and air toxics assessment. In addition, Petitioners refer EPA to the comments prepared by their

³⁶ 33 La. Admin. Code Pt III, 509(L), provides that “[a]ll estimates of ambient concentrations required under this Subsection shall be based on applicable air quality models, databases, and other requirements specified in Appendix W of 40 CFR Part 51 (Guideline on Air Quality Models).” Any deviation from Appendix W standards must be approved in writing by the state administrator and the modification must be subject to notice and opportunity for public comment. *Id.*

³⁷ *Id.* at 5.

³⁸ *Id.* at 4.

³⁹ *See* LAC 33:III.509.L.

⁴⁰ Petitioners’ Comments, Attachment 1, Attach. D, Cloud Aff., Ex. 2, 7.

expert Dr. Sahu (Attachment 1, Attachment E, Ex. 1, EDMS 11819373 at pdf pp. 136-139) for additional support for an EPA objection based on Formosa's flawed air quality analyses.

III. FORMOSA PERVASIVELY UNDERESTIMATES ITS POTENTIAL TO EMIT.

As documented at length in Section 3 of Dr. Sahu's expert report (Petitioners' Comments, Attachment 1, Attach. E), Formosa's permit applications rely routinely on underestimated, and often inappropriate, emissions factors for assessing the petrochemical complex's potential to emit ("PTE").⁴¹ Accurate PTE estimates are critical for determining the complex's overall emissions profile and impacts on ambient air quality. As Dr. Sahu concluded, "[t]aken as a whole, the PTE emissions estimates provided in the permitting record underestimate PTE emissions for every single pollutant, and as a result, the impact of the facility's emissions are also underestimated."⁴² LDEQ must order Formosa to revise its PTE calculations with fully supported, more accurate representations of each source's maximum potential emissions.

The likely inaccurate PTE estimates are consequential, because they call into question whether Formosa complies with the health-based NAAQS and Class II increments.⁴³ As described in Section I, Formosa has already modelled that St. James would be in nonattainment, by wide margins, for the 1-hour NO_x (NO₂) and 24-hour PM_{2.5} NAAQS standards and nearly exceeds the PM_{2.5} annual standard.⁴⁴ Formosa's modeling already shows that its complex would consume the Class II increment for 24-hour PM_{2.5} and nearly consume the increment for annual NO₂.⁴⁵ Formosa only narrowly avoided conducting refined modelling of its 1-hour SO₂ emissions.⁴⁶ The pervasive underestimates in Formosa's PTE calculations may well outstrip what, if any, margin for error Formosa has left from violating these or other NAAQS standards.⁴⁷ Air quality and public health in St. James may be even more clearly at risk than Formosa's modeling presently reveals. Because of the lack of rigor in the Title V permits' monitoring conditions, described in Section V and Dr. Sahu's expert report, Formosa regularly could emit more pollution than its permit limits allow without LDEQ or the public knowing.

The problems with Formosa's PTE estimates fall into several categories. First, PTE is required to be determined based on the "**maximum** capacity of a stationary source to emit any air pollutant

⁴¹ See Petitioners' Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1, Sahu Report, pp. 9-42.

⁴² *Id.* at 9.

⁴³ The distortionary impact of the inaccurate PTE figures discussed here is likely magnified by other errors in Formosa's air quality modeling, outlined in the report of Todd Cloud (Petitioners' Comments, Attachment 1, Attach. D, Ex. 2) and above.

⁴⁴ Petitioners' Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1, Sahu Report at 7.

⁴⁵ *Id.*

⁴⁶ *Id.* at 5.

⁴⁷ *Id.* at 7-8.

under its physical and operational design.”⁴⁸ But Formosa repeatedly looked to the AP-42 emissions factors to produce its PTE estimates, which are not based on maximum but, at best, average emissions from a source category.⁴⁹ Indeed, EPA counsels against using AP-42 emissions factors in permitting determinations except as a “last resort,” when better information is unavailable.⁵⁰ In particular, EPA cautions against using AP-42 factors in situations in which the consequences for a poor estimate may be high.⁵¹ State environmental agencies have echoed EPA’s warnings against using AP-42 factors in permitting.⁵²

Because the AP-42 emission factors reflect average emissions rates, Formosa is likely underestimating PTE for nearly every source in which it relies on AP-42 emissions factors, in violation of Louisiana air regulations and EPA guidance. Formosa also made this same error even for some sources that do not rely on AP-42 factors, like its fugitive VOC emissions estimates that are based on EPA data explicitly listed as averages.⁵³ LDEQ must require Formosa to modify all PTE estimates that rely on AP-42 factors, or average emissions rates, and instead provide well-supported, more accurate estimates of a source’s maximum potential emissions.

