

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

In the Matter of
Annova LNG Brownsville Project

CP16-480

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED ANNOVA LNG BROWNSVILLE PROJECT

Defenders of Wildlife, Save RGV from LNG, Shrimpers and Fisherman of the RGV, Sierra Club, and Vecinos para el Bienestar de la Comunidad Costera (collectively, “Commenters”) submit these comments regarding the regarding the Federal Energy Regulatory Commission’s (“FERC” or “the Commission”) draft environmental impact statement (“DEIS”) for Annova LNG Common Infrastructure, LLC, *et al.*’s (“Annova’s”) proposed liquefied natural gas (“LNG”) export terminal.

In Docket CP16-480, Annova seeks authorization under section 3(a) of the Natural Gas Act, 15 U.S.C. § 717b(a), to site, construct and operate a new liquefied natural gas export and truck loading terminal near Brownsville, Texas, with a nameplate capacity of 0.9 billion cubic feet per day (bcf/d).

As commenters explain below, the DEIS for this Project fails to satisfy the obligations imposed by the National Environmental Policy Act (“NEPA”). The DEIS contains numerous informational gaps, and reaches multiple conclusions that lack support or are contrary to the available evidence. These deficiencies are severe enough that they must be corrected with a renewed draft EIS and a fresh opportunity for the public comment. Ultimately, however, it is clear that the Project will have such severe adverse impacts on the local environment, surrounding

communities, regions supplying the gas to be exported, and the climate as a whole, that the Project is contrary to the public interest, cannot satisfy other applicable law, and must be denied.

Table of Contents

I.	FERC Has Not Provided Sufficient Opportunity for Public Participation	4
A.	The DEIS Is Missing Extensive Information Precluding the Opportunity for Meaningful Public Comment.....	4
B.	FERC Has Not Provided Sufficient Opportunity for Public Comment.....	6
II.	The DEIS Does Not Demonstrate a Need for the Projects	6
III.	The DEIS’s Alternatives Analysis Is Incomplete and Arbitrary	9
A.	Analysis of Alternative Power Sources Likely Understates the Benefits of the Proposed Design	9
B.	The DEIS Must Consider Alternative Designs that Would Reduce or Divide the Facility’s Footprint.....	12
IV.	The Annova LNG DEIS Fails to Adequately Assess Impacts on Local Communities	17
A.	Introduction	17
B.	The DEIS Fails to Adequately Consider the Environmental Justice Impacts of the A LNG Project	18
1.	The Annova LNG Project Primarily Impacts Low-Income, Minority Communities	18
2.	The DEIS Fails to Consider Impacts to Public Health and Safety	19
3.	The DEIS Fails to Adequately Consider Impacts to Nearby Residential Property Values	23
4.	The DEIS Fails to Adequately Consider Impacts to Vehicular Traffic in its Vicinity	24
C.	The DEIS Fails to Adequately Consider the Socioeconomic Impacts of the Annova LNG Project	26
1.	Claims that the Project Will Increase Jobs and Create Positive In-flows into the Local Economy Fail to Fully Account for the Shocks to the Economy Created by the Construction Phases of the Project.....	26
2.	The Estimated Annual Economic Impact of the Projects Fails to Account for the Adverse Impacts of High-Paid, Skilled Workers on Low-Income Areas, Social Costs Incurred by Neighboring Communities, and Market Volatility	29
D.	The DEIS Does Not Adequately Consider How the Environmental Degradation Caused by the Projects Will Likely Adversely Impact Local Industries.....	31
1.	The DEIS Does Not Adequately Consider Adverse Impacts to Tourism.....	31
2.	The DEIS Fails to Adequately Analyze the Project’s Impact on the Recreational Fishing Industry	37

3. The DEIS Does Not Adequately Consider the Adverse Impacts to the Commercial Fishing and Shrimping Industries, Including Impacts to Aquatic Species and Essential Fish Habitat, and Does Not Propose Meaningful Mitigation for These Impacts.....	39
V. The DEIS Fails to Adequately Assess Impacts on Cultural Resources and Historic Properties.	49
A. The DEIS Fails to Require FERC to Complete the Section 106 Consultation Process Before Authorizing the Project.	49
B. The area of potential effect for indirect impacts should be reconsidered and nearby historic sites should be re-evaluated for impacts.....	52
1. Palmito Ranch Battlefield NHL	54
VI. The DEIS Fails to Adequately Assess Impacts on Listed and Sensitive Species	58
A. NEPA Obligations Respecting Wildlife and Listed Species	58
B. The DEIS Fails to Adequately Assess the Project’s Significant Effects on Listed Species	61
1. Endangered Ocelot	61
2. Threatened Piping Plover and Red Knot	66
3. Endangered and Threatened Sea Turtles	68
C. The DEIS Fails to Adequately Assess Mitigation for Wildlife	72
D. FERC Has Failed to Comply with the ESA’s Consultation Requirements	72
VII. The DEIS Fails to Take a Hard Look at Wetlands Impacts.....	73
A. The DEIS Fails to Consider Reasonable Facility Design and Siting Alternatives That Would Reduce Wetland Impacts.....	74
B. The DEIS Fails to Take a Hard Look at Mitigating Wetland Impacts	75
1. The DEIS Arbitrarily Defers Discussion of Mitigation to Future Corps of Engineers Decisionmaking	75
2. The DEIS Fails to Adequately Evaluate Wetlands Impacts Due to the Associated Supply Pipeline.	76
3. The Information in the DEIS Regarding Annova’s Proposed Mitigation Is Insufficient	77
VIII. The DEIS Fails to Adequately Consider Reliability and Safety.....	79
1. FERC Must Clarify the Basis for Its Potential Impacts Analysis and Its Discrepancy with ACTA’s Conclusions	80
2. The Risk Assessment for Space Launch Failures Improperly Failed To Include the BFR.....	81
3. The DEIS Provides Insufficient Information Regarding Debris Impacts to the Brownsville Ship Channel.....	84
B. The DEIS’ Reliability and Safety Analysis Is Incomplete and Fails to Account for All	

Reasonably Foreseeable Infrastructure.....	85
C. The DEIS Should Not Be Issued Until the DOT Issued Its Letter of Determination	86
IX. The DEIS Fails to Adequately Address Connected, Indirect, and Cumulative Actions, Including Production and Use of the Exported Gas	87
A. The EIS Must Address the Impacts of Cooperating Agencies’ Decisions, Including the Impacts of Additional Natural Gas Production and Use	87
B. The Proposed Feed Gas Pipeline Is FERC Jurisdictional and A Connected Action	90
C. The Effects of Increased Gas Production and Use Are Reasonably Foreseeable	91
1. Exporting LNG Will Increase Gas Production.....	92
2. The Environmental Impacts of Increased Gas Production, Processing, and Transport are Reasonably Foreseeable	94
3. Increasing LNG Expots Will Increase Overseas Gas Use.....	96
D. DOE’s Prior Analyses of Indirect Effects Are Insufficient	97
X. The DEIS Fails to Adequately Address Climate Change	98
XI. The DEIS Fails to Adequately Address Cumulative Impacts.....	107
XII. Conclusion	112

I. FERC Has Not Provided Sufficient Opportunity for Public Participation

A. The DEIS Is Missing Extensive Information Precluding the Opportunity for Meaningful Public Comment

The DEIS fails to satisfy NEPA’s basic requirements because it omits analysis of many key issues, stating that these analyses are forthcoming. This precludes meaningful public involvement and violates NEPA.

NEPA serves to protect the environment by ensuring “clarity and transparency” to federal decisions affecting the environment. *North Carolina Wildlife Fed’n v. North Carolina Dept. of Transp*, 677 F.3d 596, 603 (4th Cir. 2012). Public participation is a two-way street, serving to inform the public and to allow the public to “play a role in the decision-making process.” *Id.* at 604–05. Enlisting the public serves to develop “high quality” information on “the issues that are truly significant to the action in question,” and to guide agencies to “take actions that protect,

restore, and enhance the environment.” 40 C.F.R. §§ 1500.1, 1506.6 (public involvement), 1502.1 (purpose of impact statements).

Public participation cannot serve these purposes unless “relevant information is ... available to the public for comment.” *North Carolina Wildlife Fed’n*, 677 F.3d at 604–05 (quotation omitted). NEPA therefore requires that a draft of EIS be provided for public comment, and this draft “must fulfill and satisfy to the fullest extent possible the requirements established for final statements.” 40 C.F.R. § 1502.9(a). Under this requirement, agencies must “make available to the public high quality information, including accurate scientific analysis, expert agency comments and public scrutiny, before decisions are made and actions are taken.” *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1167 (9th Cir. 2003). The agency “should take to the public the full facts in its draft EIS and not change them after the comment period unless, of course, the project itself is changed.” *Burkey v. Ellis*, 483 F. Supp. 897, 915 (N.D. Ala. 1979).

Here, FERC’s decision to release the DEIS is premature, because analyses of numerous environmental issues are, by FERC’s own admission, incomplete. Missing documents include analysis of:

- Essential Fish Habitat consultation with National Marine Fisheries Services
- Numerous reliability and safety analyses
- Analyses of impacts to endangered and threatened species,
- Details of proposed compensatory mitigation for wetlands

By circulating a DEIS without this information, FERC has violated NEPA’s requirement that the DEIS satisfy the requirements of the final EIS to the fullest extent possible, and FERC has limited the public’s ability to meaningfully review and comment.

B. FERC Has Not Provided Sufficient Opportunity for Public Comment

FERC has further failed to provide the public with sufficient opportunity to weigh in on the DEIS. FERC set the public comment period at the regulatory minimum of 45 days. Much of this period—including the time preceding the in-person comment session—took place during the Christmas and New Year’s holidays, when commenters’ office were closed.

The format of the public comment sessions further frustrated meaningful public involvement. Rather than adopt a traditional public hearing, FERC’s public comment sessions required individuals to speak one-on-one to a court reporter, isolated from their supporting community and in an intimidating environment.

Furthermore, FERC failed to provide information about the Project in Spanish, despite the fact that a large portion of the local impacted population is Spanish speaking, including individuals with limited English language proficiency. At a minimum, FERC should have provided interpreters and summary material in Spanish during the public comment session, even if FERC declined to translate the entire DEIS into Spanish. *See* Executive Order 13,166, 65 Fed. Reg. 50,121 (Aug. 16, 2000) (instructing “each Federal agency” to ensure that persons with limited English proficiency “can meaningfully access the agency’s programs and activities”), 65 Fed. Reg. 50,123 (Aug. 16, 2000) (implementation guidance).

II. The DEIS Does Not Demonstrate a Need for the Projects

Neither Annova’s application nor the DEIS provide any indication that Annova has contracts for the sale of LNG, or meaningful prospects for securing such contracts. As such, there is no evidence of a need for, or purpose served by, this project, and Annova’s application should be denied.

Annova has not provided *any* evidence of demand for its proposed exports. The DEIS

provides *no* discussion of the need for the project or of market support for the proposed exports. This omission violates NEPA's requirement to address the purpose and need of the proposed project, and undermines the public and decisionmakers' ability to evaluate the project and potential alternatives (including, for example, alternatives that would provide less than the full proposed capacity).

If Annova had information demonstrating purpose and need, Annova would be required to have provided this information both by NEPA and by the terms of Annova's DOE authorization to export to export gas to "Free Trade Agreement" countries. In seeking that authorization, Annova committed to filing "any relevant long-term commercial agreements (contracts)" concerning export of LNG from the proposed facility.¹ Annova must similarly file all contracts associated with long-term supply of gas.² These contracts must be filed "within 30 days of their execution."³ To date, no filings indicating either type of contract appear on the DOE docket.⁴ If Annova doesn't have anyone to sell gas to, or anyone to buy gas from, there is no need for the project.

Annova has not provided evidence of need now, and the DEIS provides no reason to believe that Annova will be able to do so in the future. As of this writing, Annova has not sought authorization to export to non-free trade agreement countries.⁵ Unless such authorization is requested and granted, Annova will only be permitted to export LNG to countries that have a free trade agreement with the United States that specifically requires national treatment of natural gas.⁶

¹ *Id.* at 7 (encompassing exports by Annova on its own behalf or by Annova as an agent for another party).

² *Id.*

³ *Id.* at 9.

⁴ <https://www.energy.gov/fe/texas-lng-brownsville-lng-llc-fe-dkt-15-62-lng>, last visited Dec. 13, 2018.

⁵ https://fossil.energy.gov/ng_regulation/applications-2013-annovalngllcfedktno13-140-lng

⁶ *See* https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2014/orders/ord3394.pdf at 4. The full list of countries that have such agreements is: Australia, Bahrain, Canada, Chile, Columbia,

Only four such countries import LNG, and of those four, only South Korea imports LNG in significant volumes.⁷ However, South Korea is unlikely to increase its LNG imports beyond current levels,⁸ making it an unlikely market for Annova's proposed exports. Moreover, while it appears that Annova is seeking long term contracts to justify investment in the new terminal, South Korean gas purchasers are transitioning away from such contracts, instead purchasing LNG on the spot market.⁹ It is unclear how Annova could meaningfully participate in spot markets without non-FTA authorization Annova has not yet applied for.

Because Annova has not applied for non-free trade agreement export authorization, the Department of Energy has not made any findings as to whether there is a market or other need for Annova's proposed exports. The Department's non-discretionary issuance of the Free Trade Agreement authorization does not provide any finding of purpose or need that FERC may rely on or defer to in evaluating whether there is a need for the proposed facility.

Even if Annova were to apply for and receive Department of Energy authorization to export LNG to non-free trade agreement countries, Annova would still be unlikely to find buyers for its proposed exports. The Energy Information Administration provides estimates of global demand for U.S. LNG as part of the agency's Annual Energy Outlook. The most recent outlook forecasts that this demand will peak at 5.28 trillion cubic feet per year, or 14.5 billion cubic feet

Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Republic of Korea, and Singapore.

⁷ South Korea imports 13.2% of globally traded LNG. https://www.igu.org/sites/default/files/node-document-field_file/IGU_LNG_2018_0.pdf, at 11, attached as Exhibit 1. The other four importing countries are Mexico (1.7%), Chile (1.1%), Singapore (0.8%). *Id.* Insofar as Mexico is a market for US gas, this gas will almost certainly be delivered by pipeline, rather than as LNG.

⁸ *Id.* at 18.

⁹ *Id.* at 16.

per day.¹⁰ Other LNG export facilities that are already operational or under construction have capacity to saturate this demand. Together with proposed expansions, these facilities provide 15.35 bcf/d of capacity.¹¹

Commenters recognize that a private consultant, NERA Economic Consulting, hired by the Department of Energy to assess the macroeconomic impacts of U.S. LNG exports recently provided a much higher estimate of global demand.¹² As Sierra Club explained in comments on the NERA report, that report relied on numerous flawed assumptions that caused it to overstate global gas demand. Most severely, the report unrealistically and myopically assumed that, in the most likely scenario, no other nation takes *any* further action to limit greenhouse gas emissions.¹³ This assumption runs counter to the rest of the world's affirmance of the Paris Climate Accords and commitment to take action on climate change.

III. The DEIS's Alternatives Analysis Is Incomplete and Arbitrary

The DEIS fails to take the required hard look at alternatives, because it both fails to consider some reasonable alternatives and because it fails to take a sufficiently hard look at some of the alternatives it does consider (including failing to support dismissal of some alternatives).

A. Analysis of Alternative Power Sources Likely Understates the Benefits of the Proposed Design

Annova proposes to power its liquefaction trains with electricity provided by the ERCOT

¹⁰ EIA, Annual Energy Outlook 2018 at 73, attached as Exhibit 2, available at <https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf>; *see also id.* Table 13, attached as Exhibit 3, available at https://www.eia.gov/outlooks/aeo/excel/aeotab_13.xlsx.

¹¹ Approved facilities include Sabine Pass, Louisiana; Corpus Christi, Texas; Freeport, Texas; Cameron LNG, Louisiana, Dominion Cove Point, Maryland; and Southern LNG, Georgia. *See* <https://ferc.gov/industries/gas/industry/lng/lng-approved.pdf?csrt=1447583269565644927>, attached as Exhibit 4.

¹² NERA Economic Consulting, Macro-economic Outcomes of Market Determined Levels of U.S. LNG Exports (June 7, 2018), available at <https://fossil.energy.gov/app/docketindex/docket/index/10>

¹³ *See id.* at 41-43.

grid. We agree that this alternative is likely to be environmentally preferable to the two alternative designs discussed in the DEIS: powering electrically driven compressor trains with a new, purpose-built combined cycle natural gas fired power plant (DEIS Part 3.6.1) or using compressors that are directly driven by on-site gas turbines (DEIS Part 3.6.2).¹⁴ We also strongly support this DEIS's recognition of the need to address the indirect impact of purchasing electricity from the grid: generating this electricity will have foreseeable environmental consequences, principally in the form of increased emission of air pollution, that must be considered in the NEPA analysis.¹⁵ Nonetheless, here, FERC should improve this analysis in two ways.

First, FERC should explore the possibility of more sophisticated modeling of the impact of procuring the needed electricity from the grid, to better assess both the amount of additional emissions and where those emissions will occur. As EPA has explained, there are numerous methods that can be used to quantify the emissions associated with adding electricity demand, ranging from “basic to sophisticated.”¹⁶ The tool used in the DEIS here—EPA's Emissions & Generation Resource Integrated Database (eGRID)—is one of the most basic forms of analysis.¹⁷ This is because eGRID identifies average emissions from the entire existing fleet. A more nuanced analysis can be performed with EPA's Avoided Emissions and Generation Tool

¹⁴ We reiterate, however, that the existence of even worse alternatives does not mean that the proposed design will not have significant drawbacks or should be adopted.

¹⁵ FERC could have and should have provided similar analyses for other LNG proposals, including the nearby Texas LNG and Rio Grande projects.

¹⁶ https://www.epa.gov/sites/production/files/2017-06/documents/epas_new_tool_avert_webinar_0.pdf at 6, attached as Exhibit 5. Several other peer-reviewed papers have summarized different methods for assessing the impact of electricity consumption. See Nicole A. Ryan *et al.*, Comparative Assessment of Models and Methods To Calculate Grid Electricity Emissions, *Environ. Sci. Technol.* 2016, 50, 17, 8937-8953 (Aug. 8, 2016), 10.1021/acs.est.5b05216 (comparing available tools), attached as Exhibit 6; Nicole A. Ryan, *et al.*, Decision Support Algorithm for Evaluating Carbon Dioxide Emissions from Electricity Generation in the United States, *Journal of Industrial Ecology* (Nov. 2017), available at <https://onlinelibrary.wiley.com/doi/epdf/10.1111/jiec.12708> and attached as Exhibit 7.

¹⁷ <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid> (last visited Dec. 13, 2018); see also EPA, *How to use eGRID for Carbon Footprinting Electricity Purchases in Greenhouse Gas Emission Inventories* (July 2012), available at <https://www.epa.gov/sites/production/files/2015-01/documents/adiem.pdf> (last accessed Dec. 13, 2018) and attached as Exhibit 8.

(AVERT), which can estimate air pollution impacts associated with adding *marginal* units of electricity demand in the Texas/ERCOT market.¹⁸ Although AVERT was primarily developed to address the impact of electricity demand reduction, it can also “model scenarios with increases in load,” such as imposition of the load contemplated here.¹⁹ AVERT can provide quantitative estimates of the particulate matter (PM_{2.5}), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon dioxide (CO₂) emissions impact of Annova’s energy consumption. AVERT can also model *where* increased emissions will occur (because AVERT models dispatch of individual generating units), providing a more sophisticated analysis than the DEIS’s general assertion that the emissions associated with electricity production would be distributed throughout the ERCOT region.

Even AVERT, however, cannot provide analysis of the expected life of the Annova project. AVERT is designed to address the near-term (*e.g.*, five years). The Department of Energy has authorized Annova to export gas to free trade agreement countries for a 30-year term.²⁰ AVERT does not reflect how ERCOT’s generation mix is likely to change over the next three decades, or how it would change in response to the load that would be created by the Annova project: in particular, the grid is likely to increase adoption of renewables, and thus, indirect emissions associated with supplying Annova with electricity are likely to decrease over time. Thus, while AVERT and eGRID may provide useful starting points for analysis, more

¹⁸ <https://www.epa.gov/statelocalenergy/avoided-emissions-and-generation-tool-avert>, attached as Exhibit 9.

¹⁹ EPA, AVERT User Manual Version 2.1 at 28 (Oct. 2018), available at https://www.epa.gov/sites/production/files/2018-10/documents/avert_user_manual_10-05-18_508_0.pdf and attached as Exhibit 10. *See also* North Carolina Department of Environmental Quality and South Carolina Energy Office, Electric vehicles and air quality (Dec. 2016), https://www.advancedenergy.org/wp-content/uploads/2016/12/EV_to_Air-Quality-003.pdf, attached as Exhibit 11 (government report using AVERT to model emissions impact of added electricity generation needed to support increased electric vehicle usage).

²⁰ https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2014/orders/ord3394.pdf

sophisticated, project-specific energy modeling may be warranted here, which could address these issues. Going forward, FERC should consult with the technical experts at EPA, a cooperating agency, to identify the most effective way to take the required hard look at the impacts of the proposed project's substantial electricity consumption.

Second, in addition to providing more sophisticated modeling, consideration of indirect impacts needs to be extended throughout the DEIS, rather than limited to the comparison of design alternatives. The indirect impacts must factor not only into the decision of whether to require an alternative design, but also into the decision of whether to approve the facility at all, or to require a reduction in facility size. Here, the DEIS ignores the impacts of Annova's electricity consumption when describing the proposal's environmental consequences, including cumulative impacts. This omission is especially inappropriate because indirect emissions associated with electricity generation are likely to be *far* greater than direct emissions. *Compare* DEIS 3-19 with DEIS 4-174. The DEIS concludes that the impact of direct and nearby indirect air emissions would be insignificant, but it provides no discussion of whether the far greater emission increases that would be associated with additional electricity production would be significant, or how those increases would impact the communities surrounding the powerplants at issue.