⁴⁸ LAC 33:III.502 (emphasis added); see *United States v. Louisiana.-Pacific Corp.*, 682 F. Supp. 1141, 1158 (D. Colo. 1988) (“The concept contemplates the maximum emissions that can be generated while operating the source as it is intended to be operated and as it is normally operated.”).

⁴⁹Petitioners’ Comments, Attachment 1, Attach E, Sahu Aff., Ex. 1, Sahu Report at 10–11; see AP-42 Manual, Fifth Ed., Introduction, pp. 1–2 (Jan. 1995) (“In most cases, these factors are simply averages of all available data of acceptable quality.”), available at <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors>.

⁵⁰ AP-42 Manual, Introduction, *supra*, at p. 3. For example, EPA warns:

Before simply applying AP-42 emission factors to predict emissions from new or proposed sources, or to make other source-specific emission assessments, the user should review the latest literature and technology to be aware of circumstances that might cause such sources to exhibit emission characteristics different from those of other, typical existing sources. Care should be taken to assure that the subject source type and design, controls, and raw material input are those of the source(s) analyzed to produce the emission factor. This fact should be considered, as well as the age of the information and the user’s knowledge of technology advances.

Id. at 4.

⁵¹ AP-42 Manual, Introduction, *supra*, at p. 3.

⁵² See, e.g., NJ DEP Memorandum from John Preczewski, P.E., Assistant Director of Air Quality Permitting Program, to Air Quality Permitting Staff 1 (Dec. 14, 2007) (“Use of emissions factors, AP-42 and others, can be problematic and permit applicants may only use them in the absence of other reliable methods.”), available at <http://www.state.nj.us/dep/aqpp/permitguide/GuidelinesEvalPropEmissRates.pdf>.

⁵³ Petitioners’ Comments, Attachments 1, Attach E, Sahu Aff., Ex. 1, Sahu Report, p. 30.

Formosa further compounded the error of relying on AP-42 factors by often using inapposite AP-42 factors or relying on low-confidence AP-42 data, without justifying these decisions. For example, rather than applying the high end of AP-42 emissions rate testing data for NO_x from flares, 0.2 lb./MMBtu, Formosa used an emissions factor one-third as high, 0.068 lb./MMBtu.⁵⁴ To make matters worse, the testing data from which this factor was derived was from burning a nearly pure propylene gas—in contrast to Formosa’s own report of its waste gas streams, which it believes will contain far lower concentrations of propylene and, often, higher concentrations of NO_x-forming nitrogen.⁵⁵ Formosa repeated this error in the emissions factors it used for its combustion control devices, like its thermal oxidizers.⁵⁶ In other words, at times, Formosa is not just inappropriately relying on average, AP-42 factors, but is stretching to make apples-to-oranges comparisons between those factors and its own emissions sources.

In addition, AP-42 factors are ranked from A (the best) to E (the worst), based on the reliability of the data used to create them.⁵⁷ EPA warns that test data informing some emissions factors in the AP-42: “may vary by an order of magnitude or more. . . . Even when the major process variables are accounted for, the emission factors developed may be the result of averaging source tests that differ by factors of five or more.”⁵⁸

Formosa relied on D-rated factors in estimating particulate matter emissions from natural-gas combustion.⁵⁹ D-rated sources are “below average,” in that “there may be reason to suspect that these facilities do not represent a random sample of the industry.”⁶⁰ By contrast, Formosa rejected using D- or E-rated AP-42 data for hazardous air pollutants from natural-gas combustion.⁶¹ But rather than project emissions of these pollutants, using other, more reliable data sources, Formosa simply omitted the pollutants altogether.⁶² And these hazardous air pollutants comprised the large majority of HAPs from natural-gas combustion.⁶³ This is particularly concerning given the significant amounts of air toxics Formosa is already projecting it will release and the vast quantities of natural gas it would burn in its process. LDEQ must

⁵⁴ *Id.* at 21–22.