B. The DEIS Must Consider Alternative Designs that Would Reduce or Divide the Facility's Footprint

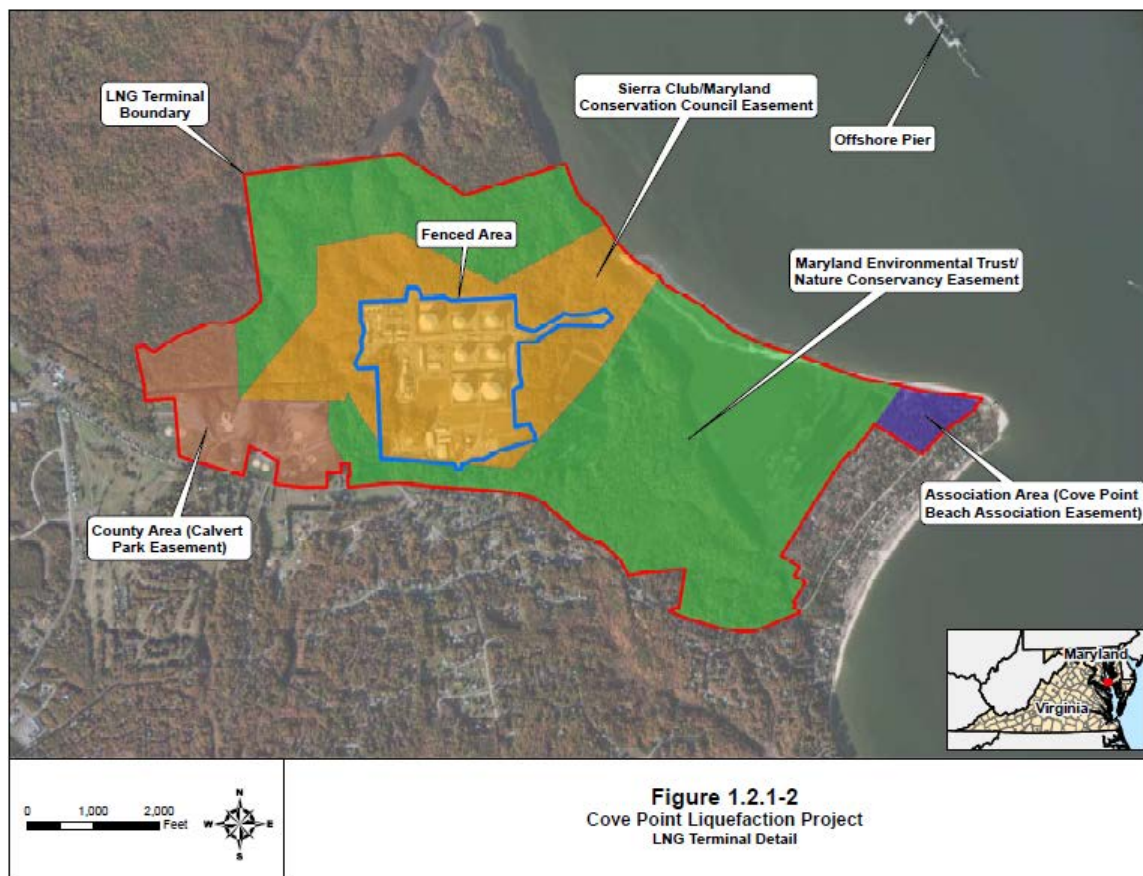
The proposed facility, as designed, will occupy 364 acres once constructed, with additional acres occupied by roads and other facilities. DEIS 2-9. Reducing or reconfiguring this footprint could allow alternatives that would reduce environmental impacts, including impacts on wetlands and sensitive species. Several such alternatives are reasonable, but are ignored by the DEIS.

As Sierra Club explained in its protest of Annova's FERC application,²¹ one alternative would be to move some of the proposed facilities away from the proposed site. Although marine facilities must generally be placed near a shipping channel, gas pretreatment and liquefaction are separate processes. *See* DEIS 2-1 to 2-4.²² Other LNG facilities have demonstrated that these components need not all be located at the same site. The Freeport, Texas project separated pretreatment facilities from the remainder of the project by a five-mile pipeline. *Freeport LNG Development*, 148 FERC ¶ 61,076 P22 (July 30, 2014). The Cove Point, Maryland project, which was constructed as an import facility more than 40 years ago, separates marine transfer facilities from gas storage and liquefaction facilities by more a mile, connected by a pipeline that transports natural gas in liquid form. FERC, *Environmental Assessment for the Cove Point Liquefaction Project*, Docket CP13-113, at 2 (May 2014).²³ The following figure illustrates the Cove Point site configuration. Notably, onshore facilities are set back from the shoreline.

²¹ FERC Accession No. 20160817-5441.

²² *Accord* Resource Report 1-7, Accession No. 20160713-4004 (July 13, 2016) (describing the proposal as having two “principal parts:” LNG facilities” and “marine transfer projects.”).

²³ Available at <http://elibrary.ferc.gov/IDMWS/common/OpenNat.asp?fileID=13546236>.

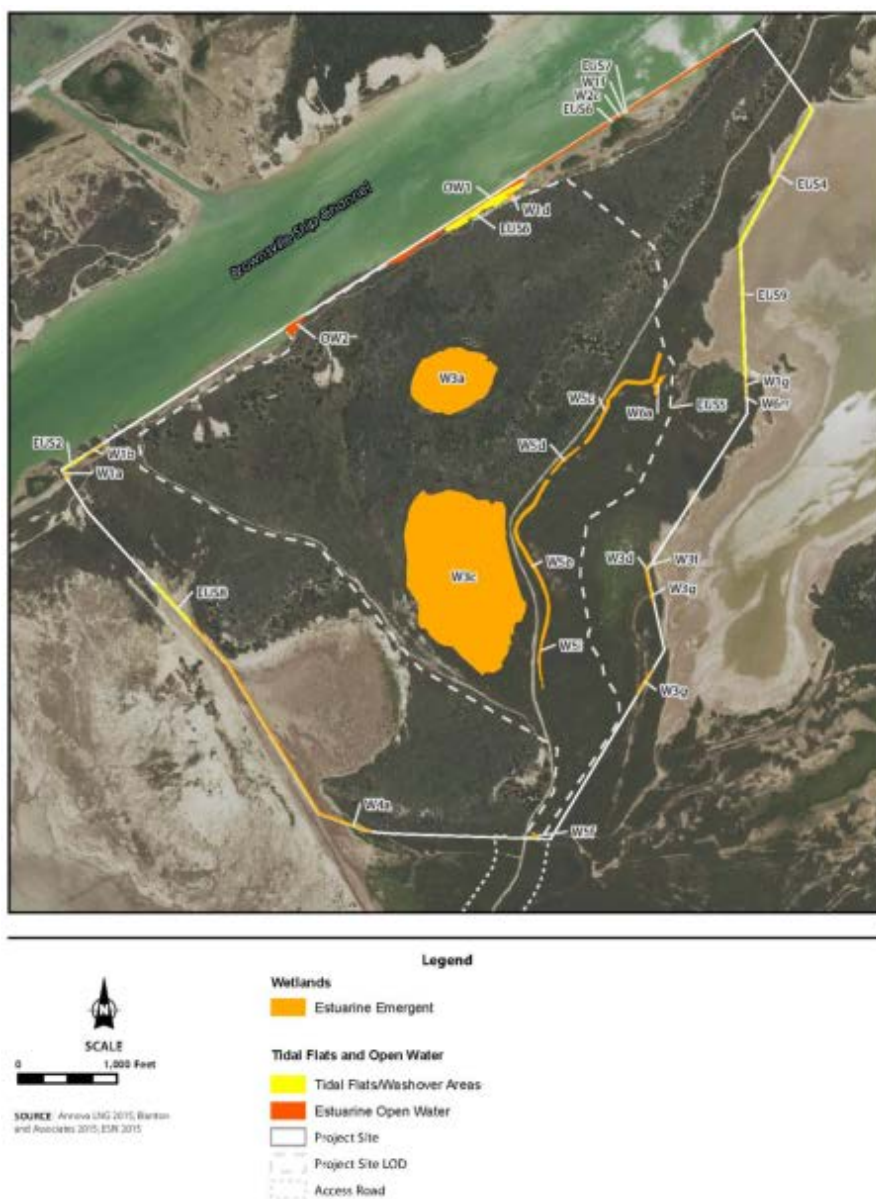


Source: FERC, *Environmental Assessment for the Cove Point Liquefaction Project*, Docket CP13-113 (May 2014).

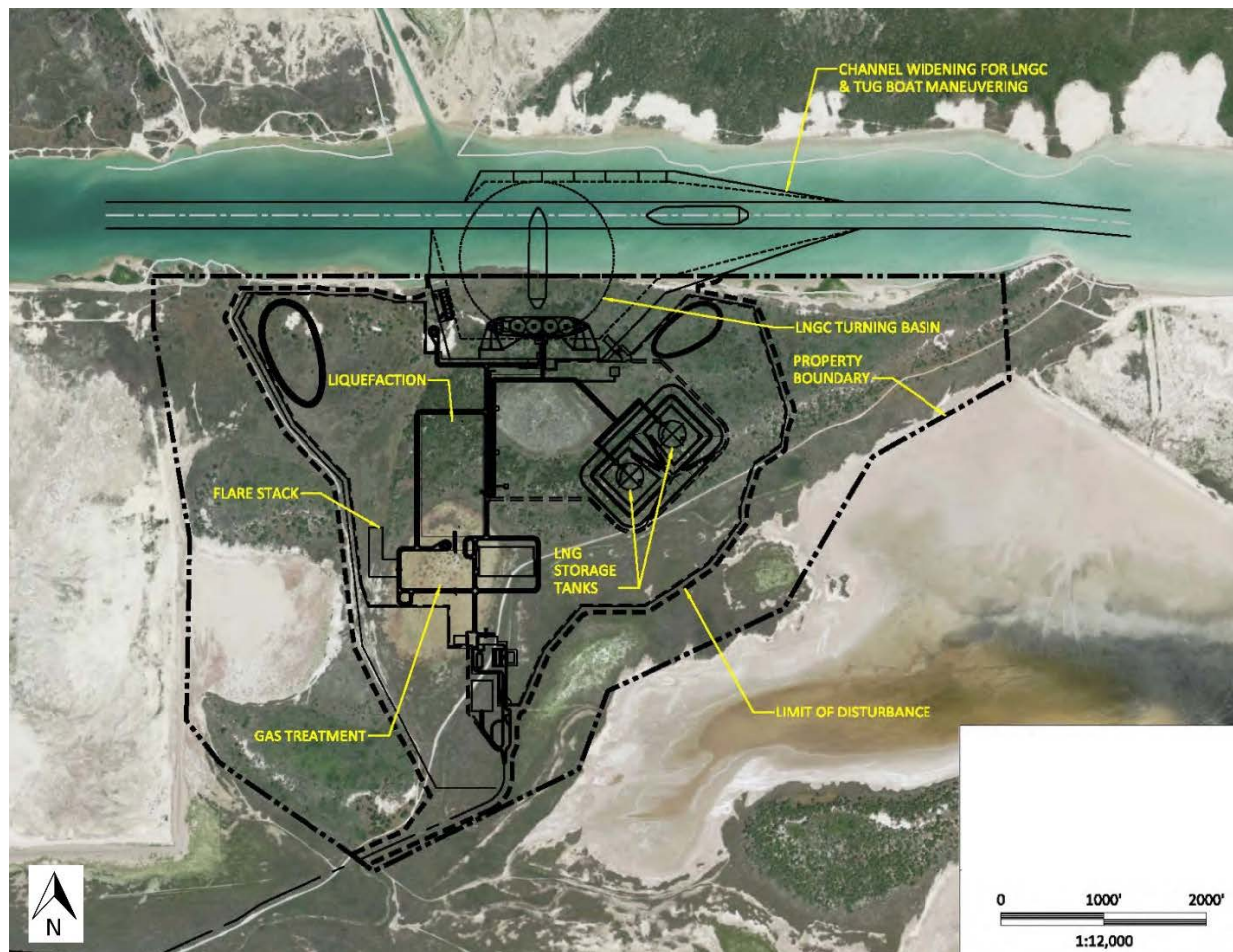
Another option for reducing the footprint at the proposed site would simply be to build a facility with a smaller capacity. Annova proposes to build six liquefaction trains in three stages, but could simply omit the second or third stage. As explained above, Annova has not demonstrated *any* need for the project; by extension, Annova has not demonstrated a need for a project of exactly this scale. NEPA requires consideration of alternatives that do not perfectly satisfy the applicant's goals: put differently, the purpose of the project cannot be defined so narrowly as to preclude consideration of reasonable alternatives. Here, FERC must consider whether alternatives that impose a smaller footprint could deliver an outside reduction in environmental harm. For example, a 33% reduction in overall facility size may eliminate far more than 33% of the wetland impacts.

Thus, reducing the footprint at the proposed site, whether by separating pretreatment (or pretreatment and liquefaction) facilities from marine loading facilities or by simply reducing the scale of the project, could enable Annova to reduce impacts on wetlands and/or wildlife.

For example, much of Annova's wetland impacts will be caused by pretreatment and storage, rather than marine transfer, facilities. Annova predicts that the project will permanently disturb 40 acres of wetlands, primarily "estuarine emergent". DEIS 4-29 to 4-300. The majority of these wetlands are at the terminal site, as shown in DEIS figures 4.4.2-1 reproduced below.



The proposed Annova facility design would fill these wetlands, as illustrated by DEIS figure 1-2, reproduced below (note the change in orientation):



In the proposed design, wetlands will be impacted by gas pretreatment facilities (which the Freeport project demonstrates can be located at a site miles away) and by liquefaction equipment (which Cove Point demonstrates can be a mile from marine loading facilities). NEPA requires that FERC take a hard look at alternatives that would follow the approaches used at Freeport or Cove Point to relocate these facilities and thereby reduce wetland impacts. Similarly, NEPA further requires a hard look at the extent to which a smaller facility, with fewer liquefaction trains, could reduce these impacts.

IV. The Annova LNG DEIS Fails to Adequately Assess Impacts on Local Communities

A. Introduction

The National Environmental Policy Act (NEPA) requires an environmental impact assessment (EIS) to examine all potential impacts of a project, including “ecological . . . aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.”²⁴ Agencies must consider the environmental justice impacts of their actions on low-income, minority communities in accordance with Executive Order 12898.²⁵ The socioeconomic costs of a project related to physical environmental impacts, including reductions in property values, must also be analyzed. These analyses include examining “purely economic” impacts—for example, the loss of businesses in the project area—and effects that branch from racial insensitivity or economic inequality.²⁶ The analysis must also consider problems related to the displacement or relocation of people.²⁷

Below, we highlight the shortcomings and inconsistencies of the DEIS’s treatment of the adverse environmental justice, socioeconomic, and fisheries impacts of the Annova Project. In terms of environmental justice impacts, we first demonstrate that the Annova Project primarily and disproportionately affects low-income, minority communities. Then, we illustrate how the DEIS fails to consider impacts to Cameron County’s public health and safety, nearby residential property values, and increased vehicular traffic.

In terms of socioeconomic impacts, we first illustrate why the DEIS’s economic analysis regarding the LNG Terminal and Pipeline Systems proposals does not adequately consider its economic impact. This includes showing why claims that the Project will increase jobs fail to

²⁴ 40 C.F.R. § 1508.8.

²⁵ *Coliseum Square, Inc. v. Jackson*, 465 F.3d 215, 232 (5th Cir. 2006).

²⁶ *Coliseum Square*, 465 F.3d at 234.

²⁷ *Coliseum Square*, 465 F.3d at 232.

account for the shocks the projects will create on the local economy, and why the estimated annual impact of the Project fails to account for a number of adverse impacts. Second, we show how the environmental degradation caused by the Projects will adversely impact local industries, including tourism, recreational fishing and commercial fishing.

B. The DEIS Fails to Adequately Consider the Environmental Justice Impacts of the A LNG Project

1. The Annova LNG Project Primarily Impacts Low-Income, Minority Communities

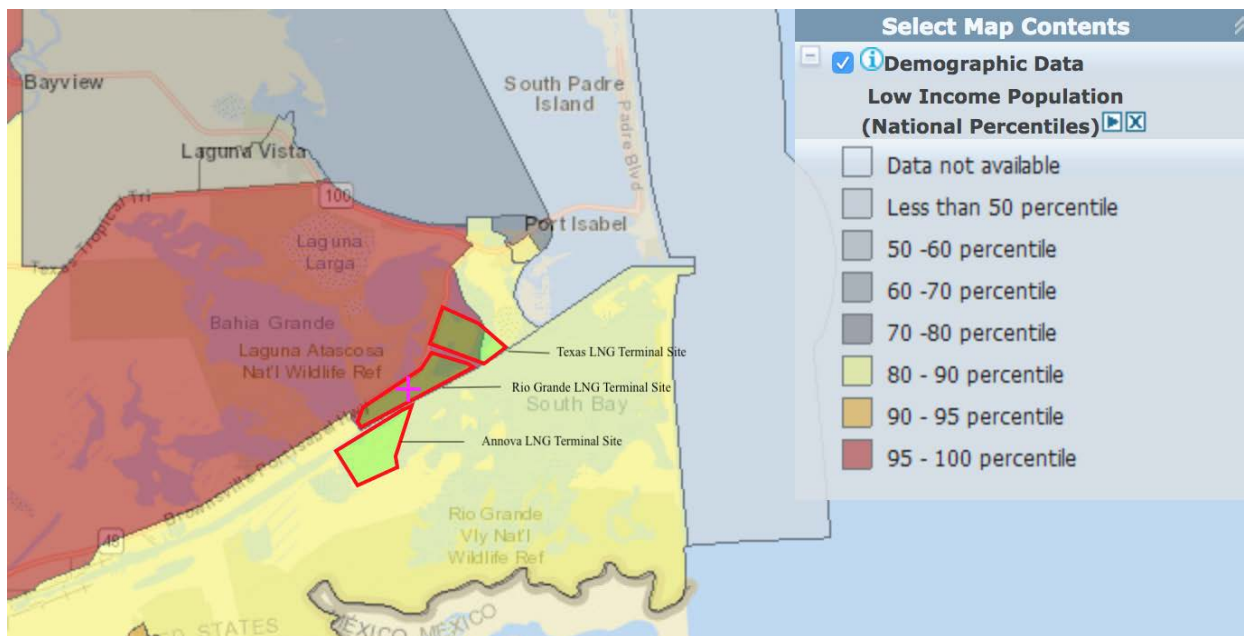
The neighborhoods in the area affected by the Annova LNG project are majority-minority and low-income communities.²⁸ Cameron County is a majority-minority county, with non-White people making up 91.1% of the population.²⁹ As one of the Annova LNG Resource Reports acknowledges, the Project would be located in an area where “unemployment [is] high” and the average wage per job is low compared with the state unemployment and wage averages.³⁰ 87.5% of students served by the Port Isabel Independent School District (Port Isabel ISD) are economically disadvantaged, and 37.8% of students in Port Isabel ISD schools are English Language Learners.³¹

²⁸ DEIS 4-134-36.

²⁹ “QuickFacts: Cameron County, Texas,” United States Census Bureau, accessed November 13, 2018, attached as Exhibit 12.

³⁰ Annova LNG Project, Resource Report 5: Socioeconomics, RR 5-9.

³¹ 2016 – 2017 Texas Academic Performance Report: Port Isabel ISD, attached as Exhibit 13, available at https://rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&year4=2017&year2=17&_debug=0&single=N&title=2017+Texas+Academic+Performance+Reports&_program=perf rept.perfmast.sas&prgopt=2017%2Ftapr%2Ftapr.sas&ptype=P&level=district&search=district&namenum=isabel&district=031909, accessed November 20, 2018.



Terminal Site Demographics: Low Income Population (Source: EJScreen mapping tool)

2. The DEIS Fails to Consider Impacts to Public Health and Safety

Annova LNG estimates that construction of the project would generate an estimated \$192 million in state and local taxes, with approximately 60% of this total paid directly by Annova.³²

The DEIS states that project construction would spur a “short-term increase in population” in areas near the project. Over the 48-month construction period, the DEIS estimates the project will employ an average of 700 workers on site. A total of 1,200 workers would be employed during peak construction, approximately a 6 month period starting “mid-way through the second year.” Very few of the non-local workers employed during the construction phase of the Project are expected to permanently relocate, or even be accompanied by their families. An average of 253 non-local workers (36%) will perform specialized jobs on the project, while the remaining 447 workers (64%) are expected to be local hires from Cameron County and, to a lesser extent, Willacy County. During peak construction, up to 780 non-local workers (65% of peak workforce

³² DEIS 4-128.

estimates) may temporarily relocate to the region. The potential impacts on the regional population, according to the DEIS, should be minor. Lastly, operation and maintenance of the project is expected to require 165 personnel, 110 of which will be filled by non-local workers who would permanently relocate to the area. This, they claim, will also not have a noticeable effect on the area.

The DEIS nevertheless fails to adequately document how these temporary and permanent increases in population expected from the temporary construction jobs and permanent operations jobs may financially strain the area's public services, especially if you consider these increases concurrently with the other two LNG projects. The DEIS claims that the minor increase of area residents during the construction phases of the Annova LNG project would not have an adverse impacts on local public services.³³ This is an oversimplification of the strain the project – and its resulting uptick in environmental degradation, especially when considered concurrently with the other two LNG projects being proposed near the site – will impose on health care services. For instance, the DEIS acknowledges that the construction phases of the Project will “impact local air quality,”³⁴ as do the concurrent LNG Terminal and Pipeline projects. Simple coordination with “local law enforcement, fire departments, and emergency medical services” for “effective emergency response” does little to abate these concerns.³⁵

Even minor damage to the area's air quality, for instance, must be considered in conjunction with the existing environmental conditions of Cameron County. The County already ranks 227 out of 242 counties in Texas for its poor air quality, water quality, and other

³³ See DEIS, 4-132.

³⁴ DEIS, 4-171.

³⁵ DEIS, 4-132.

environmental metrics.³⁶ Cumulative impacts from the Annova LNG project, multiple pipelines, multiple terminals, and supporting industries, *e.g.*, freight, could exponentially increase environmentally-influenced health issues. One example is that air pollution can worsen symptoms of respiratory diseases like asthma.³⁷ Any uptick in health issues like these could, in turn, also significantly increase the demand for medical services. The DEIS fails to provide adequate analysis on whether the increase in pollutants is likely to increase health problems and the demand they place on hospitals' capacity to take in patients.

Not only does the DEIS lack any serious analysis on whether a decrease in air quality might lead to an increase in demand for medical services, such as asthma treatments, but it does not adequately address disasters. In the event of a disaster requiring evacuation or causing trauma and hospitalization – either during the construction or operation/maintenance phases of the Annova LNG project – Port Isabel residents would be required to travel to one of Brownsville's two medical centers with trauma centers, since Port Isabel and Laguna Madre have no hospitals.³⁸ There is no analysis on whether these trauma centers can handle such a disaster. Further, in the event of a disaster requiring evacuation, there is no analysis on routes that residents closest to the Project will be able to take to reach safety or medical services. The most direct route to Brownsville and its medical services passes directly adjacent to the proposed facility.

If a scenario such as this one plays out during the construction and/or operation phases of the Project, communities closest to the Project would have to travel to medical facilities in Brownsville in case of health emergencies. The lack of public financial resources caused by the

³⁶ "Cameron County: County Health Rankings," from County Health Rankings & Roadmaps, attached as Exhibit 14, available at <http://www.countyhealthrankings.org/app/texas/2018/rankings/cameron/county/factors/overall/snapshot>.

³⁷ Asthma and Allergy Foundation of America, *Asthma Capitals 2018: The Most Challenging Places to Live With Asthma*, (2018), p. 18, attached as Exhibit 15, available at <http://www.aafa.org/media/2119/aafa-2018-asthma-capitals-report.pdf>.

³⁸ DEIS, 4-132.

increased population of the Annova project in tandem with the other LNG projects may, in turn, create strain for Brownsville medical facilities that may not be equipped to handle increased foot traffic. It may also prevent the construction of new facilities in Port Isabel and/or Laguna Madre if health needs become acute, since tax increases may still not be enough to handle the cumulative increases in population. Not to mention, political choices regarding how to prioritize those dollars may not be moved towards increased health care accessibility.

The DEIS also fails to acknowledge Annova LNG's impact on local public schools. The DEIS acknowledges that if all of the estimated non-local workers that move into the area during the operation phase of the project – approximately 110 non-local workers in total – have 1.3 school-aged children on average, then approximately 144 additional students would enroll in area public schools – a 0.3% increase of the student population in the Brownsville ISD, and 0.1% of total enrollment in Cameron County.³⁹ When looked at individually, the impact on teacher-student ratios is minimal. However, this estimate does not take into account the strain that an increase of the student population may have in tandem with the other LNG projects coming to the area, of course, which would change teacher-student ratios for the worse. Not to mention, with tax abatements given to another LNG project, this view also fails to acknowledge the strain on school occupancy limitations, meaning that concurrent influxes of school-aged children into area public schools could lead to fewer dollars per student invested. This is also a property-poor area, meaning that investments in schools from property taxes are already low. As a result, any increase in students could have a disproportionately large negative impact, given the higher marginal utility of tax dollars in school districts such as the Brownsville and Point Isabel Independent School Districts in comparison to richer districts. A potential strain on school funding is

³⁹ DEIS, 4-133.

particularly problematic because Laguna Heights schools are within the PISD, and given the high poverty rates in Laguna Heights, any impact to educational opportunities could further cement income inequality throughout Cameron County.⁴⁰

3. The DEIS Fails to Adequately Consider Impacts to Nearby Residential Property Values

The DEIS failed to adequately consider impacts to property values. The DEIS states only that “the nearest residences [to the Annova LNG project are] located approximately 2.7 miles to the south.”⁴¹ As such, the DEIS states simply that development of the Annova facility is “not expected” to impact the value of residential properties or ongoing developments, which are all situated beyond 2 miles from the project.⁴²

Unfortunately, the DEIS does not provide any further analysis on the impact the Project will have on neighboring communities. Truthfully, since the LNG market is young, economic studies on the effects of large-scale, industrial LNG projects on nearby property values are scant. However, comparable studies have been conducted for decades regarding the effects of other high-polluting, loud and visually unappealing industrial projects on nearby property values. For example, a University of California - Berkeley study found that home values within two miles of power plants opened up in the U.S. in the 1990s decreased by three to seven percent by the mid-2000s, largely due to disamenities such as how visually unappealing large industrial projects are, as well as the noise they generate.⁴³ In addition, power plant openings are correlated with

⁴⁰ Nathan Grawe, *Education and Economic Mobility*, The Urban Institute (Apr. 3, 2008), p. 18, attached as Exhibit 16, available at <https://www.urban.org/sites/default/files/publication/31161/1001157-education-and-economic-mobility.pdf> (demonstrating that while research is in its early stages, improved K-12 school quality increases economic mobility).

⁴¹ DEIS, 4-127.

⁴² *Id.*

⁴³ Lucas W. Davis, *The Effect of Power Plants on local Housing Values and Rents*, The Review of Economics and Statistics 93: 4, 1391–1402, 1392, attached as Exhibit 17, available at

significant decreases in mean household incomes and educational attainment in areas near the plants, and the proportion of homes that are owner-occupied decreased by two to five percentage points as well.⁴⁴ This is because people with incomes in the middle class or near-middle class range choose to live near industrial projects like power plants, and thus only households with lower incomes – which is correlated with lower educational attainment – live in the area, often because it is either less expensive or because it is too expensive to move.⁴⁵

While the homes nearest to the Annova LNG project are approximately 2.3 miles away in the Port Isabel area, the power plants analyzed in the UC Berkeley Paper were also in areas with low population density like the proposed site in question. This means that a slight increase in distance from the LNG terminal can still possibly lose some of its value, unlike slight distances in more dense areas, where property values can vary more significantly on a block by block basis. Also, the concentration of lower household incomes and educational attainment levels can help further stratify regional poverty⁴⁶ in an area that has struggled for decades to lift itself up economically. In sum, the DEIS's lack of in-depth analysis of property values demonstrates a failure to adequately consider socioeconomic impacts.

4. The DEIS Fails to Adequately Consider Impacts to Vehicular Traffic in its Vicinity

During construction, there will be a large increase in vehicular traffic, particularly on SH-48. The DEIS acknowledges that traffic will increase on SH-48 during construction, citing the

<http://realneo.us/system/files/PowerplantValueImpact.pdf>.

⁴⁴ *Id.*

⁴⁵ *Id.* at 1392, 1401-05.

⁴⁶ Jay Shambaugh and Ryan Nunn (ed.), *Place-Based Policies for Shared Economic Growth*, The Hamilton Project at the Brookings Institute, 1–250, 7–9 (2018). Attached as Exhibit 18 and available at http://www.hamiltonproject.org/assets/files/THP_PBP_fullbook_web_20190129.pdf.

results of Annova LNG's Traffic Impact Analysis.⁴⁷ Annova LNG's Traffic Impact Analysis assumes that construction shifts will be staggered, with half the workforce (500 vehicles) arriving and departing during peak hours. In other words, the Traffic Impact Analysis recommends that half of the employees (500 trips) work from 6:30 a.m. to 5:00 p.m., while the remaining 500 trips working from 7:30 a.m. to 6:00 p.m.⁴⁸ Even with mitigation, however, the traffic flows will be negatively impacted with a significant increase in delays during morning and evening peak travel times, especially when considering that just Annova's construction phase alone – without even taking into account the construction phases of the other two LNG projects – will bring in more average daily commuters onto SH-48 than there were in 2015.⁴⁹

While the Traffic Impact Analysis recommends several measures to mitigate the increased traffic on the SH-48 intersections that will be impacted the most, *e.g.*, constructing and operating new lanes, the DEIS relies Annova LNG's proposal to transport construction workers to and from the construction site from a centralized location of via passenger buses, , assuming this will be an effective tool to curb vehicular traffic impacts.

There is no indication of what incentives construction workers may have, however, to travel to this centralized location, which is still to be determined, in order to catch a passenger bus. This is especially pressing if construction workers are expected to drive to the centralized location in order to do so. It is difficult, then, to understand why enough construction workers would rather drive to the centralized location instead of simply driving to the construction site directly. Since the DEIS relies on Annova's proposed passenger bus to assuage increased commuter traffic, it does not even bother considering the effect that this increased traffic and

⁴⁷ DEIS at 4-139 – 4-143.

⁴⁸ *Id.* at 4-140. .

⁴⁹ *Id.*

resulting change in traffic patterns will have on the low-income minority communities closest to the Project. Large increases in traffic along SH-48 will impact the ability of residents to reach their workplaces or medical services in Brownsville in a timely manner. The visitation patterns of tourists may also change based on this increased in traffic, but the DEIS also fails to consider how the pattern might change and how such changes might impact businesses and residents in Port Isabel and Laguna Heights.

C. The DEIS Fails to Adequately Consider the Socioeconomic Impacts of the Annova LNG Project

1. Claims that the Project Will Increase Jobs and Create Positive In-flows into the Local Economy Fail to Fully Account for the Shocks to the Economy Created by the Construction Phases of the Project

Construction of the LNG Terminal would require an average of 700 on-site workers per month, with a peak of 1,200 personnel during the height of the construction phase, which will span about 48 months.⁵⁰ On average, 253 non-local workers, or 36%, are predicted to be employed to perform specialized construction jobs, while the remaining 447 workers, or 64% are expected to be local hires from Cameron County. During peak construction, up to 780 non-local workers, or 65% of the total labor force, may temporarily locate to the region.⁵¹ About \$3 billion will be spent to construct the project, an estimated \$1.5 billion of which would be spent on construction of the project and share infrastructure with Texas, with the remaining \$1.5 billion “spent elsewhere.”⁵² An estimated \$130 million will be spend on construction materials, with materials such as concrete, sand, gravel/rock, lumber, erosion and sediment control devices, personal protective equipment, welding consumables and other miscellaneous items purchased

⁵⁰ DEIS, 2-9.

⁵¹ *Id.* at 2-9, 4-121.

⁵² *Id.* at 4-122.

locally.⁵³ Annova LNG also estimates it would add a total of \$688.2 million to the local Cameron County economy, and \$3.0 billion in associated economic output, during the 48-month construction period. The operation and maintenance phase of the project, which will require 165 permanent personnel, would generate approximately \$17.3 million in annual labor income in Cameron County, with an estimated salary per worker of \$105,000.⁵⁴ Out of these 165 workers, 110 of them will be non-local workers that relocate to the area.⁵⁵ Annova also claims that the operations and maintenance phase will support 446 total jobs in Cameron County, \$30.8 million in total labor income, and \$522 million in economic output.⁵⁶

The logic of the DEIS is shortsighted. Increased employment and expenditures are often the source of an influx of consumer activity of economy. As demands for goods and services and the spending of disposable income by workers at local businesses increases, economic advantages should, in theory, trickle down. Surely, it is possible, if not likely, that the local economy of the areas surrounding the projects will react positively, resulting in a temporary stimulus to the existing housing industry, and existing retail, educational, and healthcare services in the area, at least during the construction period.

However, the rollercoaster effect created by two separate shocks to the local economy – the introduction of the construction project and the completion of the project – may produce serious complications, especially when considered concurrently with the similar shocks produced by other LNG projects being proposed in the area. With a large influx of temporary employees, any per capita growth in gross domestic product is diluted, and thus there is not as much of a boon to the local economy as the gross numbers make it seem. In this sense, economic activity that

⁵³ *Id.*

⁵⁴ *Id.* at 4–121.

⁵⁵ *Id.*

⁵⁶ *Id.*

arises to meet the demand of the large influx of employees hired from out-of-state for the project may not significantly increase the area's per capita income or standards of living. Second, a large influx of foreign workers should make a serious impact in the kinds of entrepreneurial activity that develops to accommodate growing demand for, say, retail. These non-local workers bring with them different cultures and lifestyles, which will likely be reflected in the markets that emerge to accommodate their presence, and thus may significantly change the character of the area.

These problems are magnified when considering the Annova LNG developer's estimated tally for its final, permanent workforce. Unfortunately, the Annova LNG developers estimate a need for only about 165 permanent jobs for operating the facilities once the construction phases are complete. Since LNG exportation is not a local feeder industry, any entrepreneurial activity that developed to absorb the disposable income of employees in the area during the construction phase of Annova and its LNG neighbor projects may suddenly face a lack of demand, causing local markets, *e.g.*, retail and entertainment markets that thrive on disposable income, to shrink. Furthermore, local contractors relying on the project, *e.g.*, assisting with secondary manufacturing needs, transportation, and possibly even utilities, could all be impacted by a disproportionately large shock to a local economy that lacks the absorbing power and industrial diversity of a large, metropolitan urban economy. This could result in displacement and increased unemployment, to start with. There is some evidence of similar effects from other regions of the country. As large energy construction projects wrap up, the regional gross domestic product of less urban, less economically diverse areas may decrease significantly. For example, in a 2018 study released by the federal Bureau of Economic Analysis, Enid, Oklahoma's GDP dropped 7.8% after large energy-related construction projects came to an end – the largest decline in gross domestic

product in 2017 among the country's 383 metropolitan areas.⁵⁷

2. The Estimated Annual Economic Impact of the Projects Fails to Account for the Adverse Impacts of High-Paid, Skilled Workers on Low-Income Areas, Social Costs Incurred by Neighboring Communities, and Market Volatility

As mentioned above, Annova LNG anticipates a 165-person operational staff for the LNG Terminal that would result in an annual payroll of \$17.3 million. However, first, permanent employees' salaries will average \$105,000 annually. While 165 employees would make a relatively small dent if diluted within the workforce of a large metropolitan area, with relatively few residential areas in the vicinity of the project, these salaries could significantly influence local consumer preferences. For instance, such high salaries in Cameron County, a county with an average salary of under \$15,000, could pressure small businesses to either cater to more moneyed patrons, or succumb to competition from businesses that are more willing to operate in the lifestyle markets that interest the new local consumer base. Furthermore, for existing businesses, rents can increase because of increased residential and consumer demand in an area. If a business's revenue does not increase, then operating costs could become unsustainable and force businesses to shutter their doors. And of course, if Annova LNG employees remain concentrated in a given area, *e.g.*, Port Isabel or Laguna Heights, then residential property prices could rise in the given area in response to the demand from a wealthier population. This increases the probability of displacement due to either the increased property taxes after the area is re-appraised, or increased rents.

Next, the projects impose social costs on current area-residents as well. These future,

⁵⁷ Adam Wilmoth, "Enid's economy slows as construction projects are completed, NewsOK (Sept. 20, 2018), attached as Exhibit 19, available at <https://newsok.com/article/5608887/enids-economy-slows-as-construction-projects-are-complete>.

richer Annova LNG employees – especially if they’re from out-of-town or out-of-state – could further any changes in the character of communities that began during the influx of foreign workers brought about by the construction phases of the project. This contributes to the disintegration of community cohesiveness and identity, and could have the effect of reducing civic engagement and increasing mental health issues among residents facing displacement.⁵⁸

Lastly, and more broadly, the LNG market is young and volatile, meaning that the estimated economic impact to the region (and the country) needs to be analyzed more profoundly. First, some industry sources forecast a supply gap, with forecasted demand exceeding supply. These industry sources are often concerned with filling the supply gap by increasing U.S. production.⁵⁹ Second, other industry sources are concerned with the seasonality of the LNG market.⁶⁰ Historically, total demand for LNG varies seasonally, while supply is usually flat. This imposes high costs of storage on LNG exporters, which in turn causes volatility. This means LNG prices change in accordance with this temporal mismatch. Note, however, if the U.S. becomes the largest LNG seller by 2025, as some industry sources predict, then it is unclear how the increased competition in LNG exporting will affect Annova LNG’s projected economic impact.⁶¹ Third, another factor that can impact LNG prices in the U.S. is the projected increase in price of gas for

⁵⁸ Zukin, Sharon, Valerie Trujillo, Peter Frase, Danielle Jackson, Tim Recuber, and Abraham Walker, *New Retail Capital and Neighborhood Change: Boutiques and Gentrification in New York City*, City and Community 8:1, 47-64, attached as Exhibit 20.

⁵⁹ Stacey Morris, “U.S. LNG Exports Part 1: Capacity Jumping in 2019, But Will There Be Enough?” SeekingAlpha.com (Jul. 11, 2018), attached as Exhibit 21, available at <https://seekingalpha.com/article/4186550-u-s-lng-exports-part-1-capacity-jumping-2019-will-enough?page=2>.

⁶⁰ Shell LNG Outlook 2018, p. 24, attached as Exhibit 22, available at https://www.shell.com/energy-and-innovation/natural-gas/liquefied-natural-gas-lng/lng-outlook/_jcr_content/par/textimage_864093748.stream/1519645795451/d44f97c4d4c4b8542875204a19c0b21297786b22a900ef8c644d07d74a2f6eae/shell-lng-outlook-2018-presentation-slides.pdf. Sylvie Cornot-Gandolphe, *New and Emerging LNG Markets: The Demand Shock* (June 2018), p. 40, attached as Exhibit 23, available at https://www.ifri.org/sites/default/files/atoms/files/cornotgandolphe_new_emerging_lng_markets_2018.pdf.

⁶¹ Jude Clemente, *Qatar As Major Competition For U.S. Liquefied Natural Gas*, *Forbes* (Nov. 11, 2018), attached as Exhibit 24, available at <https://www.forbes.com/sites/judeclemente/2018/11/07/qatar-as-major-competition-for-u-s-liquefied-natural-gas/#51824b3678ae>.

consumers as more natural gas is exported. While consumers can react to the price impact of LNG exports as long as LNG exports can be anticipated, it is extremely difficult to predict the amount of exports that can be shipped out of any given terminal, since there is considerable debate among engineers regarding how much can be produced out of each shale gas basin.⁶² In other words, the economic impact projected by the DEIS should take the market volatility of LNG into account if it hopes to be responsible.

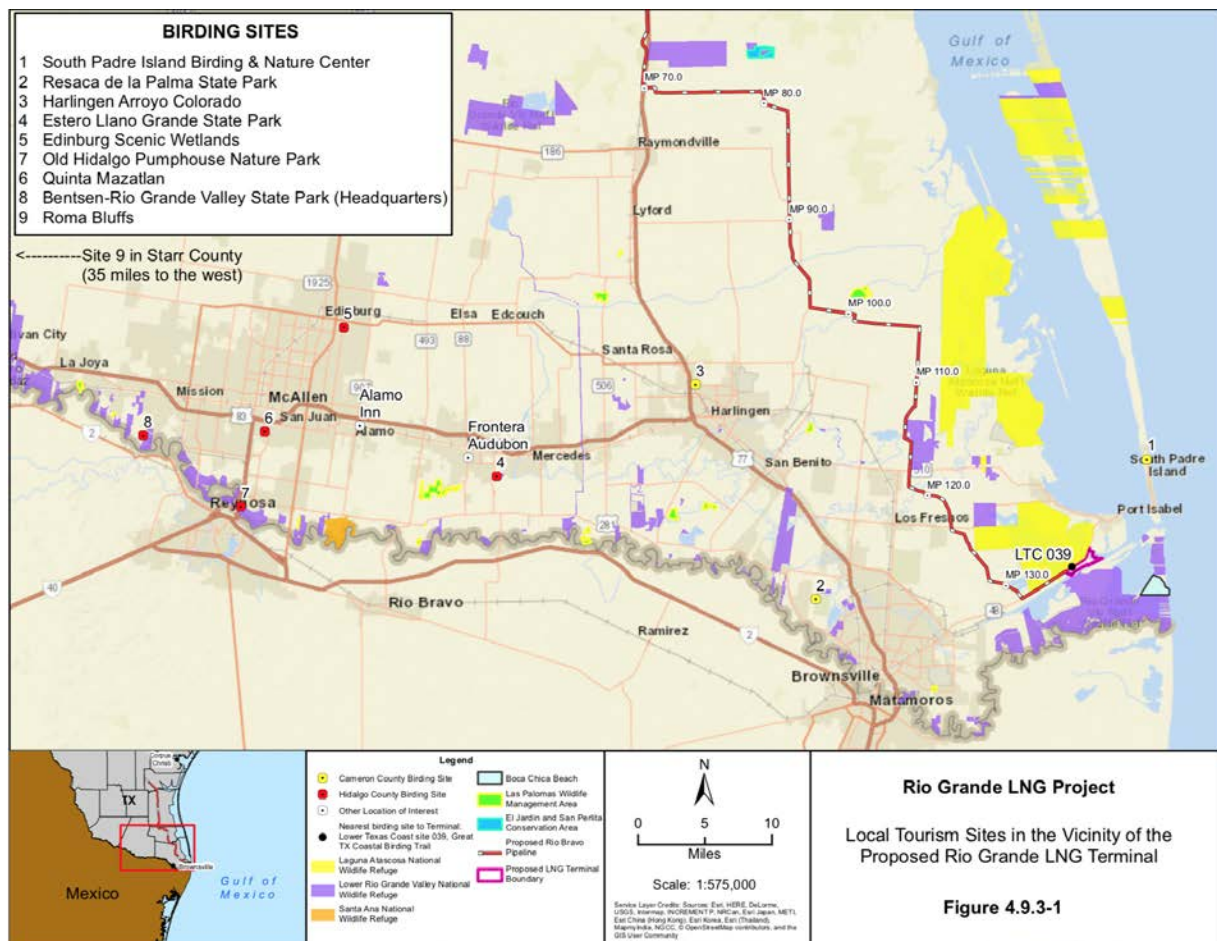
D. The DEIS Does Not Adequately Consider How the Environmental Degradation Caused by the Projects Will Likely Adversely Impact Local Industries

1. The DEIS Does Not Adequately Consider Adverse Impacts to Tourism

a) Industry Overview

The Annova LNG project, along with two other major LNG export terminals, will increase air pollution, large vessel traffic, and noise to an area where tourism—especially nature-oriented tourism like bird watching and fishing—is a major source of employment and income. Many low-income residents are employed in jobs related to the hospitality industry serving the areas tourists. Adverse impacts of the area's ability to draw nature-oriented tourists would significantly affect this population.

⁶² The Deloitte Center for Energy Solutions, *Made In America: The economic impact of LNG exports from the United States*, Deloitte Insights (Jan. 25, 2013), attached as Exhibit 25, available at <https://www2.deloitte.com/insights/us/en/industry/oil-and-gas/made-in-america-the-economic-impact-of-lng-exports-from-the-united-states.html>.



DEIS, Figure 4.9.3-1.

The Rio Grande Valley is one of the top bird watching destinations in the country.⁶³

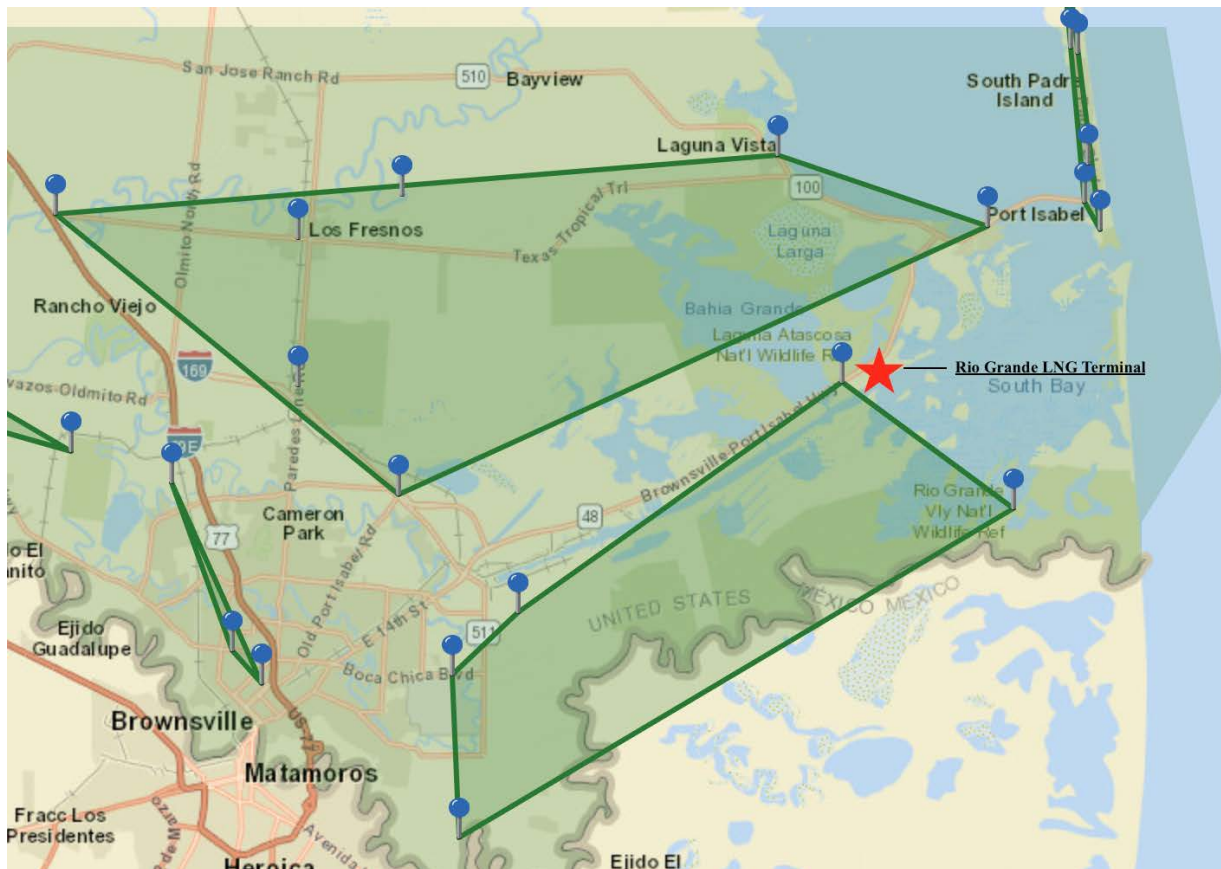
“Texas is the number one birdwatching state/province in North America, and the Texas Rio Grande Valley is often considered the number two birdwatching destination in North America. The four counties of the Valley—Hidalgo, Starr, Willacy, and Cameron—together have recorded almost 500 bird species—more than all but four states.”⁶⁴ Ecotourism brought \$25.4 billion to the state, based on estimates from the Texas Comptroller’s office.⁶⁵ Ecotourism in the Rio Grande Valley brings in “between \$100 million and \$170 million annually and employs *several thousand*

⁶³ See DEIS, Figure 4.9.3-1 reproduced above.