⁵⁵ *Id.*

⁵⁶ *Id.* at 22–23.

⁵⁷ AP-42 Manual, Introduction, *supra*, at pp. 8–10.

⁵⁸ AP-42 Manual, Introduction, *supra*, at p. 3.

⁵⁹ Petitioners’ Comments, Attachment 1, Attach E, Sahu Aff., Ex. 1, Sahu Report, p. 14.

⁶⁰ AP-42 Manual, Introduction, *supra*, p 10.

⁶¹ Petitioners’ Comments, Attachment 1, Attach E, Sahu Aff., Ex. 1, Sahu Report, pp.15, 17–18.

⁶² *Id.* at 15.

⁶³ *See id.* at 15, 17–18.

order Formosa to develop an accurate inventory of its maximum potential emissions from each source, looking to references beyond the AP-42 where necessary.

Finally, in some cases Formosa provided no basis at all for its emissions assumptions. For instance, Formosa assumed that each of its flares would have relatively high destruction efficiencies of 98 or 99 percent, regardless of the flare type, the waste gas composition, or the flow rate to the flare.⁶⁴ But Formosa cited no active guidance justifying this decision, particularly since a flare's actual destruction efficiency is heavily dependent on operating conditions.⁶⁵ Even small differences in real-world flare efficiency could have enormous consequences for actual emissions of hazardous and criteria pollutants from the flares, particularly in high-flow-rate scenarios, like Maintenance, Startup, and Shutdown and upsets.⁶⁶ To instead represent true PTE, Formosa should have assumed the lowest potential destruction efficiencies for each flare.⁶⁷

In another consequential example, Formosa assumed, without providing support, that PM_{2.5} would only be 0.197 percent of total PM emissions from its cooling towers.⁶⁸ Dr. Sahu opined that this was "an extraordinary assumption," that appears to be "dramatically wrong," as readily available cooling tower emissions data show PM_{2.5} to be more than double the share of PM assumed without support by Formosa.⁶⁹

LDEQ must require Formosa to revise its PTE estimates, using emissions data that reflect maximum potential emissions and that are supported by verifiable and relevant data. As it stands, Formosa's PTE estimates may deeply underestimate its potential emissions, including of pollutants like PM_{2.5} and NO_x that Formosa's existing modeling already shows could pose concern for human health.

In addition, Petitioners refer EPA to the comments prepared by their expert Dr. Sahu (Attachment 1, Attachment E, Ex. 1, EDMS 11819373 at pdf pp. 140-173) for additional support and grounds for an EPA objection based on Formosa's failure properly estimate its potential to emit pollutants. Petitioners also refer EPA to the comments prepared by EIP, pp. 1-4 and reference exhibits (Attachment 2) for additional grounds to support an EPA objection based on Formosa's failure to properly estimate its potential to emit Hazardous Air Pollutants (HAPs), PM₁₀, and PM_{2.5}.

⁶⁴ *Id.* at 18–20.

⁶⁵ *Id.* at 19–20.

⁶⁶ *Id.*

⁶⁷ *Id.* at 20.

⁶⁸ *Id.* at 23.

⁶⁹ *Id.* at 23–24.

IV. THE EMISSION LIMITS DO NOT REFLECT THE BEST AVAILABLE CONTROL TECHNOLOGY (BACT).

A. Best Available Control Technology (BACT)—Legal Background.

The Clean Air Act requires that a permit issued to a major new source of air pollution in an attainment area include emission limits that reflect the installation of BACT for each regulated air pollutant.⁷⁰ A permit cannot issue without proper BACT limits.⁷¹ The limits proposed in the draft permits do not represent BACT because they fail to reflect the maximum emission reductions that are achievable.

The Clean Air Act defines BACT as an:

emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.⁷²

Louisiana’s federally approved State Implementation Plan (SIP) similarly makes clear that BACT is, “an emissions limitation...based on the maximum degree of reduction from each pollutant subject to regulation under this Section that would be emitted from any proposed major stationary source or modification...”⁷³

The BACT review “is one of the most critical elements of the PSD permitting process” because it determines the amount of pollution that a source will be allowed to emit over its lifetime.⁷⁴ As such, the BACT analysis must be “well documented” and a decision to reject a particular control option or a lower emission limit “must be adequately explained and justified.”⁷⁵ While the applicant has the duty to supply a BACT analysis and supporting information in its application,

⁷⁰ 42 U.S.C. §§ 7471, 7475(a)(2), 7479(3).