⁶⁴ Mathis & Matisoff, Houston Advanced Research Center, *A Characterization of Ecotourism in the Texas Lower Rio Grande Valley* (March 2004), p. 1, attached as Exhibit 26.

⁶⁵ *Id.* at 14.

people.”⁶⁶ The proposed terminal site is sandwiched between two National Wildlife Refuges that are less than 0.25 miles from the project site.⁶⁷



*Designated Birding Sites Part of the Great Texas Birding Trail (Source: Texas Parks and Wildlife)*⁶⁸

There are many designated birding sites near the terminal site, including the South Padre Island Birding & Nature Center and locations on the Great Texas Birding Trail.⁶⁹ In addition to the designated spots, there are innumerable unofficial birding sites within the parks and nature reserves. Part of what makes the area a unique birding site and major tourist attraction is its position within the Central Flyway. A major migratory route, over 380 species travel along the

⁶⁶ *Id.* at 17. (emphasis added).

⁶⁷ See DEIS, 4-70.

⁶⁸ Attached as Exhibit 27, available at <https://tpwd.texas.gov/huntwild/wildlife/wildlife-trails/ltr>.

⁶⁹ See DEIS, 4-206.

Central Flyway.⁷⁰ The area surrounding the proposed terminal project is where birds make first landfall after crossing the Gulf of Mexico.⁷¹ The Laguna Atascosa National Wildlife Refuge, immediately adjacent to the proposed terminal site, was established in 1929 to serve as a sanctuary for migratory birds.⁷² Habitat destruction, like the construction of a major pipeline and LNG terminal, is a rising threat to migratory birds.⁷³

In addition, South Padre Island draws \$370 million each year to Cameron County and “approximately \$266 million to Brownsville, Port Isabel/Laguna Vista, and Los Fresnos.”⁷⁴ For Port Isabel and Laguna Vista, nearly 36% of their employment is related to economic activity on South Padre Island.⁷⁵ Recreational fishing in the Lower Laguna Madre System contributed an estimated 479 jobs and \$45.3 million in the sales of goods and services.⁷⁶

b) The DEIS Inadequately Considers the Adverse Impacts to the Tourism Industry

The DEIS acknowledges few potential impacts on the tourism industry. First, the DEIS admits that dust, increased traffic, noise and visual impacts will affect some tourists and residents using recreational sites in the project area, but claims it will implement measures to mitigate these effects.⁷⁷ There will be permanent changes to the area’s landscape, including visually prominent

⁷⁰ “Central Americas Flyway: Fact Sheet,” Bird Life International, attached as Exhibit 28, available at http://datazone.birdlife.org/userfiles/file/sowb/flyways/2_Central_Americas_Factsheet.pdf.

⁷¹ Tim Harris, “RSPB Migration Hotspots: The World’s Best Bird Migration Sites,” 2013, p. 48, attached as Exhibit 29.

⁷² *Id.*

⁷³ Paul A. Johnsgard, “Wings Over the Great Plains: Bird Migrations in the Central Flyway,” (2012), p. 21, attached as Exhibit 30.

⁷⁴ South Padre Island Economic Development Corporation, “Economic Impact of South Padre Island,” p. 3, attached as Exhibit 31, available at <http://southpadreislandedc.com/sites/default/files/files/Resources%20%26%20Studies/SPI%20Economic%20Impact%20Analysis%20Summary.pdf>.

⁷⁵ *Id.* at 2.

⁷⁶ Andrew Ropicki et al., “The Economic Impacts of Recreational Fishing in the Lower Laguna Madre Bay System,” Nov. 9, 2016, p. 2, attached as Exhibit 32, available at http://texasseagrant.org/assets/uploads/resources/16-512_The_Economic_Impacts_of_Recreational_Fishing_in_the_Lower_Laguna_Madre_Bay_System.pdf.

⁷⁷ DEIS, 4-93.

features of the proposed facilities, which will affect the character and quality of the natural landscape.⁷⁸ Viewer sensitivity is high throughout the area, “due to the large number of people traveling in the area for recreation and leisure.”⁷⁹ Also, the DEIS concedes that any uptick in hotel accommodations needed for temporary workers throughout the area is unlikely to displace tourists, and that existing hotel accommodations should be more than enough to accommodate the uptick in temporary employees.⁸⁰ The DEIS also predicts that any visual impacts to visitors of South Padre Island will be minimal, and will unlikely affect visitors to Schlitterbahn Waterpark and Resort, Isla Blanca Beach, and the Boy Scout camp – three of the South Padre attractions closest to the project site.⁸¹ Unfortunately, this treatment admits to affecting nature tourism, but discards its motivations, which are steeped in admiration for nature that either is, or is perceived to be, undisturbed. Despite admitting to how the project will affect the visual of the area’s touristic attractions, the DEIS posits that the project will not significantly affect the gross number of tourists that visit the area with relatively little evidentiary support.⁸² The DEIS also does little to keep in mind that there will likely be two concurrent LNG projects in construction at the time that Annova is in its own construction phase, thus further limiting hotel accommodations for tourists.

Even a relatively minor impact to the tourism industry can result in huge repercussions for the region. A 2011 Texas A&M University study on nature tourism in the Rio Grande Valley documented a \$344 million dollar economic benefit.⁸³ Further, based on data from the Bureau of

⁷⁸ *Id.* at 4–102.

⁷⁹ *Id.* at 4–103.

⁸⁰ *Id.* at 4–131.

⁸¹ *Id.* at 4–99 – 4–100.

⁸² *Id.* at 4–124.

⁸³ Kyle M. Woosman, Rebekka M. Dudensing, Dan Hanselka, Seonhee An, “An Initial Examination of the Economic Impact of Nature Tourism on the Rio Grande Valley.” Texas A&M Univ. 1 Sept 2011, attached as Exhibit 33.

Labor Statistics, there are 671 tourism businesses and 12,296 tourism jobs in Cameron County.⁸⁴

And due to its pristine beaches and clean water, South Padre Island draws about a million overnight visitors yearly, adding an estimated \$370 million to the Valley's economy in 2011 alone.⁸⁵ Thus, even a small dent in economic impact could result in tens of millions of dollars of lost revenues for the region, which is especially harmful in the case of South Padre Island, where tourism is by far the dominant industry. In addition, a decrease in economic impact from the tourism industry can translate to an uptick in unemployment. Even if the number of jobs created by the LNG projects would be enough to supplant the loss of tourism industry jobs, much of the jobs created by the projects will be staffed by out-of-towners and/or by workers with specific skills. This could exclude workers that may have lost their jobs as a result of any damage to the tourism industry. These workers may also reside in low income areas, such as Laguna Heights, which in turn magnifies the impact of the project on low income, minority communities. Lastly, tourism workers may not have the skills to staff the influx of incoming, construction-related jobs.

A further risk is whether the presence of Annova and the other two proposed major LNG export terminals, as well as other industrial projects, will discourage future investment in the area that would be consistent with the tourism industry or, conversely, attract more high polluting projects. Quality of life and recreational activities are important factors that companies consider when choosing where to invest in office operations.⁸⁶ The project area has a natural, comparative

⁸⁴ See Shawn Stokes and Marcy Lowe, "Wildlife Tourism and the Gulf Coast Economy," Jul. 9, 2013, p. 8, attached as Exhibit 34, available at https://www.mmc.gov/wp-content/uploads/Stokes-and-Lowe-2013-Wildlife-Tourism-and-the-Gulf-Report_FINAL.pdf.

⁸⁵ "Economic Impact of South Padre Island," South Padre Island Economic Development Corporation, 2012, attached as Exhibit 31, available at <http://southpadreislandedc.com/sites/default/files/files/Resources%20%26%20Studies/SPI%20Economic%20Impact%20Analysis%20Summary.pdf>.

⁸⁶ See Parks and Recreation's Role in Economic Development," The George Mason University Center for Regional Analysis, May 2018, attached as Exhibit 35, available at <https://www.nrpa.org/siteassets/nrpa-economic-development-report.pdf>.

advantage to other communities because of its low cost of living, many recreational opportunities, and unique natural beauty. The project area will lose that comparative advantage if it instead caters to high polluting industries that degrade the qualities that make it an attractive place to vacation or make a home.

Furthermore, a study from the University of Indiana shows that high concentrations of certain industries tend to attract investment in the same industries.⁸⁷ Industries tend to cluster to take advantages of benefits of proximity to related industries and infrastructure.⁸⁸ The DEIS fails to consider that this project and others will attract similar investments in other high polluting projects to the detriment of the local population.

2. The DEIS Fails to Adequately Analyze the Project's Impact on the Recreational Fishing Industry

The DEIS fails to seriously acknowledge that the LNG Terminal will have adverse impacts on recreational fishing.⁸⁹ The DEIS acknowledges that construction may temporarily affect access to recreational fishing and boating activities along the Brownsville Ship Channel.⁹⁰ Access to some destinations may be delayed as well due to “dredging activities and the movement of barges delivering large equipment” to the project’s offloading facility.⁹¹ During operation, LNG carriers navigating to and from the project site may impact recreational anglers who transit recreational fishing boats through the BSC, causing delays and possible temporary relocations due to safety reasons while an LNG carrier is navigating to or from the marine berth at the project

⁸⁷ Timothy Slaper and Ping Zheng, “Why Invest There?”, Center for International Business Education and Research, Sept. 2018, attached as Exhibit 36, available at <http://www.ibrc.indiana.edu/studies/why-invest-there-2018.pdf>.

⁸⁸ *Id.*

⁸⁹ *See* DEIS, 4-108 – 4-112.

⁹⁰ *Id.* at 4-101.

⁹¹ *Id.*

site.⁹² The increase in traffic – from an average of 2 to 6 vessels per month, or about 80 LNG carriers per year – would be added onto the Port of Brownsville 312 vessel-a-year average, without even counting the impacts from the other LNG projects.⁹³ These weekly trips cause delays for fishing vessels that are not allowed to cross paths with the LNG carriers, averaging from a few minutes to 1.5 hours on some occasions.⁹⁴

This treatment leaves much to be desired. First, the DEIS fails to provide in-depth consideration of the cumulative impacts the multiple projects will have on recreational fishing. For example, there is no analysis on the cumulative impact of the LNG carriers servicing the LNG Terminals will have on traffic in the BSC. The cumulative impact is downplayed as temporary, short-term, and minor due to the presence of other recreational opportunities nearby.⁹⁵ While the LNG carriers servicing the Texas LNG terminal may just be 80 a year, the total number of LNG Carriers for all three proposed LNG terminals is 512.⁹⁶ This impact will not be temporary or short-term, since it will continue so long as the terminals are operating. And yet, other than minimizing the effect of the project on recreational fishing opportunities, the DEIS does not provide any analysis supporting their finding that there will be no significant impact on recreational fishing.

In addition, by failing to acknowledge the interdependent nature of recreational fishing and the tourism industry, the DEIS fails to adequately address the impact the project will have on each industry separately. The Brownsville Economic Development Council describes recreational

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ See DEIS, 4-112 – 4-113.

⁹⁶ See Rio Grande LNG DEIS, 4-401.

fishing as “a major attraction for locals and tourists.”⁹⁷ Recreational fishing is a significant portion of wildlife tourism in Texas, accounting for 29% of wildlife tourists.⁹⁸ In 2011, 7,769,000 people participated in wildlife activities in Texas, and 2,253,010 of those people participated in recreational fishing.⁹⁹ Recreational fishing in the Lower Laguna Madre System alone contributed an estimated 479 jobs and \$45.3 million in the sales of goods and services.¹⁰⁰

By failing to consider the adverse impacts recreational fishing will have on the tourism industry, the DEIS fails to adequately consider the adverse impact the project will have on the local economy. This lack of nuance dilutes the impact on both tourism and recreational fishing by failing to consider simultaneous adverse effects the project may have on both industries, thus minimizing the impact of the project generally.

3. The DEIS Does Not Adequately Consider the Adverse Impacts to the Commercial Fishing and Shrimping Industries, Including Impacts to Aquatic Species and Essential Fish Habitat, and Does Not Propose Meaningful Mitigation for These Impacts

a) Industry Overview

The DEIS fails to adequately consider impacts to area residents who shrimp and fish for their livelihood and to others who rely on the local fishing and shrimping industry for their livings. It also fails to include adequate mitigation for the harms to this vitally important industry. Between 2009 and 2014, Cameron County accounted for 31% of the Texas shrimp harvest.¹⁰¹

⁹⁷ See Brownsville Economic Development Council website, attached as Exhibit 37, available at <http://www.bedc.com/sports-recreation>.

⁹⁸ See Shawn Stokes and Marcy Lowe, “Wildlife Tourism and the Gulf Coast Economy,” Jul. 9, 2013, p. 8, attached as Exhibit 34, available at https://www.mmc.gov/wp-content/uploads/Stokes-and-Lowe-2013-Wildlife-Tourism-and-the-Gulf-Report_FINAL.pdf.

⁹⁹ See *id.*

¹⁰⁰ Andrew Ropicki et al., “The Economic Impacts of Recreational Fishing in the Lower Laguna Madre Bay System,” Nov. 9, 2016, p. 2, attached as Exhibit 32, available at http://texasseagrant.org/assets/uploads/resources/16-512_The_Economic_Impacts_of_Recreational_Fishing_in_the_Lower_Laguna_Madre_Bay_System.pdf.

¹⁰¹ See Andrew Ropicki et al., “Economic Impacts of the Cameron County Shrimp Industry,” Jun. 2016, attached as Exhibit 38, available at <http://cameron.agrilife.org/files/2015/06/Cameron-County-Shrimp-Industry-Economic->

Including processing facilities, the shrimping industry has a \$145 million impact per year on Cameron County.¹⁰² With 178 shrimping vessels, shrimping is a significant part of the local economy.¹⁰³ Currently, there are 106 permits for Gulf Royal Red Shrimp issued to Texas shrimpers. Thirty-five of those permits were issued to people in Port Isabel, and 45 of those permits were issued to people in Brownsville.¹⁰⁴ There are 542 permits for Gulf of Mexico Shrimp issued to Texas shrimpers. Seventy-one of those permits were issued to people in Port Isabel, and 84 of those permits were issued to people in Brownsville.¹⁰⁵

The Annova LNG terminal would be located between the Bay and the Brownsville Fishing Harbor, where numerous shrimping trawlers and fishing boats are docked. As the DEIS acknowledges, “[m]ost local Gulf-shrimping vessels dock at the Port of Brownsville Shrimp Basin”¹⁰⁶ and the Port of Brownsville and the Port Isabel together ranked as the second largest commercial fishing port by value along the Gulf of Mexico.¹⁰⁷

b) Impacts on Essential Fish Habitat

FERC concludes in the DEIS and attached EFH Assessment (Appendix F) that the construction of the Annova LNG Terminal would result in “short-term and highly localized” impacts, and that any loss of fish species “would be inconsequential to regional fish

Impacts.pdf.

¹⁰² See *id.*; see also Rod Santa Ana, “Experts: Shrimp imports depress market prices and pose health risks,” AgriLife Today, Aug. 27, 2015, attached as Exhibit 39, available at <https://today.agrilife.org/2015/08/27/shrimp-imports-depress-market-prices/>.

¹⁰³ Tony Reisinger and Andrew Ropicki, Ph.D., 2016 *Cameron County Shrimp Industry Best Management Practices Outreach*, “Extension Education in Cameron County: Making a Difference,” (2016), p. 40, attached as Exhibit 40, available at <http://counties.agrilife.org/cameron/files/2011/04/2016-Making-a-Difference-Cameron-County.pdf>.

¹⁰⁴ National Oceanic and Atmospheric Administration, Gulf Royal Red Shrimp Permit Records, attached as Exhibit 41, available at <https://portal.southeast.fisheries.noaa.gov/reports/foia/GRRS.htm> (accessed Nov. 20, 2018).

¹⁰⁵ National Oceanic and Atmospheric Administration, Gulf of Mexico Shrimp Permit Records, attached as Exhibit 42, available at <https://portal.southeast.fisheries.noaa.gov/reports/foia/SPGM.htm> (accessed Nov. 20, 2018).

¹⁰⁶ DEIS, 4-147; 4-126.

¹⁰⁷ DEIS, 4-126.

populations.”¹⁰⁸ However, the DEIS does not provide an opportunity for meaningful review of FERC’s Required EFH Assessment with NMFS. FERC does include a Proposed EFH Assessment in Appendix F of the DEIS, however, the next crucial steps in the EFH process – the EFH Conservation Recommendations by NMFS and FERC’s response to those recommendations – have not occurred yet, and thus will not be available during the public comment period for the public to review and provide feedback. For example, FERC states that “NMFS may provide recommendations to FERC regarding further measures that can be taken to conserve EFH. We would respond to any such recommendations.” Thus, the public does not have a meaningful opportunity to review possible future analysis and recommendations to conserve EFH.

In this initial step of the EFH consultation in the DEIS, FERC has not adequately considered or provided mitigation for the demonstrated harmful impacts of other LNG facilities on fisheries. Several National Oceanic and Atmospheric Administration (NOAA) documents demonstrate the high level of concern about the impacts of LNG facilities on fisheries in the Gulf of Mexico, but none of these impacts were considered as part of FERC’s DEIS. First, in a 2017 Report from the National Essential Fish Habitat Summit, LNG was identified as one of three “emerging issues” in the Southwest Region:¹⁰⁹

“In many Gulf of Mexico LNG facilities, seawater is used to reheat liquid natural gas and is then discharged back into the ocean at about 20°C cooler than the ambient temperature. There was a time lag between the development of LNG facilities and the assessment of the potential effects of the discharge of cooled waters on fish stocks, but studies now show that about five billion fish eggs and larvae are killed per facility due to this cooled discharged water.”

Here, the DEIS states that “water used for engine cooling would be discharged at a

¹⁰⁸ DEIS Vol. II, F-32.

¹⁰⁹ NOAA Technical Memorandum NMFS-OHC-3, August 2017, attached as Exhibit 43, available at <https://spo.nmfs.noaa.gov/sites/default/files/TM-OHC3.pdf>.

temperature between 2.7F and 7.2F warmer than the ambient water temperature,” but then without citing any studies or other evidence, concludes that the impacts from these discharges would be “short-term and minor.”¹¹⁰

In addition, the Gulf of Mexico Fishery Management Council concluded in 2005:¹¹¹

“Facilities that require substantial intake and discharge of water, especially heated and chemically-treated discharge water, are generally not suited for construction and operation in estuarine and near-shore marine environments. ...

There is also concern over the potential impacts of proposed Liquid Natural Gas (LNG) flowthrough processing facilities in waters of the Gulf of Mexico. These facilities take in large volumes of water to warm LNG. For example, the Port Pelican Liquid Natural Gas (LNG) processing facility is proposed for coastal Louisiana in 25 m (83 ft) of water. During Phase II of its operation, it is projected to take in 176.4 million gallons of seawater per day or 64.4 billion gallons per year. The water will be used to warm the LNG and will undergo a temperature decrease of 11° C (20° F). The intake rate will be around 15 cm/sec (0.5 ft/sec), allowing most larger organisms to avoid impingement at the intake structures, but water passing through the facility will undergo mechanical, pressure, temperature, and chemical (NaOCl) shock. Some entrained eggs and larvae may survive any one of these adverse conditions (Cada et al. 1981, Muessig et al. 1988), but the combination of these stresses will be lethal to almost all organisms passing through the facility.

There is a special concern regarding the siting of flow-through facilities in or near estuarine passes. Most fishery organisms in the Gulf of Mexico use estuaries as nursery grounds, and eggs and larvae recruit into these areas through tidal passes. Locating facilities in or near these tidal passes will be especially damaging to fishery resources, since eggs and larvae of fishery species are often concentrated in these areas. Locating LNG facilities in shallow water also increases the proportional area of impact. Based on an

¹¹⁰ DEIS 4-56, 57.

¹¹¹ Gulf of Mexico Fishery Management Council, NOAA, “Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico,” March 2005, attached as Exhibit 44, available at <https://gulfcouncil.org/wp-content/uploads/March-2005-FINAL3-EFH-Amendment.pdf>

assessment of LNG facilities, the NOAA Fisheries Southeast Fisheries Science Center recommended that flow-through LNG systems in the Gulf of Mexico should be avoided in favor of closed loop systems. The negative impacts to fishery species and living marine resources in the Gulf from a single flow-through facility could be potentially severe, and cumulative impacts from multiple facilities were considered a threat to fishery resources.”

The DEIS estimates that the Annova LNG facility *alone* (not counting the other two proposed LNG facilities) would “affect” (*i.e.* kill) “between 872,000 and 1.8 million larval fish and 152,000 and 328,000 larval shrimp per year by cooling water intake.”¹¹² However, despite these sizable mortality numbers and the concerns listed in the report above, the DEIS states that the impacts on ichthyoplankton from cooling water intake would be “permanent” but “not significant.”¹¹³ The analysis is inadequate to make this conclusion because it assumes without analysis that due to “high natural mortality rates in the first year of ichthyoplankton,” the additional loss from the LNG facility would “not significantly impact the health of the adult fish population.”¹¹⁴ No studies are cited or other analysis to support this conclusion. In addition, when combined with the impacts on fish species from the other two proposed LNG terminals, this does not satisfy the agency’s requirement of taking the requisite “hard look” at impacts to aquatic species and fisheries, including cumulative impacts.

The only mitigation proposed for impacts to fisheries and EFH is the Applicant’s Section 404 permit and noise mitigation from the construction of pilings.¹¹⁵ Additional mitigation should be included to minimize impacts to fisheries from a wider variety of impacts, as discussed above.

Another major concern to the region’s fisheries that FERC has not adequately evaluated in the DEIS is the potential for exotic species introductions from ballast water. FERC’s analysis of

¹¹² DEIS 4-56.

¹¹³ DEIS 4-56.

¹¹⁴ DEIS 4-56.

¹¹⁵ DEIS Vol. II, F-30 – F-32.

the potential risks is inadequate because 1) it presumes that because “the makeup of native aquatic species within the BSC has likely been altered over the years”¹¹⁶ by operation of ships in the Port of Brownsville that new additional ballast water exchange from LNG vessels wouldn’t have an additional impact on fisheries and native species, and 2) it presumes that Coast Guard and EPA regulations will “minimize and avoid impacts on marine resources” without evaluating any evidence of the efficacy and timeline of these new regulations generally or in particular for the sensitivity of local conditions in the Brownsville area to non-native species, where there are important fisheries, unique ecosystems, and other aquatic life.¹¹⁷

For example, a 2017 study entitled “Potential effects of LNG trade shift on transfer of ballast water and biota by ships” warned of potential “large effects” on the transfer of non-native species from the growing LNG exports from the US even with the existing US regulations:

“Moreover, compliance schedules are based on vessel capacity and construction date, so ships with large ballast water capacity (N5000 m3), such as LNG carriers, have more lag time to meet US regulations. Thus, the massive surge in overseas ballast water predicted by the US LNG export boom could increase propagule supply and invasion risk... even as management efforts seek to reduce organism concentrations.... These changes in magnitude, source, and direction of the LNG trade can have large effects on transfer of nonnative organisms, due to the volume and biotic content of associated ballast discharge to ports.”¹¹⁸

In the DEIS, FERC has not given the requisite “hard look” to these potential “large effects” on fisheries, unique ecosystems, and aquatic resources from the threat of non-native species.

¹¹⁶ DEIS 4-55.