⁷¹ 42 U.S.C. § 7475(a)(4); *Alaska Dep’t of Env’tl. Conservation v. EPA*, 540 U.S. 461 (2004) (upholding EPA’s authority to block a PSD permit where the state permitting authority’s BACT determination was unreasonable).

⁷² 42 U.S.C. § 7479(3).

⁷³ LAC 33:III.509.B (providing BACT definition).

⁷⁴ *In re Mississippi Lime*, 15 E.A.D. 349, 361 (E.A.B. 2011); *In re Knauf*, 8 E.A.D. 121, 123-24 (E.A.B. 1999).

⁷⁵ *In re Mississippi Lime*, 15 E.A.D. at 361; *In re Knauf*, 8 E.A.D. at 131.

“the ultimate BACT decision is made by the permit-issuing authority.”⁷⁶ Therefore, LDEQ has an independent responsibility to review and verify the applicant’s BACT analyses and the information upon which those analyses are based to ensure that the limits in any permit reflect the maximum degree of reduction achievable for each regulated pollutant.⁷⁷ As demonstrated by Dr. Sahu,⁷⁸ many of the emission limits in the proposed PSD permit do not represent BACT.

BACT requires a case-by-case⁷⁹ analysis in order to determine the lowest emission rate for the pollutant in question for the source in question, reflecting the maximum degree of emissions reduction⁸⁰ that is achievable considering collateral factors such as cost, energy, and other environmental impacts. By using the terms “maximum” and “achievable,” the Clean Air Act sets forth a “strong, normative” requirement that “constrain[s]” agency discretion in determining BACT.⁸¹ Pursuant to those requirements, “the most stringent technology is BACT” unless the applicant or agency can show that such technology is not feasible or should be rejected due to specific collateral impact concerns.⁸² The collateral impacts exception is a limited one, designed only to act as a “safety valve” in the event that “unusual circumstances specific to the facility make it appropriate to use less than the most effective technology.”⁸³ If the agency proposes permit limits that are less stringent than those for recently permitted similar facilities, the burden is on the applicant and agency to explain and justify why those more stringent limits were rejected.⁸⁴ The need to aim for the lowest limits achievable as part of the BACT analysis was emphasized by the Environmental Appeals Board, which stated in reversing a permit issuance:

If reviewing authorities let slip their rigorous look at ‘all’ appropriate technologies, if the target ever eases from the ‘maximum degree of reduction’

⁷⁶ *In re: Genesee Power Station Ltd. Partnership*, 4 E.A.D. at 832, 835.

⁷⁷ See 42 U.S.C. § 7479(3) (“permitting authority” makes BACT determination); 40 C.F.R. § 70.7(a)(5).

⁷⁸ Petitioners’ Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1, Sahu Report, Section 4.

⁷⁹ 42 U.S.C. § 7479(3); New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting, Draft, (“NSR Manual”), p. B-5, EPA’s Office of Air Quality Planning and Standards (Oct. 1990), <https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf>.

⁸⁰ NSR Manual, pp. B.1-B.2, B.23.

⁸¹ *Alaska*, 540 U.S. at 485-86.

⁸² *Alaska Dep’t of Env’tl. Conserv. v. EPA*, 298 F.3d 814, 822 (9th Cir. 2002).

⁸³ *In re Kawaihae Cogeneration Project*, PSD Appeal Nos. 96-6, 96-10, 96-11, 96-14, 96-16, 7 E.A.D. 107, 117 (E.A.B. Apr. 28, 1997); *In re World Color Press, Inc.*, 3 E.A.D. 474, 478 (Adm’r 1990) (collateral impacts clause focuses on the specific *local* impacts); *In re Columbia Gulf Transmission Co.*, PSD Appeal No. 88-11, 2 E.A.D. 824, 827 (Adm’r 1989); NSR Manual at B.29.