¹¹⁷ See Mendoza, R. et al, “Aquatic Invasive Species in the Rio Bravo/Laguna Madre Ecological Region,” Commisison for Environmental Cooperation, Canada (October 2011), attached as Exhibit 45, available at <http://www3.cec.org/islandora/en/item/10259-aquatic-invasive-species-in-río-bravolaguna-madre-ecological-region-en.pdf>

¹¹⁸ Holzer et al, Potential effects of LNG trade shift on transfer of ballast water and biota by ships, *Science of the Total Environment*, 580 (2017) 1470–1474, attached as Exhibit 46, available at https://www.researchgate.net/publication/311936667_Potential_effects_of_LNG_trade_shift_on_transfer_of_ballast_water_and_biota_by_ships#pf5

Furthermore, the DEIS fails to adequately address the cumulative impacts on EFH and fisheries from the three proposed LNG facilities combined as well as other projects impacting the Brownsville Ship Channel. FERC determines that cumulative impacts on water quality are anticipated to be “minor” and “negligible” as a result of cooling water exchanges and ballast water, respectively, because the impacts from each facility are “localized.”¹¹⁹ FERC also determines that withdrawal of cooling water from all three facilities “would have direct effects on ichthyoplankton” but then concludes these effects would only have a combined “minor impact.”¹²⁰ However, there are no studies or analysis cited as to why the impacts would remain localized or minor, if, for example, non-native species were introduced or large amounts of fish eggs and larvae were killed from entrainment from all three proposed facilities. FERC also concludes that cumulative impacts on aquatic resources as result of dredging activities would be “short-term” but “could result in adverse effects” and does not address cumulative impacts on EFH.¹²¹ As commentators stated above and in comments on the RG LNG DEIS and Texas LNG DEIS, the EFH Assessments have not been completed and reviewed by NOAA yet, and therefore, we do not know the full impact from each facility nor the combined impacts and the public does not have a meaningful chance to review impacts to EFH. Local fisheries will bear the brunt of potentially three new proposed LNG facilities, and the impacts from all of these projects combined must be more comprehensively evaluated.

c) Impacts on Fishing Vessel Travel in the Ship Channel

The DEIS determines that dredging activities alone would displace shrimpers who trawl in the BSC for “approximately 175 working days” and that 2-6 LNG carriers per month (up to 80

¹¹⁹ DEIS, 4-275.

¹²⁰ DEIS 4-282.

¹²¹ DEIS, 4-282.

visits per year) would cause delays to shrimping activities and traffic in the BSC.¹²² FERC acknowledges that “the three LNG projects would result in an increase in ship traffic by about 722 vessels per year within the BSC during construction and 467 vessels per year during operation”¹²³ and that the cumulative impact of these vessel trips “would represent a substantial increase” in vessels in the BSC, which would cause delays for small vessels and boaters, “ranging from 11 to 32 percent of daylight hours per year.”¹²⁴ The cumulative impact of these lengthy and/or frequent delays in access to the ship channel due to LNG traffic could be both costly and life-threatening to the fishing industry – impacts that FERC either does not acknowledge in the DEIS. Commercial fishing boats are often out for extended periods of time, and then return at unexpected times with thousands of pounds of frozen shrimp or fish. Boats may also return early due to illness, injuries, or mechanical problems and need to get to shore quickly. Time is an important resource that is a huge variable in the fishing industry, and thus being forced to wait extended periods of time for LNG traffic could endanger lives and financially harm the fishing industry.

FERC should find a greater impact given the severe harm this would place on the commercial fishing industry. Furthermore, *there is nothing proposed in the DEIS to even attempt to mitigate these impacts.*

d) Economic Impacts to Fisheries

There is no analysis of how converting essential fish habitat (EFH) to permanent industry sites and/or how displacement and destruction of aquatic life will impact the commercial fishing industry. This omission is glaring, considering how often this has been a concern during the permitting process of other LNG projects in the past, both in the continental U.S. and abroad. For

¹²² DEIS, 4-126, 127.

¹²³ DEIS, 4-288.

¹²⁴ DEIS 5-13.

instance, a 2009 Department of Fisheries study in Australia found that a proposed development of an LNG terminal on the west coast of Australia had the potential to significantly impact all fisheries that were active in the immediate and adjacent areas.¹²⁵ The study predicted there would be a reduction in the levels of fishing activity as a result of the LNG port, with “some flow-on effects to the economy of the region.”¹²⁶ Some of the decline, the study predicted, would come about through the environmental changes created by the LNG project, such as the displacement of prawns, mackerel, pelagic gamefish, and pearling operations.¹²⁷

The increased vessel traffic to and from the export terminal,¹²⁸ in tandem with the destruction of essential fish habitats, would further interfere with commercial fishing operations. This is one of the primary effects expected to result from similar LNG projects.¹²⁹ For instance, experts commenting on Oregon’s Jordan Cove Energy Project said the project would have undermined “decades of work to protect fishing opportunities” off the coast of Oregon, which risks undoing the advances that came about after “billions of dollars” were invested to restore salmon habitat in the region.¹³⁰

The DEIS also fails to consider the interplay between the tourism and commercial fishing and shrimping industries. Damage to the commercial fishing and shrimping industries could also lead to a decrease in the number of tourists, which in turn could decrease the number of customers

¹²⁵ Guy Wright and Christian Pike, *Fishing Industry Impact Study: James Price Point Proposed Liquefied Natural Gas Precinct*, Fisheries Occasional Publication No. 78, iii-iv, 2010, attached as Exhibit 47.

¹²⁶ *Id.* at iv.

¹²⁷ *Id.* at ix.

¹²⁸ See, *supra*, Section on TOURISM.

¹²⁹ Attached as Exhibit 48, available at http://www.beg.utexas.edu/files/energyecon/global-gas-and-lng/CEE_offshore_LNG.pdf

¹³⁰ “Science Shows Vital Fish Habitat Threatened by Proposed Oregon LNG Terminal,” Columbia Riverkeeper (February 5, 2015), attached as Exhibit 49, available at <https://www.columbiariverkeeper.org/news/2015/2/science-shows-vital-fish-habitat-threatened-proposed-oregon-lng-terminal>. See also Eric de Place and Paelina DeStephano, “Jordan Cove Energy Project, LNG Facility May Harm Water Quality, Salmon Runs,” Sightline Institute (August 1, 2018), attached as Exhibit 50, available at <https://www.sightline.org/2018/08/01/jordan-cove-energy-project-oregon-could-harm-water-quality-salmon-runs/>.

available to local fishers and shrimpers. Not to mention, tourists may be dissuaded from buying locally-caught shrimp in an area dominated by petrochemical industry. While studies about this form of “seafood tourism” are not readily available about Texas, LNG-friendly coastal areas such as New South Wales in Australia find that domestic tourists expect to eat local seafood when traveling to the coast.¹³¹

Not accounting for the effects of the project’s impact on the commercial fishing and shrimping industries sufficiently is dangerous, given the economic importance of these fisheries and the adverse effects created by similar LNG projects elsewhere.

e) Additional Mitigation for Impacts to Fisheries Must be Proposed

Further highlighting the absence of a discussion on the project’s impact on commercial fishing, other LNG terminal projects in the past have tried to mitigate the impact on commercial and recreational fisheries in the surrounding areas. For instance, the 2005 approval of two offshore LNG terminals in Massachusetts was conditioned on a mitigation package that required the companies involved to provide \$16 million to mitigate impacts to “commercial fishermen and lobstermen,” \$14 million to mitigate impacts to public trust interests, \$9 million to mitigate impacts to marine habitat and resources, and \$8 million to mitigate impacts to marine mammals.¹³²

¹³¹ Kate Barclay and Michelle Voyer, “Valuing Coastal Fisheries,” University of Technology Sydney, October 2016, attached as Exhibit 51, available at <https://www.uts.edu.au/about/faculty-arts-and-social-sciences/research/fass-research-projects/valuing-coastal-fisheries>.

¹³² Commonwealth of Massachusetts, “Romney Approves Two Offshore LNG Terminals,” January 2005, attached as Exhibit 52, available at https://www.rigzone.com/news/oil_gas/a/39328/romney_approves_two_offshore_lng_terminals/.

V. The DEIS Fails to Adequately Assess Impacts on Cultural Resources and Historic Properties.

Agencies that must comply with both the National Environmental Policy Act (NEPA) and section 106 of the National Historic Preservation Act (NHPA) are encouraged to coordinate their reviews.¹³³ The agencies must ensure that the NEPA documents “include[] appropriate scoping, identification of historic properties, assessment of effects upon them, and consultation leading to resolution of any adverse effects.”¹³⁴ They must also go through the identification and assessment processes of the section 106 process “in a manner consistent with the standards and criteria of §§ 800.4 through 800.5.”¹³⁵ FERC has chosen to incorporate its NHPA duties into its NEPA review process, and it must still properly identify and assess historic properties and fully perform its consultation duties in order to comply with section 106.

A. The DEIS Fails to Require FERC to Complete the Section 106 Consultation Process Before Authorizing the Project.

Section 106 of the NHPA requires “the head of any Federal department or independent agency having authority to license any undertaking” to consider the undertaking’s effect on any “historic property” *before* “issuance of any license.”¹³⁶ A historic property is “any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register.”¹³⁷ An undertaking includes “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a Federal permit, license, or approval.”¹³⁸ The section 106 process is laid out in more detail in the

¹³³ 36 C.F.R. § 800.8(a)(1).

¹³⁴ *Id.* § 800.8(a)(3).

¹³⁵ *Id.* § 800.8(c)(1)(ii).

¹³⁶ 54 U.S.C. § 306108.

¹³⁷ *Id.* § 300308.

¹³⁸ *Id.* § 300320.

Code of Federal Regulations.¹³⁹ The purpose of the section 106 process is to require “Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment on such undertakings.”¹⁴⁰ The regulations are specific in their mention of when the process should occur: “The agency official must complete the section 106 process ‘prior to the approval of any Federal funds on the undertaking or prior to the issuance of any license.’”¹⁴¹

Annova LNG is seeking authorization from the Federal Energy Regulatory Commission (FERC), a federal agency, to “site, construct, and operate new liquefaction and export facilities.”¹⁴² Thus, this project is an undertaking requiring a “Federal permit, license, or approval” and the relevant agency, FERC, must go through the section 106 process to evaluate the undertaking’s effect on historic properties.¹⁴³ It must complete the section 106 process *before* it gives its authorization to Annova LNG. Despite this clear mandate, FERC states in the DEIS that “[c]ompliance with Section 106 of the NHPA has not been completed.”

To fulfill the requirements of section 106, various actions must still be taken by both Annova and FERC. Annova has yet to complete cultural resource surveys in certain parts of the Project area and it has not yet performed “NRHP eligibility testing of archaeological site 41CF48.”¹⁴⁴ Consultation with various groups, including “the SHPO, Federal Land Managers, Indian tribes and other parties is incomplete,” as well.¹⁴⁵ Instead of requiring completion of these activities before the undertaking is authorized, FERC recommends that “Annova file all

¹³⁹ See 36 C.F.R. 800.1 *et seq.*

¹⁴⁰ 36 C.F.R. § 800.1(a).

¹⁴¹ *Id.* § 800.1(c).

¹⁴² Annova LNG Common Infrastructure, LLC, et al., Application for Authorization Under Section 3 of the Natural Gas Act, 1 (July 13, 2016).

¹⁴³ 54 U.S.C. § 300320.

¹⁴⁴ Federal Energy Regulatory Commission, Annova LNG Brownsville Project Draft Environmental Impact Statement Vol.1, 4-156 (Dec. 2018).

¹⁴⁵ *Id.*

outstanding reports and agency comments with the FERC and that FERC staff complete the Section 106 consultation process before construction may begin.”¹⁴⁶ This implies that authorization will be given before the section 106 process is completed.

Under § 800.4(b)(2) “final identification and evaluation of historic properties” may be deferred by an agency if specifically allowed for in “the documents used by an agency official to comply with [NEPA] pursuant to § 800.8.”¹⁴⁷ Presumably this is why FERC would allow Annova to postpone surveying in the “sensitive thornshrub habitat and historical tidal flats” and evaluating site 41CF48 until approval is granted.¹⁴⁸ However, in the DEIS recommendations, it is unclear whether the cultural resources survey reports, site evaluation reports, and avoidance/treatment plans still to be submitted are related to these un-surveyed areas, or whether other reports are also lacking. The DEIS mentions at least one report, related to the archaeological resource potential of Access Road Alternative 2 (the proposed permanent access road), where FERC is unsure as to whether or not the report was submitted to the State Historic Preservation Officer.¹⁴⁹ Any required reports must be submitted before authorization is allowed.

If there remain reports to be submitted, comments to be made, or consultation to be performed, FERC should require that these steps and any other necessary steps towards compliance with the section 106 process be completed before it authorizes the Project, as is required under the NHPA. If phased/deferred identification and evaluation is allowed in specific areas, and the reports, comments, and consultation related to these areas are also to be deferred, this should be explained clearly in the EIS, so that ambiguity regarding compliance no longer exists.

¹⁴⁶ *Id.* at 5-9.

¹⁴⁷ 36 C.F.R. § 800.4(b)(2).

¹⁴⁸ DEIS at 4-151.

¹⁴⁹ *Id.*

B. The area of potential effect for indirect impacts should be reconsidered and nearby historic sites should be re-evaluated for impacts.

The area of potential effect(s) (APE), under the Section 106 regulations, “means the geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties . . . The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”¹⁵⁰ During the Section 106 process, the agency must “determine and document the area of potential effects,”¹⁵¹ determine whether any historic properties within the APE will be affected by the undertaking, and assess any adverse effects upon historic properties within the APE.¹⁵² The agency must “apply the criteria of adverse effect to historic properties within the area of potential effects.”¹⁵³ The regulations state that

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. . . . Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.¹⁵⁴

A type of adverse effect is the “[i]ntroduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features.”¹⁵⁵

FERC has chosen a “0.5-mile area around the boundaries of the Project site, and a 300-foot area on either side of the access roads” as the APE for indirect effects.¹⁵⁶ Because of this, despite the presence of multiple historic properties listed on the National Register of Historic

¹⁵⁰ 36 C.F.R. § 800.16(d).

¹⁵¹ *Id.* § 800.4(a)(1);

¹⁵² *Id.* §§ 800.4 and 800.5.

¹⁵³ *Id.* § 800.5(a).

¹⁵⁴ *Id.* § 800.5(a)(1).

¹⁵⁵ *Id.* § 800.5(a)(2)(v).

¹⁵⁶ DEIS, 4-150.

Places nearby, the Palmito Ranch Battlefield National Historic Landmark (NHL) is the only non-archaeological historic resource within the indirect APE.¹⁵⁷ The APE used in the DEIS was chosen despite the fact that the National Park Service (NPS) expressed its concern over a 0.5-mile APE for indirect effects of the Project, calling it “insufficient due to the flat terrain of the area.”¹⁵⁸ The structures, according to the NPS, will be visible from the two nearby Battlefields and “[c]onstruction noise and traffic will intrude on the sense of place, feeling and setting as will increased daily traffic during operations.”¹⁵⁹

FERC should reconsider its indirect APE. A larger APE would take into account the flat terrain in the area and the impact that tall structures, such as those required by the Project, have on such a landscape. As seen in the pictures used in the visual assessments and as stated by FERC, “[l]and in the vicinity of the Project is generally undeveloped and natural . . . flat to very gently rolling.”¹⁶⁰ Across the ship channel is the Laguna Atascosa National Wildlife Refuge; next door is the Lower Rio Grande Valley National Wildlife Refuge.¹⁶¹ Additional unnatural light, sound, and structure could affect the integrity of the surrounding area, including the nearby Battlefields. FERC demonstrates in its visual simulations that the Project will be visible from various key observation points (KOPs), such as from both Palmito Ranch Battlefield NHL and Palo Alto Battlefield NHL.¹⁶² The agency claims that in many places, vegetation will conceal the Project

¹⁵⁷ *Id.* The Palmito Ranch Battlefield NHL is within the 300-foot APE of the Project’s access road. The other historic properties in the area repeatedly addressed by the DEIS, but not within the APE for indirect effects, are the Palo Alto Battlefield NHL and the Brazos Santiago Depot. It is worth noting that despite the APE chosen by FERC, the agency still assessed all three sites for potential direct or indirect impacts, due to concerns expressed by cooperating agencies. *See* DEIS at 4-154 and 4-155.

¹⁵⁸ Annova LNG, Resource Report 4 Cultural Resources, vi (July 2016) (“Resource Report 4”).

¹⁵⁹ *Id.*

¹⁶⁰ DEIS at 4-127; *see also* Federal Energy Regulatory Commission, Annova LNG Brownsville Project Draft Environmental Impact Statement Vol.2, Appendix E (Dec. 2018) (“DEIS Vol. 2”).

¹⁶¹ *See* U.S. Fish and Wildlife Service, Lower Rio Grande Valley, attached as Exhibit 53 and available at https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/map.html.

¹⁶² DEIS at 4-153 and 4-154; DEIS Vol.2, Appendix E.

from nearby vantage points, though it recognizes that the Project would be visible if the vegetation were removed.¹⁶³ The NPS states that vegetation should not be relied upon in the evaluation to block views of the facility, since vegetation can be quickly removed by wildlife and requires a long period of time to regrow.¹⁶⁴ In addition, there will be an increase in sound in the area during both construction and operation.¹⁶⁵

Due to the surrounding terrain and “the scale and nature of the undertaking,” the Project could alter the “character or use of historic properties” further away than 0.5 miles or 300 feet.¹⁶⁶ The Project would be an incongruous industrial facility looming on the horizon of a largely undeveloped area, famous for its natural and historic character. Because of the Project’s potential to cause adverse effects at a distance, FERC should consider a larger APE for indirect effects than the one currently relied upon. If it does so, it must also re-evaluate which historic resources are within the APE and whether those resources are subject to indirect impacts.

1. Palmito Ranch Battlefield NHL

Regardless of whether or not the indirect APE is expanded, Palmito Ranch Battlefield NHL falls within the original APE used by FERC in the DEIS. Therefore, FERC must “apply the criteria of adverse effect” to Palmito Ranch and determine whether the Project “diminish[es] the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.”¹⁶⁷ The NPS has expressed concern that the Project affects some of these qualities, naming construction and increased traffic as issues that “will intrude on the sense of place, feeling

¹⁶³ DEIS at 4-153.

¹⁶⁴ Resource Report 4, vi.

¹⁶⁵ DEIS at 4-179 to 4-192.

¹⁶⁶ 36 C.F.R. § 800.16(d).

¹⁶⁷ *Id.* § 800.5(a)(1).

and setting.”¹⁶⁸ It seems likely that the height, size, and associated sounds and traffic of the Project would constitute the “[i]ntroduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.”¹⁶⁹

The Palmito Ranch Battlefield NHL is the site of the last land battle during the Civil War.¹⁷⁰ The Battlefield can be found within the Lower Rio Grande Valley National Wildlife Refuge “in much the same natural state as it appeared in 1865.”¹⁷¹ The area preserves a piece of historic landscape, one important both for its wildlife conservation purposes as well as its commemoration of history. The Battlefield’s location and setting within a relatively untouched area of Texas allow the Battlefield to exist as it did at the relevant period of history for the Landmark: the Civil War. The feeling of Palmito Ranch is tied to the landscape appearing as it did over a hundred and fifty years ago.

FERC recognizes the visual and auditory impacts the Project will have, but it still determines, at least in reference to the visual impacts, that the “Project would not affect the essential features of the Palmito Ranch Battlefield . . . and the overall integrity . . . would remain intact.”¹⁷² However, according to FERC: “Visible changes . . . would occur in the setting surrounding the property because the Project would be among the limited infrastructure that breaks above the horizon line; it would be visible from within the NHL, especially if vegetation is absent.”¹⁷³ The access road would also “detract from the natural appearance of the battlefield at its boundaries.”¹⁷⁴ In the DEIS, FERC often mentions the fact that the Project will be obscured by

¹⁶⁸ Resource Report 4, vi.

¹⁶⁹ 36 C.F.R. § 800.5(a)(2)(v).

¹⁷⁰ U.S. Fish and Wildlife Service, Lower Rio Grande Valley, Battle of Palmito, attached as Exhibit 54 and available at https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/about/battle_of_palmito.html.

¹⁷¹ *Id.*

¹⁷² DEIS at 5-9.

¹⁷³ *Id.* at 4-153.

¹⁷⁴ *Id.*

vegetation if viewed from the Battlefield.¹⁷⁵ It also mentions that most views of the NHL face away from the Project.¹⁷⁶ But the NPS cautions against “counting on vegetation to screen the facility” since vegetation is easily altered and/or removed by wildlife.¹⁷⁷ The NPS also warns against assuming visitors will view the Battlefield from the roadside exhibit or viewing platform, where the visual assessments were performed.¹⁷⁸ The Battlefield may be experienced from a variety of angles, some of which may face the Project and lack a barrier of vegetation.

The DEIS shows that construction and operation of the LNG facilities would increase the level of noise at the Battlefield. The construction noise would not only be “clearly audible,” it would be a “doubling of ambient noise” at the Palmito Ranch Battlefield NHL.¹⁷⁹ Operational activities are also predicted to increase the sound at the NHL, though less so than during construction.¹⁸⁰ While the noise impacts on Palmito Ranch are assessed, they do not appear to be specifically addressed as an issue impacting the character of the site as a historic place. An increase in noise levels could well affect the character of the Battlefield, and the experience visitors have as they view it. While FERC does make suggestions related to the noise, it is unclear if these are meant to mitigate adverse impacts to nearby historic sites.¹⁸¹

In addition to the impacts that Annova will have upon the Battlefield and any other historic properties in the area, there will also be cumulative effects caused by similar projects nearby, such as the Rio Grande LNG and Texas LNG projects.¹⁸² FERC does recognize the potential for cumulative visual impacts on the area, saying that the “visual impact on the Palmito

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ Resource Report 4, vi.

¹⁷⁸ *Id.*

¹⁷⁹ DEIS at 4-186.

¹⁸⁰ *Id.* at 4-189.

¹⁸¹ *See e.g.* DEIS at 4-189.

¹⁸² *Id.* at 4-262 and 4-263.

Ranch Battlefield NHL and the Palo Alto Battlefield NHL KOPs would range from no effect or negligible in some areas to moderate or moderately high in other areas.”¹⁸³ There will also be cumulative auditory impacts on Palmito Ranch Battlefield NHL, both during construction and operation.¹⁸⁴ Annova is not the only LNG facility that will be visible from the Palmito Ranch Battlefield NHL, and the shift in the area from undeveloped to increasingly industrial should be analyzed more thoroughly due to the potential adverse impacts on the character and integrity of nearby cultural resources. There is also the issue of the increase in traffic that would occur if the three LNG sites were constructed simultaneously.¹⁸⁵ This could increase traffic times, and according to the NPS “intrude on the sense of place, feeling and setting.”¹⁸⁶

As shown in the DEIS and as predicted by the NPS, the Project will affect historic properties, especially Palmito Ranch Battlefield NHL. The effects will be both visual and auditory, and there will be cumulative effects caused by other nearby LNG projects as well. FERC should reconsider its conclusion that the visual effects on Palmito Ranch will not “affect the essential features” of the Battlefield.¹⁸⁷ It should also consider the impact of auditory effects on the NHL in its assessment of potential adverse effects. The quiet, undeveloped, and natural appearance of the area is an important part of what allows the Landmark to maintain its character and connection to the past. Both the NHPA and the Section 106 regulations demand additional attention in a situation with an “undertaking that may directly and adversely affect any National Historic Landmark.”¹⁸⁸ FERC should recognize the adverse effects on the Battlefield and move forward with the Section 106 process, including resolving any adverse effects, consulting with the

¹⁸³ *Id.* at 4-298.

¹⁸⁴ *Id.* at 5-12 and 5-13.

¹⁸⁵ *Id.* at 5-13.

¹⁸⁶ *Id.*; Resource Report 4, vi.

¹⁸⁷ DEIS at 5-9.