⁸⁴ *In re Indeck-Elwood, LLC*, PSD Appeal 03-04, 13 E.A.D. 184-190 (E.A.B. Sept. 27, 2006); *In re Knauf Fiber Glass, GMBH*, PSD Permit No. 97-PO-06, 8 E.A.D. 121, 131-32 (E.A.B. Feb. 4, 1999).

available to something less or more convenient, the result may be somewhat protective, may be superior to some pollution control elsewhere, but it will not be BACT.⁸⁵

BACT's focus on the maximum emission reduction achievable makes the standard both technology-driven and technology-forcing.⁸⁶ A proper BACT limit must account for both general improvements within the pollution control technology industry and the specific applications of advanced technology to individual sources, ensuring that limits are increasingly more stringent. BACT may not be based solely on prior permits, or even emission rates that other plants have achieved, but must be calculated based on what available control options and technologies can achieve for the project at issue and set standards accordingly.⁸⁷ For instance, technology transfer from other sources with similar exhaust gas conditions must be considered explicitly in making BACT determinations.

The U.S. EPA established a top-down approach for making BACT determinations to ensure that BACT determinations are "reasonably moored" to the Clean Air Act's statutory requirement that BACT represent the maximum achievable reduction.⁸⁸ While an agency is not required to utilize the top-down process as laid out in the NSR Manual, where, as here, it purports to do so, the process must be applied in a "reasoned and justified manner."⁸⁹ Louisiana purports to follow EPA's top down approach to determine BACT.⁹⁰

⁸⁵ *In re: Northern Michigan University Ripley Heating Plant*, PSD Appeal No. 08-02, slip op. at 16 (EAB 2009) (hereinafter "*In re NMU*"); see also *Utah Chapter of Sierra Club*, 226 P.3d at 734-35 (remanding permit where there "was evidence that a lower overall emission limitation was achievable").

⁸⁶ See NSR Manual, pp. B.12, B.5, B.16.

⁸⁷ An agency must choose the lowest limit "achievable." While a state agency may reject a lower limit based on data showing the project does not have "the ability to achieve [the limit] consistently," *In re Newmont*, PSD Appeal No. 05-04, 12 E.A.D. at 429, 443 (E.A.B. Dec. 21, 2005), it may only do so based on a detailed record establishing an adequate rationale, *see id.* Moreover, actual testing data from other facilities is relevant to establishing what level of control is achievable given a certain technology. *Id.* at *30. The word "achievable" does not allow a state agency to only look at past performance at other facilities, but "mandates a forward-looking analysis of what the facility [under review] can achieve in the future." *Id.* at *32. Thus, the agency cannot reject the use of a certain technology based on the lack of testing data for that technology, where the record otherwise establishes that the technology is appropriate as an engineering matter. NSR Manual, at B.5.

⁸⁸ *Alaska, Dep't of Env'tl. Conservation v. U.S. E.P.A.*, 540 U.S. 461, 485, 488-89 (2004)

⁸⁹ *Alaska, Dep't of Env'tl. Conservation v. U.S. E.P.A.*, 298 F.3d 814, 822 (9th Cir. 2002), 540 U.S. 461 (2004)

⁹⁰ "Consistent with EPA guidance, LDEQ utilizes the 'top-down' approach to determine BACT." LDEQ Preliminary Determination Summary, p. 7, EDMS 1187336.

In a top-down analysis, the first step is to *identify all potential available control technologies* for the unit.⁹¹ This includes all technologies or techniques with “practical potential for applications.” These technologies should not be limited to those used within the United States.

The second step is to *eliminate technically infeasible options*. Now, technical infeasibility should be “clearly documented” to show that the control technology would not be successful, due to difficulties based on physical, chemical, and engineering principles.

In the third step, the applicant *ranks the remaining control technologies by control effectiveness* for each pollutant and for each unit subject to BACT analysis. Here, the list should present information on the 1) control efficiencies; 2) expected emission rate; 3) expected emission reduction; 4) environmental impacts; 5) energy impacts; and 6) economic impacts.

Finally, the applicant *evaluates the most effective controls and document results* and selects the most effective control measure not eliminated during the evaluation process. Measures are eliminated from top to bottom based on well-documented energy, environmental, or economic impacts.