¹⁸⁸ 54 U.S.C. § 306107; *see also* 36 C.F.R. § 800.10.

relevant parties, and involving the Advisory Council on Historic Preservation, if necessary.¹⁸⁹

VI. The DEIS Fails to Adequately Assess Impacts on Listed and Sensitive Species

A. NEPA Obligations Respecting Wildlife and Listed Species

Under the Natural Gas Act, the Commission cannot approve Annova's application if it determines that the construction and operations "will not be consistent with the public interest" or are not required by the "public convenience and necessity."¹⁹⁰ The determination of whether a proposed facility is consistent with the public interest, in turn, depends upon the environmental impact of the facility.¹⁹¹ Moreover, the Commission may only approve an LNG application (whether in whole or part) "with such modifications and upon such terms and conditions as the Commission find[s] necessary or appropriate" to ensure consistency with the public interest.¹⁹² Stated another way, the Commission must consider whether impacts that are unavoidable and irreducible render the proposal inconsistent with the public interest.

The National Environmental Policy Act ("NEPA") has two objectives: (1) it requires an agency "to consider every significant aspect of the environmental impact of a proposed action"; and (2) "it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process."¹⁹³ "Part of the harm NEPA attempts to prevent in requiring an EIS is that, without one, there may be little if any information about

¹⁸⁹ The ACHP must be invited to participate when the undertaking will have an adverse effect on an NHL. 36 C.F.R. § 800.6(a)(1)(i)(B).

¹⁹⁰ 15 U.S.C. §§ 717b(a), 717f(c).

¹⁹¹ See *Sabine Pass Liquefaction Expansion*, 151 FERC ¶ 61012, at 27 n.32 (Apr. 6, 2015) (explaining that the Commission's public interest review evaluates the environmental impacts of the siting, construction, and operation of the export facility).

¹⁹² 15 U.S.C. § 717b(e)(3)(A).

¹⁹³ *United States v. Coal. for Buzzards Bay*, 644 F.3d 26, 31 (1st Cir. 2011) (internal citations omitted).

prospective environmental harms and potential mitigating measures.”¹⁹⁴ Notably, the Council on Environmental Quality (“CEQ”) Regulations implementing NEPA state that “NEPA procedures *must insure that environmental information is available to public officials and citizens before decisions are made* and before actions are taken.”¹⁹⁵ Thus, NEPA compliance informs the Commission’s public interest determination under the Natural Gas Act and helps ensure that it will minimize the environmental harm resulting from the development of LNG facilities, and—more importantly—will avoid harms that are so great as to outweigh the benefits of constructing a terminal in a particular location.

Environmental impact statements “shall...be supported by evidence demonstrating that agencies have made the necessary environmental analyses” to avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.¹⁹⁶ Moreover, an EIS must “state how alternatives considered in it and decisions based on it will or will not achieve the requirements of...other environmental laws and policies.”¹⁹⁷ The adequacy of an agency’s EIS turns on:

- (1) whether the agency in good faith objectively has taken a hard look at the environmental consequences of a proposed action and alternatives;
- (2) whether the EIS provides detail sufficient to allow those who did not participate in its preparation to understand and consider the pertinent environmental influences involved; and
- (3) whether the EIS explanation of alternatives is sufficient to permit a reasoned choice among different courses of action.¹⁹⁸

¹⁹⁴ *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 23 (2008).

¹⁹⁵ 40 C.F.R. § 1500.1(b) (emphasis added).

¹⁹⁶ 40 C.F.R. § 1500.2(b).

¹⁹⁷ 40 C.F.R. § 1502.2(d).

¹⁹⁸ *Davis Mountains Trans-Pecos Heritage Ass’n v. Fed. Aviation Admin.*, 116 Fed. Appx. 3, 8-9 (5th Cir. 2004).

The Commission has promulgated a series of regulations to “implement [FERC’s] procedures” under NEPA and “supplement the regulations of the [CEQ].”¹⁹⁹ These regulations require the Commission to identify and assess the extent of the impact of each proposed facility on wildlife, including threatened and endangered species, and including a discussion of what mitigation is necessary to ensure consistency with the public interest, or whether alternative sites for the export terminal would avoid or reduce those impacts.²⁰⁰ Moreover, NEPA also requires that the Commission determine the *cumulative* impacts of developing the three facilities currently proposed for the Brownsville Ship Channel area—including cumulative effects on wildlife and listed species.²⁰¹

The Commission erroneously seeks to defer responsibility regarding its NEPA obligations with respect to threatened and endangered species. The DEIS “recommend[s] that Annova should not begin construction until the FERC staff completes section 7 consultation with the FWS and NOAA Fisheries.”²⁰² An action agency cannot satisfy the NEPA requirement to identify the extent of impact to listed species in the EIS merely by stating that the project will ultimately

¹⁹⁹ 18 C.F.R. § 380.1; *see generally* 18 C.F.R. Part 380.

²⁰⁰ *See, e.g.*, 18 C.F.R. § 380.12(e) (requiring identification of listed species *and* discussion of potential mitigation measures); § 380.13(b) (describing required content for a biological assessment and incorporating those requirements into NEPA analysis); § 380.15 (requiring that the “siting...of facilities shall be undertaken in a way that avoids or minimizes effects on...wildlife values.”). Regarding the biological assessment incorporated into FERC’s NEPA procedures via 18 C.F.R. § 380.13(b), the regulations provide that it “must contain the following information for each species...:”

- (A) Life history and habitat requirements;
- (B) Results of detailed surveys to determine if individuals, populations, or suitable, unoccupied habitat exists in the proposed project’s area of effect;
- (C) *Potential impacts...that could result from the construction and operation of the proposed project...; and*
- (D) *Proposed mitigation that would eliminate or minimize potential impacts.*

18 C.F.R. § 380.13(b)(5)(ii) (emphasis added).

²⁰¹ 18 C.F.R. §380.12(b)(3).

²⁰² DEIS 5-6.

incorporate the results of the Section 7 consultation process.²⁰³ Because NEPA requires that the extent of the impacts be identified and made available for public review (42 U.S.C. § 4332(2)(G)), the reliance on the content of a yet to be developed Biological Opinion cannot satisfy NEPA's requirement to provide the public with an opportunity for comment on the actual extent of the impacts that will occur.²⁰⁴ Moreover, NEPA separately requires FERC to state how the decision to approve Annova LNG's project would comply with the ESA.²⁰⁵

B. The DEIS Fails to Adequately Assess the Project's Significant Effects on Listed Species

A review of the DEIS and materials provided by Annova reveals that the analysis contains insufficient information to fully determine the extent of adverse effects on listed species, or to determine whether proposed mitigation measures are sufficient to eliminate, avoid, or minimize adverse effects on those species.²⁰⁶

1. Endangered Ocelot

The ocelot (*Leopardus pardalis*) is an endangered species with two nearby U.S. populations, one at the Laguna Atascosa National Wildlife Refuge, immediately north of the Annova LNG and other terminal sites, and the other population some 20 miles north of the refuge on private ranchland in Kenedy and Willacy Counties. The ocelot is also considered endangered in Mexico by the Secretariat of the Environment and Natural Resources. Habitat loss is the

²⁰³ Cf. *Forest Service Employees for Env'tl. Ethics v. U.S. Forest Service*, 727 F. Supp. 2d 1195, 1213 (D. Mont. 2010) ("Plaintiff correctly observes that [*Env'tl. Prot. Info. Ctr. v. U.S. Forest Service*, 451 F. 3d 1005 (9th Cir. 2006)] does not allow an action agency to completely ignore an issue in its NEPA documents so long as the matter is discussed in adequate detail in a biological opinion....").

²⁰⁴ See *Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1275–76 (10th Cir. 2004) (recognizing FWS conclusion that action not likely to cause jeopardy does not necessarily mean impacts are insignificant).

²⁰⁵ 40 C.F.R. § 1502.2(d).

²⁰⁶ In addition to the impacts discussed below, we adopt and incorporate in full Defenders of Wildlife's Scoping Comments on Rio Grande LNG (FERC Docket #PF 15-20-000), Annova (FERC Docket #PF 15-15-000); Texas LNG (FERC Docket #PF 15-14-000), dated September 3, 2015, attached to Defenders of Wildlife's Motion to Intervene, FERC Docket No. 16-116, Accession No. 20160504-5053.

primary reason ocelots have largely disappeared from the U.S./Mexico borderlands. The Fish and Wildlife Service and nongovernmental organizations have been working for decades to protect and restore the ocelot in the U.S.—and to make progress toward restoring connectivity between the two U.S. ocelot populations and the larger Mexican population. There are three predominant reasons that the DEIS and supporting documentation’s analysis regarding ocelot impacts provide insufficient basis to approve Annova’s project.

First, the impact of the project on the north-south ocelot movement corridor is largely dismissed or mischaracterized. For decades, FWS and partner organizations have been purchasing land and arranging easements with the goal of protecting habitat and wildlife corridors that would maintain connections between ocelot populations in the U.S., including habitat north and south of the Brownsville Shipping Channel (“BSC”), with the ultimate vision of retaining connectivity to the population in Tamaulipas, Mexico.²⁰⁷ The effects of Annova LNG’s proposed export terminal project along the shipping channel—and particularly in light of the combined effects of this project with the proposed Rio Grande LNG and Texas LNG terminals—would be to greatly reduce the width of (if not basically eliminate) the currently existing corridor. The corridor would be restricted, at best, to a band that varies from approximately 700 to 1,800 feet wide very close or adjacent to LNG terminals that ocelots are likely to avoid because of light, noise, and human activity. Indeed, FWS has stated: “If the Annova site is developed as proposed, we believe the remaining coastal ocelot corridor to the Rio Grande River and Mexico will be severed.”²⁰⁸

Once the terminals are under construction or completed, an ocelot seeking to move north or south would have to approach the lighted, noisy facilities, locate and travel through a narrow

²⁰⁷ See, e.g., Exhibit 55, available at <https://www.kveo.com/news/local-news/-11-million-for-conservation-projects/1614349403>).

²⁰⁸ FE CP16-480, Accession No. 20160816-5175 at 21 (Exhibit 3 to Comments of Defenders of Wildlife on Annova Application).

easement adjacent to a terminal, swim the channel, and then exit the channel via a second easement, again in close proximity to a lighted and noisy industrial area. In addition, ocelots would have to use culverts to cross access roads or risk being killed by a vehicle strike. It is unlikely that ocelots would successfully run this gauntlet—and therefore likely that the three terminals would permanently cut the connection between ocelots north and south of the channel. The stark and likely impact is a loss of connectivity that may jeopardize long-term viability of the U.S. ocelot population by substantially reducing the area available to ocelots and ending hope of eventual natural gene flow from the Mexican population.

Annova LNG’s documentation fails to acknowledge the three terminals’ combined role in cutting this vital corridor. In its Revised Sensitive Species Report, Annova LNG excludes the Rio Grande LNG and Texas LNG terminals from its cumulative effects analysis based on those projects’ separate ESA consultations.²⁰⁹ As discussed above, ESA consultation alone is not sufficient for NEPA purposes. Moreover, NEPA’s cumulative impacts analysis covers a broader scope than the ESA.²¹⁰ FERC must disclose and evaluate the other two terminals’ effects on the ocelot (as well as other listed species) as part of the cumulative impacts analysis, particularly in terms of the destruction of habitat and corridors. This failure to fully disclose and analyze impacts on the ocelot violates NEPA’s “hard look” requirement and prevents the public from “understand[ing] and consider[ing] the pertinent environmental” effects of Annova LNG’s project.²¹¹

The second reason that the Annova DEIS is deficient is that it contains insufficient

²⁰⁹ FE CP16-480, Accession No. 20170316-5069 at 140-41.

²¹⁰ Compare 50 C.F.R. § 402.02 (definition of cumulative effects under the Services’ ESA consultation regulations) with 40 C.F.R. § 1508.7 (definition of cumulative impact under NEPA includes “past, present, and reasonably foreseeable future actions *regardless of what agency...or person undertakes such actions*”) (emphasis added).

²¹¹ *Davis Mountains*, 116 Fed. Appx. at 8-9; see also 18 C.F.R. §§ 380.12(e) & 380.13(b)(5)(ii)(C).

information to evaluate whether significant impacts on the ocelot are avoided, eliminated, or minimized. The DEIS discloses three conservation measures Annova LNG may take to reduce impacts on ocelot: (1) consideration of funding off-site conservation lands, (2) shifting its project site east to accommodate a wildlife corridor, and (3) funding an extension of the Redhead Ridge Conservation Easement on the opposite shore of the shipping channel.²¹² The latter two conservation measures are likely insufficient to avoid significant impacts to ocelot because it is unlikely ocelot will utilize these corridors, for the reasons discussed above.²¹³ Moreover, Annova LNG only proposes to protect these two corridors for the life of the project instead of in perpetuity, so mitigation effects could be short-term while the negative effects of the habitat destruction long-term.

Regarding off-site conservation lands, the DEIS assumes that it would contribute to the Project minimizing impacts on ocelot. But without more information, the assumption is all there is. The proposed conservation measure cannot be evaluated to determine the extent—if any—that it would address the loss of connectivity, loss of habitat, as well as other adverse effects (*e.g.*, noise and lights). The DEIS’s conclusion that Annova’s conservation measures “would” minimize impacts is unwarranted where the DEIS simultaneously concludes that funding for conservation lands only “may” benefit ocelots.²¹⁴ Indeed, Annova LNG has not even committed to purchase land or easements but, according to the DEIS, is simply “evaluating” doing so.²¹⁵ While the DEIS does not show Annova’s proposed mitigation to be effective, it is also clear that the loss of connectivity caused by the three terminals would be an enormous problem for the ocelot. Should

²¹² FE CP16-480, Accession No. 20181214-3018 at 169-70.

²¹³ Moreover, Annova does not propose to protect those corridors in perpetuity, thus undermining the entire purpose of maintaining connectivity to ensure genetic interchange.

²¹⁴ *Id.*

²¹⁵ FE CP16-480, Accession No. 20181214-3018 at 169-70.

connectivity be lost, delisting the ocelot would require an additional population of 75 ocelots in Texas—over the 200 ocelots necessary if connectivity and genetic exchange is maintained.²¹⁶ (For comparison, there are currently estimated to be around 50 ocelots remaining in Texas.) Based on the typical male ocelot's range of 5 square miles, there would need to be over 100,000 acres of suitable ocelot habitat protected off-site to support that additional population of 75 ocelots.²¹⁷ If the projects contributing to cutting off connectivity, such as Annova's and the other two LNG terminals, do not adequately compensate for these losses, then those substantial costs will eventually be borne by the federal government and/or the public.

Third and finally, Annova and FERC have failed to develop and evaluate sufficient alternatives for its project that would have fewer impacts on ocelot. As discussed in more detail in Part III.B, the DEIS must evaluate alternatives that would result in the terminal site having a smaller footprint. A robust evaluation of these alternatives is critical not just with regard to impacts such as wetlands, but because decreasing the operational footprint at the terminal site may reduce impacts to ocelot and ocelot habitat. For example, it could directly increase the amount of habitat available to ocelot. Moreover, it could increase the width (and effectiveness) of the corridor that is critical to movement and effective genetic variability of ocelot in Texas and Mexico. Finally, if certain facilities are moved to a remote site, noise and light impacts could be significantly mitigated. But because such alternatives were given no consideration in the DEIS, neither FERC nor the public can evaluate the true extent of the project's impacts on ocelot, or whether those impacts can be mitigated to insignificance. Based on this deficiency, as well as the other two reasons discussed above, the Commission has not taken the "hard look" at ocelot

²¹⁶ Exhibit 56 at 53-55 (Ocelot Recovery Plan, First Revision).

²¹⁷ Exhibit 57 at 23.

impacts necessary to comply with NEPA.²¹⁸

2. Threatened Piping Plover and Red Knot

Annova LNG's Revised Sensitive Species Assessment and the Annova DEIS note that there is typical wintering habitat for both the endangered piping plover (*Charadrius melodus*) and threatened red knot (*Calidris canutus rufa*) on the project site itself,²¹⁹ as well as wintering critical habitat for piping plover²²⁰ on part of the project site. The assessment states that the red knot and the piping plover may lose wintering/foraging habitat and that human activity associated with the terminal may prevent both species from using additional habitat adjacent to the site. However, Annova LNG does not anticipate adverse effects on either bird because "there is abundant high-quality wintering habitat in the vicinity."²²¹ The implication, for which no evidence is presented, is that there is underutilized feeding habitat available for wintering birds to use.²²² The validity of this assumption is biologically questionable. These birds are likely imperiled because of the *cumulative* effects of habitat loss that, in turn, results in inadequate food supplies. For example, the large decline in red knot that led to its listing as threatened in 2015 was caused primarily by a decline in food availability when the birds arrived on migration in Delaware Bay.²²³ If food is similarly limiting piping plover and red knot along the South Texas coast, there is reason to assume that alternative habitat with adequate food is not available, and accordingly, the Annova LNG project, alone and in conjunction with other industrial projects nearby, may have significant adverse impacts to the piping plover and red knot. Without analysis that demonstrates that

²¹⁸ See, e.g., *Davis Mountains*, 116 Fed. Appx. at 8-9.

²¹⁹ E.g., FE CP16-480, Accession No. 20181214-3018 at 174.

²²⁰ *Id.* at 173.

²²¹ FE CP16-480, Accession No. 20170316-5069 at 124 (Revised Sensitive Species Assessment, p. 85).

²²² FE CP16-480, Accession No. 20181214-3018 at 175.

²²³ See generally U.S. Fish and Wildlife Service, Red Knot (2018), available at <https://www.fws.gov/northeast/redknot/>.

sufficient food *is* available on other habitat, the conclusion that the project is not likely to adversely affect the red knot or piping plover is unwarranted. Further, because the DEIS does not adequately evaluate the extent to which alternative habitat with available food exists, the Commission has not taken a “hard look” at the impacts to these birds.²²⁴

Moreover, cumulative loss of habitat by the LNG plants and other development in the area may also decrease feeding effectiveness by altering the distribution of wetland habitat. Shorebirds have been found to be more effective at feeding with lower search costs and exploit more feeding sites when distance between wetlands decreases and the percentage of the landscape occupied by wetlands increases.²²⁵ In other words, the habitat that would be affected may be part of a web of nearby lands that together increase overall feeding efficiency. Thus, the Annova LNG terminal may contribute to what is effectively an overall loss in available food in the general area. The DEIS fails to adequately evaluate this issue or determine whether additional conservation measures are necessary to offset the loss of feeding habitat for piping plover and red knot. Moreover, there is no evaluation of whether the proposed wetland restoration at Little San Martín Lake would create habitat for these birds that would offset the loss of feeding habitat for piping plover and red knot.

The DEIS finds that the project “would not significantly destroy or adversely modify” designated critical habitat for piping plovers located on the east side of the Project site” because “only one acre of habitat would be removed and there is abundant high-quality wintering habitat in the vicinity of the Project site.”²²⁶ As discussed above, neither the DEIS nor the assessment provides scientific evidence that nearby “high-quality wintering habitat” is underutilized and

²²⁴ See *Davis Mountains*, 116 Fed. Appx. at 8-9.

²²⁵ Farmer, A.H. and A.H. Parent. 1997. Effects of the Landscape on Shorebird Movements at Spring Migration Stopovers. *The Condor* Vol. 99, No. 3 (August 1997), pp. 698-707, attached as Exhibit 58.

²²⁶ FE CP16-480, Accession No. 20181214-3018 at 389.

therefore available to birds displaced from the site. Moreover, by focusing on the “one acre of habitat” that would be permanently removed, the DEIS understates the potential effects of the project for two reasons. First, plovers may be excluded not only from the one acre where habitat will be removed, but also from the other estimated 12.4 acres of critical habitat by human activity.²²⁷ Indeed, the DEIS notes that human activity may flush birds from habitat near but not on the site, with the clear implication that birds may be displaced from habitat on the site. The EIS should clarify impacts on all piping plover critical habitat.

A second way the focus on destroyed critical habitat understates the effects is that it overlooks habitat that has not been designated as critical. Table 5 in the Revised Sensitive Species Assessment indicates that there is a total of 31 acres of suitable habitat for piping plover on the site²²⁸, and impacts on these acres should be analyzed with respect to survival of the plover and red knot. Moreover, depending on a species’ sensitivity to disturbance from human activities, the loss of those 31 acres may also represent a loss of a buffer around the designated habitat, in turn resulting in the adverse modification of the critical habitat. The failure of the DEIS to evaluate this issue renders it deficient.

3. Endangered and Threatened Sea Turtles

The project documentation also contains insufficient information to determine whether there are sufficient conservation measures to minimize the project’s impacts on listed sea turtles. Sea turtle species that may be present within the project’s general area include Kemp’s ridley, hawksbill, leatherback, loggerhead, and the green sea turtle. All these species are endangered

²²⁷ Total acres of CH given as 13.4. FE CP16-480, Accession No. 20181214-3018 at 173.

²²⁸ FE CP16-480, Accession No. 20170316-5069 at 10 (Revised Sensitive Species Assessment, p. 61, Table 5).

except for the green, whose population off the Texas coast is classified as threatened. Critical habitat for the loggerhead turtle has been mapped offshore.

Annova LNG does not adequately evaluate the potential for collision with ships as a significant risk to sea turtles associated with the project, both directly and in conjunction with the increased traffic resulting from the two other terminal projects.²²⁹ Turtles are vulnerable because they surface to breathe; often bask, feed, and mate near the surface where they are struck; and are more vulnerable during cold spells when they are unable to move as effectively. They are also more vulnerable when ships travel at high speed because the turtles cannot take effective evasive action.²³⁰ The bodies of most struck turtles are not recovered, but dead and injured turtles that wash up on shore include turtles clearly struck by ships. NOAA collects statistics on turtle strandings off the Texas coast, although these statistics are not broken down by cause of death. In Zone 21 of NOAA's Gulf of Mexico sea turtle coastal habitat zoning, the number of strandings of all threatened or endangered species of sea turtles from 2010 to 2018 was 3,390. This includes the area of Padre Island and South Padre Island (offshore and in-shore strandings).²³¹ Some proportion are likely due to collision and could increase as a greater number of ships enter the Brownsville ship channel arriving at the three new LNG terminals. To comply with NEPA, the Annova LNG EIS must analyze this issue.