B. The Proposed PSD Permit Fails to Require BACT.

Formosa’s proposed permit does not correctly utilize the top down approach and ultimately fails to require BACT or the proper emissions limits for many of its sources. Specifically, the proposed permit is deficient because it: (1) fails to properly implement LDEQ’s own top down BACT determination analysis; (2) fails to select the BACT emissions rate based on Best Achievable Rate for the technology selected as BACT, and; (3) rejects BACT based on cost considerations without basis.

Petitioners refer EPA to the comments prepared by their expert Dr. Sahu (Attachment 1, Attachment E, Ex. 1, EDMS 11819373 at pdf pp. 174-195) for detailed grounds as to why Formosa’s flawed BACT analysis requires EPA to object to the Title V permits, which Petitioners summarize below. Petitioners also refer EPA to the comments prepared by EIP, pp. 4-11 and referenced exhibits (Attachment 2) for additional grounds to support an EPA objection based on Formosa’s failure to conduct a proper BACT analysis.

1. The BACT determination does not correctly utilize a top-down analysis.

In the first step in the top down BACT analysis, the applicant considers all control options with a “practical potential for application to the emission unit under evaluation.” A control option is considered “available” if “there are sufficient data indicating (but not necessarily proving)” the technology “will lead to a demonstrable reduction in emissions of regulated pollutants or will otherwise represent BACT.”⁹² Formosa’s draft permit fails to consider key technologies, and at

⁹¹ NSR Manual at p. B-5.

⁹² *In re Spokane Regional Waste-to-Energy Applicant*, 2 E.A.D. 809, slip op. at 22 (Adm’r June 9, 1989).

times fails to include any limitations resembling BACT. LDEQ, thus, must deny the permit and require Formosa to conduct a proper analysis and implement BACT.

As Dr. Sahu discusses in detail in his report, the proposed permit's SO₂ BACT determination for Boilers, Heaters, and Pyrolysis Furnaces is incomplete in that it failed to consider dry sorbent injection (DSI) to reduce emissions.⁹³ Instead, the permit selects fuel gas as BACT, which can result in higher levels of sulfur compound emissions. In connection with the same equipment, and adding the turbines, the BACT determination is incomplete by omitting any consideration of the condensable portion of PM.⁹⁴

Further, the BACT determination is incomplete in failing to consider Optical Gas Imaging (OGI), which pin points larger leaking sources more quickly than LDAR (Leak Detection and Repair technology).⁹⁵ As Dr. Sahu explains, this responsiveness is essential to keeping fugitive VOC emissions low. *Id.* Notably, Formosa rejected leakless technology in part because it is not available for all components.⁹⁶ But the top-down analysis, and the Clean Air Act, require a rational basis for eliminating technology that would otherwise constitute BACT.

In other cases, the proposed permit fails to require BACT at all. While technologies for PM₁₀ and PM_{2.5} from the process vents were explored, LDEQ failed to select any of them. Sahu Report at 51. Similarly, on a number of sources with fugitive emissions, the permit relies on either Maximum Achievable Control Technology ("MACT") or National Emission Standards for Hazardous Air Pollutants (NESHAPs) to reduce VOC emissions.⁹⁷ But, counterintuitively, MACT, also known as "the MACT floor," sets the minimum standard that industry must meet to comply. MACT and NESHAPs standards are used in this permit to establish critical conditions such as leak threshold, monitoring frequency, and time allowed for repair. Applying these less stringent results in a permit that is weaker than what BACT requires.

2. The BACT analysis failed to incorporate rate and other factors necessary to establish emissions limits.

BACT encompasses all of the factors required to achieve an emissions limitation, including factors such as rate, concentration, and averaging time. As the BACT clearinghouse manual explains, BACT is not an equipment requirement but a performance requirement.⁹⁸

⁹³ Petitioners' Comments, Attach. E, Sahu Aff., Ex. 1, Sahu Report, pp. 49-50.

⁹⁴ *Id.* at 50.

⁹⁵ *Id.* at 52.

⁹⁶ *See id.* at 52-53.

⁹⁷ *Id.* at 53.