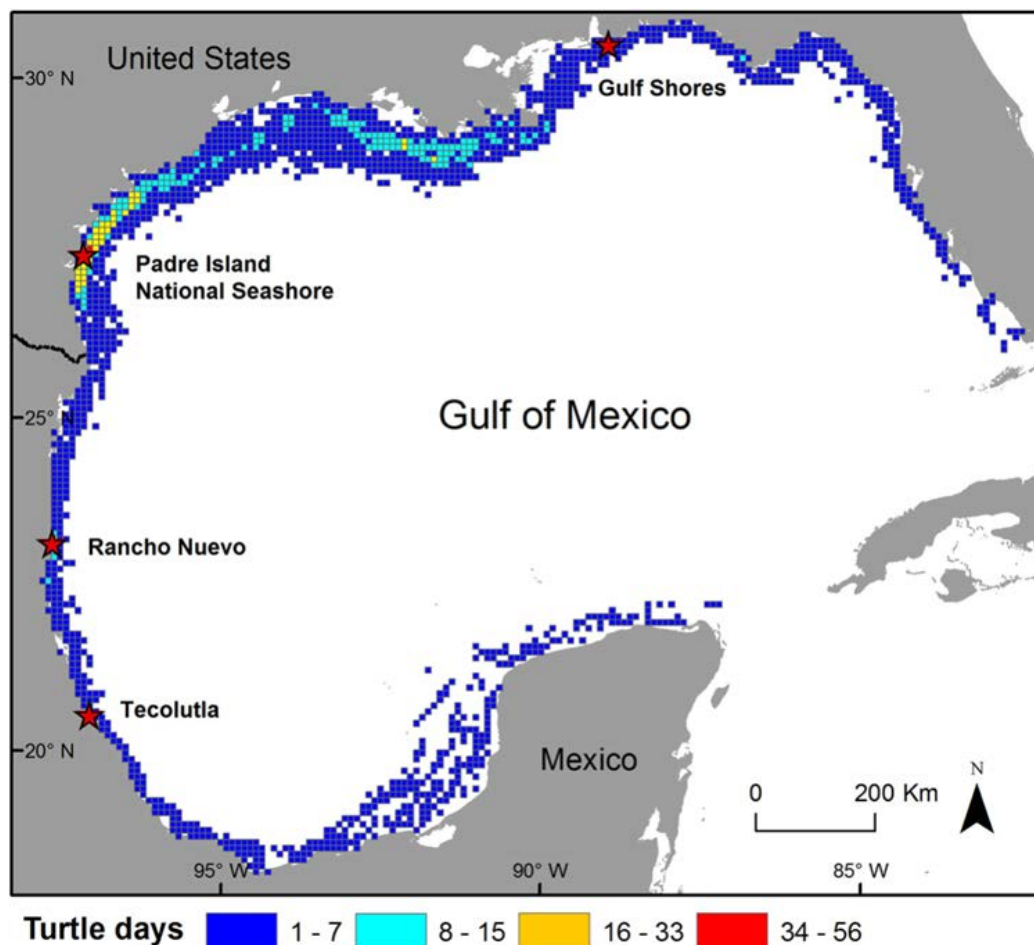
Turtles are known to be present in high density in this area, as shown in the map below, so

²²⁹ See, e.g., NOAA Fisheries Service & U.S. Fish and Wildlife Service. 2008. Recovery Plan for the NW Atlantic Population of the Loggerhead Sea Turtle, attached as Exhibit 59; Denkinger et al. 2013. Are boat strikes a threat to sea turtles in the Galapagos Marine Reserve? Ocean & Coastal Management Volume 80, pp 29-35, Exhibit 60.

²³⁰ Hazell et al. 2007. Vessel speed increases collision risk for the green turtle *Chelonia mydas*. Endangered Species Research Volume 3, pp. 105-113, attached as Exhibit 61.

²³¹ Data from NOAA Southeast Fisheries Science Center, available at <https://grunt.sefsc.noaa.gov/stssnrep/SeaTurtleReportI.do?action=reportquery>. Zone 21 covers roughly 60 miles of Texas coastline from slightly north of Port Mansfield through the border with Mexico.

many ship-turtle collisions are likely.²³² The Annova LNG project and other LNG projects planned along the shipping channel will significantly increase the amount of ship traffic in the area, thereby increasing the probability of collision and turtle death. This may especially negatively impact nesting beaches for the Kemp's ridley, which nest along Boca Chica beaches in South Padre island at the entrance to the ship channel. The project documentation fails to quantify the increased vulnerability to vessel strikes, and therefore—contrary to NEPA's requirements—it is impossible to determine whether vessel strikes associated with the project are causing significant adverse effects on any of the listed sea turtle species.²³³



²³² Shaver D. et al. 2016. Migratory corridors of adult female Kemp's ridley turtles in the Gulf of Mexico. Biological Conservation, Vol. 194, pp 158-167, attached as Exhibit 62.

²³³ FE CP16-480, Accession No. 20181214-3018 at 181.

Moreover, the documentation shows insufficient evaluation of mitigation measures related to sea turtles. Turtle mortality from collisions can be reduced if ships travel more slowly and if ships avoid turtles. Such avoidance guidelines have been promulgated by the National Marine Fisheries Service (NMFS).²³⁴ Though the Annova DEIS refers to these guidelines, stating that the increase in vessel strikes due to the project “would be small due to implementation of the NOAA Fisheries’ guidance,”²³⁵ it provides no evidence that these purely voluntary guide lines would be followed or that the effects would indeed be “small.” Indeed, there is reason to believe the guidelines would not be followed—there are additional costs when ships travel slowly, as has been calculated for the right whale seasonal management areas off the east coast near Boston, Massachusetts.²³⁶ Based on these increased costs, ships have an economic incentive not to comply with the voluntary NMFS guidelines, and there is little reason to believe they would do so. Based on the information available in the DEIS, it appears unlikely that Annova LNG’s proposed conservation measures would prevent significant impacts to listed species of sea turtles due to increased vessel strikes. Regardless, the lack of adequate evaluation of the issue does not comply with NEPA.²³⁷

Other measures are available that may mitigate vessel strikes. For example, a speed control area such as the one set for right whales is precedent for a mandatory vessel speed limit.²³⁸ Because increased ship traffic due to the LNG sites would likely increase mortality of endangered and threatened turtles, NEPA requires the Annova LNG project’s EIS to demonstrate the

²³⁴ NOAA Fisheries Service, Southeast Regional Office. 2008. Vessel Strike Avoidance Measures and Reporting for Mariners, attached as Exhibit 63.

²³⁵ FE CP16-480, Accession No. 20181214-3018 at 191.

²³⁶ NOAA Fisheries Service. 2012. Economic Analysis of North Atlantic Right Whale Ship Strike Reduction Rule, attached as Exhibit 64.

²³⁷ *E.g., Davis Mountains*, 116 Fed. Appx. at 8-9.

²³⁸ NOAA Fisheries Service. 2018. Compliance Guide for Right Whale Ship Strike Reduction Rule (50 CFR 224.105), attached as Exhibit 65.

Commission's "hard look" at all such measures to avoid, eliminate, or minimize significant effects on listed sea turtles, including creation of a mandatory ship speed control area in the vicinity of the mouth of the shipping channel sufficiently large to significantly reduce turtle mortality.

C. The DEIS Fails to Adequately Assess Mitigation for Wildlife

The DEIS and Annova LNG's supporting documentation fail to provide sufficient species-specific analyses that would allow the Commission to determine whether Annova LNG's other proposed conservation measures will ensure that the project does not jeopardize the continued existence of the listed species above. Because the terminal site includes a mosaic of different habitat types that support different species, effects on species supported by these habitat types need to be specifically evaluated. For example, thorn scrub is ocelot habitat, while Gulf Coast salty prairie is habitat for Aplomado falcon. Other types of habitat on the site include loma grassland (potential ocelot hunting ground), loma evergreen shrubland, loma deciduous shrubland, as well as significant acreage of varying types of wetlands and open water. Annova LNG is taking a species-specific approach to ocelot mitigation, but has not done a similar analysis or developed conservation measure alternatives specific to Aplomado falcon, piping plover, red knot or sea turtles, which it should do. Without evaluating lost habitat for each listed species, the Commission is unable to determine whether Annova LNG's conservation measures will prevent significant impacts to any individual listed species (or critical habitat), and therefore has not taken the "hard look" and environmental impacts that NEPA requires.

D. FERC Has Failed to Comply with the ESA's Consultation Requirements

Pursuant to Section 7(a)(2) of the ESA, the FERC may not take an action—here, authorizing the construction of an LNG export terminal and associated supply pipeline—that is

“likely to jeopardize the continued existence” of listed species or may destroy or adversely modify critical habitat. 16 U.S.C. § 1536(a)(2); *see* 50 C.F.R. §§ 402.02, 402.03. The consultation must include an analysis of the effects of building the LNG export terminal and supply pipeline, including the effects on the various listed species and critical habitat discussed above. *See, e.g.*, 50 C.F.R. §§ 402.02, 402.12, 402.14. The Services have not evaluated whether Annova LNG’s project jeopardizes the listed species or destroys/adversely modifies the critical habitat discussed above. Because consultation is “ongoing,” FERC staff recommends that “Annova should not begin construction until the FERC staff completes section 7 consultation.”²³⁹ But this does not go far enough. FERC may not rely on a future consultation with an unknown outcome to authorize this project. NEPA requires FERC complete its formal consultation *before* making a determination on this project under the Natural Gas Act.

VII. The DEIS Fails to Take a Hard Look at Wetlands Impacts

According to the DEIS, approximately 165 acres of wetlands would be within the construction footprint of the Annova terminal site and permanent access road.²⁴⁰ The terminal and access road will “permanently affect” 52.8 acres of wetlands, largely through conversion to uplands.²⁴¹ Beyond these intentional changes, other wetlands will be temporarily or permanently degraded, as restoration of disturbed wetlands will take years to complete and is not expected to fully restore original conditions.²⁴² Moreover, the impacts from the associated natural gas supply lateral may be significant. The DEIS violates NEPA because it fails to take a hard look at reasonable alternatives regarding reduction and mitigation of these alternatives, because the

²³⁹ FE CP16-480, Accession No. 20181214-3018 at 425.

²⁴⁰ *Id.* at 131.

²⁴¹ *Id.* at 132.

²⁴² *See id.* (construction taking about four years); *id.*, DEIS vol. 2 at 61 (Appx. B, stating restoration will be deemed successful if 80% of vegetative cover restored).

DEIS's assertion that wetland impacts will be mitigated to insignificance is unsupported, and because the DEIS almost entirely fails to account for impacts for the supply pipeline.

A. The DEIS Fails to Consider Reasonable Facility Design and Siting Alternatives That Would Reduce Wetland Impacts

As explained in Part III.B *supra*, the DEIS arbitrarily failed to consider alternatives that would wetland impacts by moving elements of the proposed facility out of wetlands or by reducing the size of the proposed facility. NEPA requires robust analysis of this alternative. 40 C.F.R. § 1502.14. The Clean Water Act also requires evaluation of alternatives that would reduce wetland impacts. 40 C.F.R. § 230.10(a). Although these two requirements are similar, *id.* § 230.10(a)(4), the Clean Water Act goes beyond NEPA's procedural requirements and imposes substantive obligations to actually adopt reasonable less damaging alternatives. 40 C.F.R. § 230.10(a). For example, where a project is not water dependent, the Clean Water Act imposes a presumption that an alternative that would not impact wetlands is available, and requires the applicant to provide "detailed, clear, and convincing information proving that an alternative with less adverse impact is impracticable." *Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1269 (10th Cir. 2004).

Here, Annova has failed to make this showing.

In response to Sierra Club's argument, in its protest, that the Freeport and Cove Point projects suggest that relocating pretreatment or liquefaction facilities would be feasible, Annova simply asserted that the Freeport and Cove Point facilities were different, and that designs successfully employed in these projects could not be used here, without providing any evidence or specifics.²⁴³ These unsupported assertions fall short of Annova's burden of providing "detailed,

²⁴³ FE CP16-480, Accession No. 20160831-5379.

clear, and convincing information proving that an alternative with less adverse impact is impracticable.” *Flowers*, 359 F.3d at 1269.

B. The DEIS Fails to Take a Hard Look at Mitigating Wetland Impacts

Annova currently proposes to restore wetlands at Little San Martín Lake, 1.2 miles northwest of the project site, but the DEIS recognizes that Annova’s Conceptual Mitigation Plan is still under review by the Corps.²⁴⁴ It is difficult for the public to meaningfully comment on whether mitigation will be adequate or effective in the absence of a Corps-approved draft mitigation plan. Certainly, as discussed in more detail below, failure to discuss pipeline mitigation in the Conceptual Mitigation Plan makes it impossible to evaluate its effects. Nevertheless, one can still draw the conclusion that the DEIS fails to sufficiently evaluate mitigation measures to render impacts to wetlands insignificant.

1. The DEIS Arbitrarily Defers Discussion of Mitigation to Future Corps of Engineers Decisionmaking

The DEIS concludes, in essence, that impacts to wetlands will be fully mitigated because the Army Corps of Engineers will require such mitigation as a condition of approval.²⁴⁵ This conclusion is entirely unwarranted given what information is actually available. In fact, the DEIS concedes how insufficient the current state is:

- Annova has not finished collecting information on baseline conditions at the proposed mitigation site;
- Functional assessments of the wetlands at the terminal site have not been reviewed or finalized;
- Additional detailed engineering, design, construction, and monitoring information is required before Annova can finalize its proposed mitigation plan;

²⁴⁴ FE CP16-480, Accession No. 20181214-3018 at 25, 134.

²⁴⁵ FE CP16-480, Accession No. 20181214-3018 at 134.

- The Corps has yet to determine the acceptability of any proposed compensatory mitigation for wetlands.²⁴⁶

Moreover, NEPA prohibits passing the buck in this manner. Indeed, one of the purposes of this EIS is to inform the Corps' evaluation of this very issue. *See infra* Part IX.A, page 87 As the Environmental Protection Agency has already explained in the context of Rio Grande LNG's application, details regarding proposed mitigation need to be presented in a draft EIS, so that, *inter alia*, the public has a meaningful opportunity to review and comment.²⁴⁷

2. The DEIS Fails to Adequately Evaluate Wetlands Impacts Due to the Associated Supply Pipeline.

The DEIS treats Annova's supply pipeline as non-jurisdictional, asserting that it would be a "yet undetermined third-party-owned and -operated intrastate pipeline."²⁴⁸ Thus, the DEIS merely discusses it superficially in the summary of cumulative impacts.²⁴⁹ But as Annova's 404 application makes clear, Annova is the owner and operator of the pipeline, and the pipeline is an integral and connected action to the terminal project. Further, as discussed in greater detail in part IX.B below, the supply pipeline would provide *interstate* service and would be subject to FERC's jurisdiction. Thus NEPA requires the full extent of its impacts to be evaluated.

Annova LNG will need an approximately 9-mile-long gas supply pipeline leading from the Valley Crossing Pipeline to the terminal. The pipeline will impact at least 110 acres, including over 42 acres of wetlands.²⁵⁰ Additionally, the pipeline will have a permanent footprint of around 50 acres. Nowhere does the DEIS (or other documents, such as the Conceptual Mitigation Plan)

²⁴⁶ FE CP16-480, Accession No. 20181214-3018 at 134.

²⁴⁷ See EPA, Comments to FERC submitted FERC Accession No. 20161115-5024; *available at* <https://elibrary.ferc.gov/IDMWS/common/opennat.asp?fileID=14398392> (hereinafter "EPA Comment"). The undersigned adopt these comments in full and incorporate them by reference.

²⁴⁸ FE CP16-480, Accession No. 20181214-3018 at 47.

²⁴⁹ FE CP16-480, Accession No. 20181214-3018 at 371.

²⁵⁰ FE CP16-480, Accession No. 20181214-3018 at 371.

disclose how many of the acres in the permanent right-of-way are wetlands—despite the project plan drawings submitted to the Corps showing wetlands within it.²⁵¹ It is not clear how long these wetlands will be disrupted during construction and restoration activities. It is also possible that these wetlands may be permanently degraded because restoration of vegetation can be imperfect, creating a risk of permanent degradation. Even if restoration is successful, wetlands within the operational right-of-way may be permanently and deliberately transformed: Annova LNG will presumably conduct vegetation maintenance within a 50-foot-wide permanent right-of-way. Given the lack of information regarding the pipeline, it is unsurprising that nothing in project documentation substantiates the assertion that the pipeline would have only temporary impacts to wetlands.²⁵² The failure to evaluate fully and adequately evaluate the impacts of the pipeline on wetlands, including considering alternatives with respect to siting the pipeline means that FERC has not taking the requisite “hard look” at the entirety of Annova’s project.

3. The Information in the DEIS Regarding Annova’s Proposed Mitigation Is Insufficient

The Corps, EPA, and other federal agencies have recognized “the longstanding national goal of ‘no net loss’ of wetland acreage and function.” Compensatory Mitigation Rule, 73 Fed. Reg. 19,594 (Apr. 10, 2008). Mitigation must be of a kind and amount to compensate for the loss of services and functions provided by the impaired wetlands. 40 C.F.R. §§ 230.93(e), (f). Compensatory mitigation is inherently imperfect and therefore always requires a greater than 1:1 ratio. In this circumstance, the ratio must be further increased because of the temporal difference between when impacts will occur (*i.e.*, start of construction) and if/when the proposed mitigation actually becomes functional. 40 C.F.R. § 230.93(m), *accord* 73 Fed. Reg. at 19,610.

²⁵¹ *Id.* at 363.

²⁵² *Id.* at 380.

According to the DEIS, nearly 100 acres of wetlands in total will be impacted by the project (including the supply pipeline). As proposed, construction and operation of the terminal site and access road will permanently impact approximately 52.8 acres of wetlands with 4.9 more acres impacted temporarily (57.7 acres total).²⁵³ An additional 42.1 acres will be disturbed or destroyed—at the very least in the short-term—by construction of the 9-mile-long pipeline.²⁵⁴ Yet Annova proposes only to restore or enhance a total of 171-192 acres of estuarine wetlands through its work at the Little San Martin Mitigation Site.²⁵⁵ This means Annova is proposing compensatory mitigation at a low ratio (ranging from 1.7:1 to 1.9:1). In contrast, the nearby SpaceX project mitigated at a greater than 10:1 ratio.²⁵⁶ Annova's own mitigation plan acknowledges that its 50-acre re-establishment plan may not fully replace the Plant Biomass Production function at the proposed mitigation site.²⁵⁷ Without more, Annova is not meeting its mitigation obligations and its application must be denied.

Finally, the Conceptual Mitigation Plan appears to misrepresent the current conditions at Little San Martin Lake. The undated "Recent Aerial Photograph provided by Annova suggests that the marsh (and corresponding aquatic resources) is completely absent from the southwest section of the proposed mitigation site."²⁵⁸ However, more recent Google Maps satellite imagery shows that this is not the case, depicting aquatic resources throughout almost the entirety of the proposed mitigation site, including the southwest corner.²⁵⁹ Individuals from one of the undersigned groups (Save RGV from LNG) recently visited the proposed mitigation site and were

²⁵³ FE CP16-480, Accession No. 20181214-3018 at 132.

²⁵⁴ FE CP16-480, Accession No. 20181214-3018 at 371.

²⁵⁵ FE CP16-480, Accession No. 20181207-5060 at 9 (Annova Conceptual Mitigation Plan, Dec. 2018 at 6).

²⁵⁶ SpaceX FEIS at 4-44, Appendix M, attached as Exhibit 66 available at <https://cdxnodelengn.epa.gov/cdx-enepa-II/public/action/eis/details/downloadEisDocuments?eisId=88519>.

²⁵⁷ FE CP16-480, Accession No. 20181207-5060 at 20 (Annova Conceptual Mitigation Plan, Dec. 2018 at 17).

²⁵⁸ FE CP16-480, Accession No. 20181207-5060 at 10 (Annova Conceptual Mitigation Plan, Dec. 2018 at 7).

²⁵⁹ See Exhibit 67 (picture from site visit depicting black mangrove).

surprised to see more open water, more vegetation, and more black mangrove on the site than Annova's Conceptual Mitigation Plan represented.²⁶⁰ Based on the available information, Annova is underrepresenting the existing wetlands at the proposed mitigation site, may be overestimating the restoration and enhancement of wetlands at the site. Without better verification of the baseline information for the aquatic resources on the proposed mitigation site, FERC cannot take the "hard look" at wetland impacts that NEPA requires.

VIII. The DEIS Fails to Adequately Consider Reliability and Safety

The DEIS recognizes potential impacts to and from the Project and the nearby SpaceX Commercial Spaceport Project, which is located approximately 6.3 miles southeast of the proposed Terminal and anticipates rocket launches starting as soon as this year. DEIS 4-91. The Annova Project Site would be located within the proposed SpaceX closure area, which is the area within the vicinity of the vertical launch area that is restricted on the day of a launch operation. *Id.* During its review, FERC staff concluded that there would be debris above a threshold of 3e-5 years, the failure rate level used to evaluate the potential for cascading damage and the failure rate used by FAA in space launch failure prior to 2017,²⁶¹ but that the cascading damage at the terminal site would not impact the public. DEIS 4-236. FERC staff concluded that rocket launch failures could impact onsite constructions workers and plant personnel. DEIS 4-237. The DEIS also states that the Coast Guard would determine any mitigation measures needed on a case-by-case basis to safeguard public health and welfare from LNG carrier operations during rocket launch activity.

²⁶⁰ *See id.*

²⁶¹ 14 C.F.R. 417.107(b) was updated from 3e-5 casualties for three different events (in the 2016 edition) to 1e-4 casualties cumulative (in the 2017 edition). It is unclear why the 2016 regulation was applied to the DEIS.

The discussion of the unique risks posed by the SpaceX launch site on Annova LNG's Terminal, and the cumulative risks posed to the public as a result of this launch site on the three currently proposed LNG terminals along the Brownsville Ship Channel, is grossly inadequate. The DEIS includes a mere two paragraphs discussing potential impacts from the SpaceX launch facility; does not reference, discuss, or incorporate the April 2017 ACTA Technical Report No. 17-1008/1-01 or any other SpaceX-related impacts analyses;²⁶² and includes only the SpaceX Final Environmental Impact Statement (2014), the 2013 FWS SpaceX Biological and Conference Opinion, and one other article on SpaceX's Boca Chica Launch Site (2014) as referenced articles in Appendix K-. As part of the impact analysis, Annova LNG must quantify risk from future space launch missions in accordance with 14 C.F.R. Parts 415 and 417. But no data is provided to demonstrate whether the public risk criteria in 14 C.F.R. § 417(b) is met for the total risk to the public (1e-4 cumulative), for any individual member of the public (1e-6 per launch), for water borne vessel (1e-5), or for aircrafts (1e-6). Given the fact that FERC staff concluded debris would occur above a regulatory threshold, the lack of further analysis or disclosure in the DEIS fails to satisfy the need to inform the public about serious impact risks.

1. FERC Must Clarify the Basis for Its Potential Impacts Analysis and Its Discrepancy with ACTA's Conclusions

FERC concluded that there would be debris above the threshold failure rate level used to evaluate the potential for cascading damage (*i.e.*, 3e-5 per year) but concluded that the cascading damage at the Terminal would not impact the public. DEIS 4-236. Annova LNG hired a consultant, ACTA, to provide information to FERC. ACTA concludes that under certain adverse

²⁶² See FERC Docket CP-16-480, Accession No. 20170425-5123 at App. A.

wind conditions, hazardous launch vehicle debris may impact the Terminal perimeter.²⁶³ The public version of this report redacts the vehicle impact probabilities on a per-launch basis,²⁶⁴ but the report's conclusions suggest that ACTA concluded the probability of debris impacting the Terminal was less than the FAA risk criteria in 14 C.F.R. Part 417. FERC filed an engineering information request related to this report,²⁶⁵ but the response is not publicly available because it was filed as CEII.

We request that FERC clarify the basis for its conclusion and explain any discrepancies between its independent review of possible impacts and that of ACTA/Annova LNG. We further request that FERC publicly disclose any correspondence or written review of ACTA's report that explain the bases for FERC's conclusions and are not already publicly available on the docket.

2. The Risk Assessment for Space Launch Failures Improperly Failed To Include the BFR

A rocket launch failure impact analysis must include all launch vehicles that meet the threshold criteria for realness and relevance. Under NEPA, a rocket launch failure impact analysis should include review of all vehicles that could reasonably be foreseen to be launched at a site during the site's lifespan.

In a FERC Environmental Information request, FERC asked that the applicant analyze the impact analysis from potential future space launch missions, accounting for all future launch vehicle-series including the Falcon 9, Falcon Heavy, and Interplanetary Transport System launch vehicle.²⁶⁶ In its response, Annova LNG stated that its contractor ACTA excluded the Interplanetary Transport System (ITS) and any other launch vehicles because SpaceX had not

²⁶³ *Id.* at 23.

²⁶⁴ *See id.* at 72-77.