⁹⁸ CAPCOA BACT Clearinghouse Resource Manual VIII. Control Technology Definitions, <https://ww3.arb.ca.gov/bact/docs/controltech.htm>

It is interesting to note that BACT is somewhat of a misnomer. The form of the requirement is defined as an emission limitation and not as an equipment standard. Therefore, one is constrained to assume that the emission limitation would, in many cases, correspond to the emission rate achieved with either basic or control equipment which would otherwise be determined to be an appropriate control technology requirement. In other words, BACT should be established as a performance requirement, not as an equipment requirement, on authorities to construct and permits to operate.⁹⁹

Moreover, BACT is forward-looking and technology forcing, evaluated on a case-by-case basis. It is not determined based simply on reviewing previously issued permits. Here, the proposed permit selected rates and other factors based on previously issued permits. Specifically, the permit failed to consider the rate for:

- Vapor combustors
- Thermal oxidizers
- Bag filters
- Draft eliminators
- Furnaces NOx

The permit also neglected to consider the concentration in determining the NOx emissions for the heater and boilers and the averaging time when determining the NOx emissions for the turbines.¹⁰⁰

The BACT analysis must incorporate rate and other factors necessary to establish emissions limits.

3. The Proposed Permit Failed to require BACT to reduce GHG emissions.

The project would emit nearly 14 million tons of greenhouse gas emissions, making this complex the second largest GHG emitter in Louisiana and one of the largest in the U.S. These emissions will have an impact well beyond the communities surrounding the facilities. Greenhouse gases emitted from this project include CO₂, N₂O, methane, and sulfur hexafluoride.

Despite these significant emissions, Formosa identifies general design features and controls that could maintain high levels of thermal efficiency and waste heat recovery, that could, in turn reduce CO₂e emissions, but adopts none of them. One option the applicant did identify as feasible and cost effective explicitly was not incorporated into the GHG emission calculations or the enforceable conditions of the permit. Ultimately, the proposed permit does not include BACT for greenhouse gas emissions, and no emission rate reduction is anticipated.¹⁰¹ This failure to apply BACT to greenhouse gas emissions would violate the Clean Air Act.

⁹⁹ *Id.*

¹⁰⁰ *See* Petitioners' Comments, Attach. E, Sahu Aff., Ex. 1, Sahu Report, p. 49.

¹⁰¹ *Id.* at 63-64.

4. The proposed permit impermissibly rejects BACT based on cost without basis.

When determining if the most effective pollution control option has sufficiently adverse economic impacts to justify rejecting that option and establishing BACT as a less effective option, a permitting agency must determine that the cost-per-ton of emissions reduced is beyond “the cost borne by other sources of the same type in applying that control alternative.”¹⁰² This high standard for eliminating a feasible BACT technology exists because the collateral impacts analysis in BACT step 4 is intended only as a safety valve for when impacts unique to the facility make application of a technology inapplicable to that specific facility. To reject pollution control option, BACT requires a demonstration that the costs per ton of pollutant removed are disproportionately high for the specific facility compared to the cost per ton to control emissions at other facilities.

Formosa rejected catalytic oxidation for four units based on a cost ranging from \$3,720 and \$5,673 per ton, yet it provided absolutely no basis for its conclusion that this amount was excessive. In fact, projects spend significantly more money on BACT per ton.¹⁰³ The record must include evidence that the value is not cost effective. A control technology is considered to be “cost effective” for BACT if its cost effectiveness in dollars per ton of pollutant removed falls within a reasonable range of cost-effectiveness estimates where other costs are calculated using the same methodology.

CONCLUSION

For the foregoing reasons, EPA should object to the draft Title V permits Nos. 3141-V0, 3142-V0, 3143-V0, 3144-V0, 3145-V0, 3146-V0, 3147-V0, 3148-V0, 3149-V0, 3150-V0, 3151-V0, 3152-V0, 3153-V0, 3154-V0 for Formosa’s planned chemical complex.

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¹⁰² NSR Manual at B.44; *See also Steel Dynamics, Inc.*, 9 E.A.D. 165, 202 (E.A.B. 2000); *Inter-Power*, 5 E.A.D. at 135 (“In essence, if the cost of reducing emissions with the top control alternative, expressed in dollars per ton, is on the same order as the cost previously borne by other sources of the same type in applying that control alternative, the alternative should initially be considered economically achievable, and, therefore, acceptable as BACT.” (quoting NSR Manual at B.44) (emphasis original)).

¹⁰³ Petitioners’ Comments, Attachment 1, Attach. E, Sahu Aff., Ex. 1, Sahu Report, pp. 46-47.

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