²⁶⁵ FERC Docket CP16-480, Accession No. 20170802-3005.

²⁶⁶ FERC Docket CP16-480, Accession No. 20161027-3006 at 5.

proposed to launch any other existing or planned launch vehicles from the Boca Chica Spaceport as of the date of response.²⁶⁷ The response also called into question whether ITS, the Big Falcon Rocket (BFR) / Big Falcon Spaceship (BFS), or other vehicles were viable or sufficiently real for purposes of the analysis required for the Terminal.

However, announcements by SpaceX representatives over the past 20 months make clear that the BFR²⁶⁸ is sufficiently real and relevant for purposes of impacts analysis for the three proposed Brownsville LNG terminals. For example:

- CEO Elon Musk has stated that SpaceX is “no longer planning to upgrade Falcon 9 second stage for reusability” because the company is “[a]ccelerating BFR instead.”²⁶⁹
- At the 2017 International Astronautical Federation conference, Musk stated that SpaceX is aiming to conduct two uncrewed missions to Mars by 2022 and a crewed mission around the moon and back in 2023.
- Following this conference, a series of public comments have made clear that the Boca Chica rocket facility will be almost exclusively dedicated to testing BFR’s spaceship prototypes.²⁷⁰
- CEO Musk stated that spaceship hop testing would “most likely . . . happen at our Brownsville location,” perhaps as early as 2019.²⁷¹ SpaceX President/COO Gwynne Shotwell has stated that she believed BFR could begin its first orbital test missions as early as 2020.²⁷²
- In January 2018, at the TAMEST Annual Conference, Shotwell stated that the Boca Chica facility would be used for “early vehicle testing” and then would move from a “test site to a launch site.”²⁷³

²⁶⁷ FERC Docket CP-16-480, Accession No. 20170425-5123 at 11.

²⁶⁸ CEO Elon Musk has stated that the BFR will be called the “Starship,” and the first stage will be named the “Super Heavy,” but we will refer to the rocket as BFR in these comments.

²⁶⁹ Elon Musk, <https://twitter.com/elonmusk/status/1063865779156729857> (Nov. 17, 2018), attached as Exhibit 68.

²⁷⁰ See Teslarati, “SpaceX Mars rocket test site receives first huge rocket propellant storage tank” (July 12, 2018), attached as Exhibit 69.

²⁷¹ *Id.*

²⁷² *Id.*

²⁷³ Gwynne Shotwell, TAMEST 2018 Annual Conference: Aerospace, https://www.youtube.com/watch?time_continue=303&v=kjTHJzWPTnU.

- In July of this year, SpaceX delivered a 100,000-gallon liquid oxygen tank to its prospective Boca Chica test and launch facility. In a statement provided to the *Valley Morning Star*, SpaceX spokesperson Sean Pitt confirmed that the tank had been delivered to Boca Chica as part of an ongoing effort to ready the site for testing and launches of an unspecified “vehicle.”²⁷⁴
- SpaceX has recently filed for permits and licenses that will eventually allow the company to legally conduct hop and flight tests of a BFR spaceship prototype at the Boca Chica site.²⁷⁵ These applications are not public, but FCC’s Experimental Licensing System has published a summary of the SpaceX request to test these vehicles in the near future.
- In September 2018, Musk announced that the spacecraft will be 387 feet tall (118 meters), SpaceX’s largest rocket to date. This is 157 feet taller than the Falcon Heavy and twice as powerful.²⁷⁶ This announcement also included a series of design images. The BFR’s booster will be lifted by 31 Raptor engines that produce a thrust of approximately 5,400 tons.²⁷⁷ Musk stated that there would not be many big changes to the booster going forward.²⁷⁸
- In January 2019, SpaceX announced its decision to both build and test the Starship prototypes at the Boca Chica facility and stated that the first of these tests could occur as soon as February or March of 2019.²⁷⁹ SpaceX has already completed assembly of a prototype of the Starship hopper vehicle at this facility.²⁸⁰

This available information paints a reasonably clear picture: SpaceX is prioritizing the development and testing of the BFR; the BFR is significantly bigger and more powerful than the Falcon boosters; and SpaceX is moving forward to test (and most believe launch)²⁸¹ the BFR at the Boca Chica site. It is reasonable to conclude that BFR may, and likely will, be launched from

²⁷⁴ See Teslarati, “SpaceX Mars rocket test site receives first huge rocket propellant storage tank” (July 12, 2018), attached as Exhibit 69.

²⁷⁵ Teslarati, “SpaceX seeks licenses for BFR spaceship prototype hop test campaign” (Nov. 22, 2018), attached as Exhibit 70.

²⁷⁶ See <https://www.spacex.com/mars> (describing height and rocket capability); Exhibit 71 (SpaceX, “Making Life Multiplanetary” (2017)).

²⁷⁷ Exhibit 71 (SpaceX, “Making Life Multiplanetary (Transcript)” (2017)).

²⁷⁸ Space.com, “The New BFR” (Sept. 21, 2018), attached as Exhibit 72 and available at <https://www.space.com/41901-spacex-bfr-mars-spaceship-rocket-design-changes.html>.

²⁷⁹ L.A. Times, “In blow to Los Angeles, SpaceX is moving some Mars spaceship and booster work to Texas” (Jan. 16, 2019), attached as Exhibit 73.

²⁸⁰ *Id.*

²⁸¹ See generally Nasa Spaceflight, “Where will BFR launch from first?”, attached as Exhibit 74 and available at <https://forum.nasaspaceflight.com/index.php?topic=44168.0>.

the Boca Chica site during Annova LNG's life.

Under NEPA's reasonably foreseeable standard approach, an analysis of potential impacts to the Annova LNG Terminal should include potential impacts from the BFR due to the spaceship's realness and relevance. FERC should coordinate with the FAA and an independent third-party contractor to get the latest information available regarding the BFR and should undertake a quantitative risk analysis in accordance with 14 CFR Parts 415 and 417. This is particularly true in light of FERC's conclusion that the much smaller and less powerful Falcon vehicles could cause debris above the regulatory threshold at the Annova LNG Terminal site.

3. The DEIS Provides Insufficient Information Regarding Debris Impacts to the Brownsville Ship Channel

The DEIS states that the Coast Guard would determine any mitigation measures needed on a case-by-case basis to safeguard the public health and welfare from LNG carrier operations during rocket launch activity. DEIS 4-236. No further information is provided regarding potential impacts to the Brownsville Ship Channel (BSC) or the public as a result of these activities.

The SpaceX facility is closer to portions of the BSC than to the Terminal site. If debris is expected at the Terminal site (and to the onsite workers and plant personnel), debris may impact LNG carrier operations and pose a risk to the public safety. No quantification of this risk is provided in the DEIS in accordance with 14 C.F.R. § 417.107(b)(3) or otherwise. No proposed mitigation is provided to reduce this risk and no assurance is given that the Coast Guard will require Annova LNG to otherwise mitigate these risks.

By letter dated February 13, 2018, the United States Coast Guard issued its Letter of Recommendation pursuant to 33 C.F.R. 127.009 concluding that the BSC be considered suitable

for LNG marine traffic.²⁸² The Coast Guard reviewed the Waterway Suitability Assessment for the Annova LNG Project that was submitted on May 24, 2016.

It is unclear if this review included information provided subsequent to Annova LNG's Letter of Intent, including ACTA's analysis of impacts from SpaceX. However, the Letter of Recommendation's Analysis did include a short description of the SpaceX launch site. This analysis concluded that based on FERC assumptions, FERC staff "found that the risk of public impact from a projectile in the 10,000 to 100,000 ft-lb range would be just inside the tolerable region (*i.e.*, within the [As Low As Reasonably Practicable] region) after accounting for 10% probability factor for wind."²⁸³

FERC should confirm that its staff provided the most recent information available to the Coast Guard during its review of the Waterway Suitability Assessment. FERC should also clarify the failure probability and public risk to LNG carrier operations during rocket launches, as well as any proposed mitigation and assurances provided by Annova LNG to reduce these risks.

B. The DEIS' Reliability and Safety Analysis Is Incomplete and Fails to Account for All Reasonably Foreseeable Infrastructure

LNG facilities handle flammable and sometimes toxic materials that can pose a significant risk to the general public. In fact, a number of incidents, some of which are described in the DEIS, have occurred involving LNG carrier accidents or U.S. LNG facilities. *See* DEIS 4-197 – 199; 4-207 – 208. Most recently, in 2014, an explosion at the Plymouth LNG facility caused the failure of pressurized equipment, resulting in high velocity projectiles. Members of the scientific community have criticized LNG terminal safe-siting policy as faulty,²⁸⁴ and we incorporate those

²⁸² FERC Docket CP16-480, Accession No. 20180307-3058.

²⁸³ *Id.* at 8.

²⁸⁴ *See, e.g.*, Havens, Jerry & James Venart, "United States LNG Terminal Safe-Siting Policy is Faulty," FERC 20150114-5038, attached as Exhibit 75.

concerns in these comments.

C. The DEIS Should Not Be Issued Until the DOT Issued Its Letter of Determination

The DEIS fails to adequately analyze and disclose potential reliability and safety information for the Annova LNG Terminal site. As the DEIS notes, on August 31, 2018, the DOT and FERC signed an MOU regarding coordination and responsibility throughout the LNG permit application process for FERC-jurisdictional LNG facilities.²⁸⁵ In the MOU, the DOT agreed to issue a Letter of Determination (LOD) stating whether a proposed LNG facility would be capable of complying with location criteria and design standards contained in Subpart B of Part 193. FERC also committed to rely upon the DOT determination in conducting its review of whether the facilities would be in the public interest, although the issuance of an LOD does not abrogate responsibility over continued compliance with Part 193. The MOU was effective upon signing by the agencies.

As the DEIS acknowledges, a LOD has not been issued by the DOT for the Annova LNG Project because the DOT has not completed its analysis of whether the proposed facilities would meet the DOT's siting standards. DEIS 4-197. The latest filings in the FERC docket shows that the U.S. Pipeline and Hazardous Materials Safety Administration requested information related to its evaluation of compliance with the siting requirements on August 14, 2018..²⁸⁶

The public should have the opportunity to review the most recent Design Spill Package documentation, final Hazard Analysis Report(s), all up-to-date supplemental documentation related to compliance with the Subpart B regulations, any correspondence between the DOT and

²⁸⁵ "Memoranda of Understanding (MOU), Federal Energy Regulatory Commission, accessed November 26, 2018, attached as Exhibit 76 and available at <https://www.ferc.gov/legal/mou/2018/FERC-PHMSA-MOU.pdf>.

²⁸⁶ FERC Docket CP16-480, Accession No. 20180823-5148.

the applicant, and the LOD itself prior to the issuance of a decision. These are materials and necessary authorizations that should be included in the DEIS. FERC staff should undertake their responsibilities in accordance with the 2018 MOU and issue a complete DEIS (or supplemental document) upon receipt of the LOD.

IX. The DEIS Fails to Adequately Address Connected, Indirect, and Cumulative Actions, Including Production and Use of the Exported Gas

Authorization of the Annova project will have foreseeable indirect effects on the price, production, and use of natural gas in the United States. Because NEPA requires an agency to engage in a wide-ranging inquiry, including connected actions, indirect effects, and other foreseeable consequences, FERC must consider these impacts in its EIS.

A. The EIS Must Address the Impacts of Cooperating Agencies' Decisions, Including the Impacts of Additional Natural Gas Production and Use

Although the DEIS recognizes that FERC received scoping comments calling for analysis of the effects of “induced natural gas production or increased hydraulic fracturing,” DEIS 1-13, the DEIS provides no discussion of these issues, nor any explanation as to why these issues are out of scope. NEPA requires FERC to consider these and other indirect effects relating to the entire natural gas lifecycle.

In other proceedings, FERC has argued that these effects are outside the scope of FERC’s NEPA review because they are instead effects of other state and federal agency actions, such as the Department of Energy export authorization. However, FERC is not exempt from including indirect environmental impacts simply because local or state agencies have control over much of the relevant regulatory process. FERC’s potential authorization of the Project would be a cause of increases in gas production and use notwithstanding the fact that other government entities also

regulate these effects. NEPA would “wither away in disuse, [if] applied only to those environmental issues wholly unregulated by any other federal, state or regional body.”²⁸⁷

Nor does the Department of Energy’s role in approving gas exports relieve FERC of the obligation to address the impacts of gas production and use in the EIS. Commenters recognize that the D.C. Circuit has held that the Department of Energy’s approval of exports, rather than FERC’s approval of the construction and operation of export infrastructure, is the “legally relevant cause,” for purposes of NEPA review, of indirect effects on gas production and use. *Sierra Club v. FERC*, 827 F.3d 36, 47-49 (D.C. Cir. 2016) (“*Freeport I*”) (citing *Department of Transp. v. Public Citizen*, 541 U.S. 752, 764, 771 (2004)). However, *Freeport I* explicitly declined to address “the interplay between the Commission and the Department of Energy when the former is acting as the ‘lead agency’ in reviewing the environmental effects of a natural gas export operation under NEPA,” whether FERC’s decision to exclude gas production from its EIS “impermissibly ‘segmented’ its review of the [terminal] Projects from the larger inter-agency export authorization process,” or whether “Commission’s construction authorizations and the Department’s export authorizations qualified as ‘connected actions’ for purposes of NEPA review.” *Id.* at 45-46. The Court could not have been clearer about the fact that *Freeport I* did not resolve these issues: “Before addressing the merits of the Associations’ NEPA claim, we pause to underscore what *we are not deciding in this case.*” *Id.* at 45 (emphasis added). No subsequent case addressing LNG exports has discussed these issues.

Consideration of these issues left undecided by *Freeport I* and its progeny plainly demonstrates that the Department’s authorization of exports *is* a “connected action,” which must be fully analyzed in the terminal EIS. 40 C.F.R. § 1508.25(a)(1). According to NEPA’s binding

²⁸⁷ *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1122-23 (D.C. Cir. 1971).

regulations:

Actions are connected if they:

- (i) Automatically trigger other actions which may require environmental impact statements.
- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

Id. “The point of the connected actions doctrine is to prevent the government from ‘segmenting’ its own ‘federal actions into separate projects and thereby failing to address the true scope and impact of the activities that should be under consideration.’” *Big Bend Conservation All. v. FERC*, 896 F.3d 418, 423–24 (D.C. Cir. 2018) (quoting *Sierra Club v. U.S. Army Corps of Eng’rs*, 803 F.3d 31, 49–50 (D.C. Cir. 2015) and *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014)).

It is clear that the decisions of cooperating agencies identified in part 1.2 of the DEIS, and the Department of Energy’s anticipated review of non-free trade agreement export application in particular, *are* connected actions, the consequences of which must be fully considered in *this* EIS. 40 C.F.R. § 1508.25(a)(1). By refusing to consider the impacts of connected actions, FERC impermissibly segments NEPA review. *Delaware Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014). The proposed exports cannot proceed without construction and operation of the terminal and pipeline, and the various projects depend on one another for their justifications. 40 C.F.R. § 1508.25(a)(1)(ii)-(iii). The Department’s evaluation of the expected application to export LNG to non-free-trade-agreement countries is an action that “may require [an] environmental impact statement[];” *id.* § 1508.25(a)(1)(i); indeed, the Department has already concluded that “[a]pprovals or disapprovals of authorizations to import or export natural

gas” involving construction or significant modification of export facilities, or even a “major increase in the quantity of [LNG] imported or exported” from existing facilities, will “normally require [an] EIS.” 10 C.F.R. Pt. 1021 Subpt., D App. D, D8-D9.

The connection between FERC’s decision and the Department’s is made particularly clear by the Energy Policy Act of 2005, which, in FERC’s own words, “amended the Natural Gas Act to require [FERC] to coordinate the environmental review and the processing of all federal authorizations relating to proposals for natural gas infrastructure under FERC’s jurisdiction.”²⁸⁸ *See also Freeport I*, 827 F.3d at 41 (discussing 15 U.S.C. § 717n(b)(1), 42 U.S.C. § 7172(a)(2)(B)). Because Congress has instructed FERC to prepare the EIS the Department of Energy and other cooperating agencies will use in satisfying their NEPA obligations, FERC cannot reasonably contend that this EIS need not include the effects of these other agencies’ actions.

B. The Proposed Feed Gas Pipeline Is FERC Jurisdictional and A Connected Action

Annova plans to receive gas from a 9 mile long, 36 inch diameter gas supply lateral. DEIS 1-13. The DEIS asserts that this lateral would be “non-jurisdictional,” *i.e.*, not subject to FERC’s Natural Gas Act section 7 authority, because it would be an “intrastate” pipeline. *Id.* This assertion is refuted by Annova’s own statement that it plans to source gas from “the entire national gas pipeline grid,” which would mean this pipeline would provide interstate service.²⁸⁹

Where gas “crosses a state line *at any time* from its production at the wellhead to its

²⁸⁸ Federal Energy Regulatory Commission, Guidance for Federal and State Agencies for the Processing of Federal Authorizations in Cooperation with the FERC, 1, attached as Exhibit 77 and available at <https://www.ferc.gov/industries/gas/enviro/epact-gas-guidance.pdf>.

²⁸⁹ Attached as Exhibit 78, available at https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2014/orders/ord3394.pdf at 4.

consumption at the burner tip,” that gas is in interstate service. *Associated Gas Distributors v. FERC*, 899 F.2d 1250, 1255 (D.C. Cir. 1990) (citing *California v. Lo-Vaca Gathering Co.*, 379 U.S. 366, 369 (1965)) (emphasis added). A pipeline built to transport such gas is therefore a pipeline in interstate service, and subject to FERC jurisdiction under section 7 of the Natural Gas Act.

Alternatively, if FERC concludes that feed gas for the project will in fact all be produced in Texas, and therefore not be transported interstate, then this conclusion simplifies the analysis of the indirect effects of such gas production, and FERC cannot claim that it cannot foresee where such production will occur. FERC cannot, however, simultaneously conclude that the feed pipeline will be in purely intrastate service and that FERC cannot reasonably foresee the source of the gas that will supply the project.

C. The Effects of Increased Gas Production and Use Are Reasonably Foreseeable

If Annova’s project enters operation, this will foreseeably increase gas production and use. These impacts are therefore reasonably foreseeable indirect effects of both the FERC and Department of Energy actions, which must be considered in the NEPA analysis.²⁹⁰ Indirect effects are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”²⁹¹ An effect is reasonably foreseeable if it is “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.”²⁹² Indirect effects encompass both “growth inducing” and “economic” effects, including “induced changes in the pattern of land use, population density or growth rate.”²⁹³ The indirect effects inquiry is

²⁹⁰ 40 C.F.R. § 1508.8(b).

²⁹¹ *Id.*

²⁹² *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549 (8th Cir. 2003) (quotations omitted).

²⁹³ 40 C.F.R. § 1508.8(b).

therefore wide-ranging in its scope.

The courts have consistently required that agencies extend their analyses to include effects similar to those ignored here by FERC. Where a new runway will foreseeably induce additional air traffic, the agency must assess the impacts of that traffic.²⁹⁴ Where a railway would reduce the cost of delivered coal, the agency must address the foreseeable possibility of an increase in coal consumption and the effects thereof.²⁹⁵ And in approving a port and causeway providing access to a previously isolated island, the agency was required to consider the effects of foreseeably induced “industrial development” thereon.²⁹⁶

Here, it is clear that exports from the proposed terminal will result in an increase in gas production, processing, and transportation—the exported gas will have to come from somewhere. It is likely that FERC can foresee where, on a regional basis, this additional production will occur (indeed, the DEIS’s assertion that the feed gas pipeline will be in intrastate service implies the belief that this additional production will occur entirely within Texas). Many of the impacts of additional gas production and associated activity can be evaluated at such a regional level. But even if the site of induced activity was entirely unknowable, FERC would still be able to meaningfully discuss the extent of climate impacts and the nature of non-climate effects. We discuss these issues in turn below.

1. Exporting LNG Will Increase Gas Production

The Energy Information Administration, Environmental Protection Agency, Department of Energy, and every private consultant that has considered the issue has concluded that increasing LNG exports will lead to increased gas production. These entities have provided

²⁹⁴ *Barnes v. U.S. Dep’t of Transp.*, 655 F.3d 1124, 1138-39 (9th Cir. 2011).

²⁹⁵ *Mid States*, 345 F.3d at 549-50.

²⁹⁶ *Sierra Club v. Marsh*, 769 F.2d 868, 878-79 (1st Cir. 1985).

predictions of the amount by which a given volume of exports, from a specific location or locations, will increase gas production in an individual state or gas basin. *See, e.g.*, ICF International, U.S. LNG Exports: Impacts on Energy Markets and the Economy at 18 (May 15, 2013) (explaining that ICF’s model predicts production in individual basins),²⁹⁷ ICF International, U.S. LNG Exports: State-Level Impacts on Energy Markets and the Economy, at 15 (Nov. 13, 2013) (showing state-level increases in gas production in response to specific export volumes).²⁹⁸ Another consultant has modeled how gas production in individual shale plays will respond to exports from an individual facility.²⁹⁹

Similarly, the Energy Information Administration has repeatedly studied how U.S. energy markets will respond to LNG exports, predicting the amount by which gas production is expected to increase in response to a given volume of exports in various scenarios.³⁰⁰ In preparing this report, EIA predicted how different export scenarios would increase gas production in individual subregions (*e.g.*, Gulf Coast, Southwest).³⁰¹ Moreover, the tool EIA used to prepare this analysis—the National Energy Modeling System—is routinely used to provide more fine-grained analysis, estimating changes in production in individual gas plays. *See* Energy Information Administration, Annual Energy Outlook 2018, at 68 (Feb. 6, 2018)³⁰² (discussing individual

²⁹⁷ Attached as Exhibit 79, available at <https://www.api.org/~media/Files/Policy/LNG-Exports/API-LNG-Export-Report-by-ICF.pdf>.

²⁹⁸ Attached as Exhibit 79, available at <https://www.api.org/~media/Files/Policy/LNG-Exports/API-State-Level-LNG-Export-Report-by-ICF.pdf>

²⁹⁹ Deloitte Marketpoint, Analysis of the Economic Impact of LNG Exports from the United States, at 8, 14, attached as Exhibit 80; initially filed as Excelerate Liquefaction Solutions I, LLC, FE Docket 12-146-LNG, Application for Non-FTA Export Authorization, Appendix F (Oct. 5, 2012), available at https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2012/applications/12_146_lng_nfta.pdf.

³⁰⁰ *See* Energy Information Administration, Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets, 12 (October 2014), attached as Exhibit 81, available at <https://www.eia.gov/analysis/requests/fe/pdf/lng.pdf>.

³⁰¹ *See* Exhibit 82, available at (select Publication: “Effect of Increased Natural Gas Exports on Domestic Energy Markets” and Table: “Lower 48 Natural Gas Production and Wellhead Prices by Supply Region”).

³⁰² Attached as Exhibit 83, available at <https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf>.

predictions regarding gas production Eagle Ford, Haynesville, Permian, Utica, and Marcellus plays); Energy Information Administration, Oil and Gas Supply Module of the National Energy Modeling System: Model Documentation 2018, at 9 (June 2018) (explaining that NEMS is a “play-level model”).³⁰³ No agency has ever disputed that EIA’s tools can be used to provide reasonable forecasts of how LNG exports from particular sites will increase gas production in individual gas plays.

2. The Environmental Impacts of Increased Gas Production, Processing, and Transport are Reasonably Foreseeable

The environmental impacts of export-induced gas production are also reasonably foreseeable.

First, the models discussed in the preceding section can reasonably foresee the volume and source of production that would be induced by this individual Project, or by LNG exports cumulatively.

Second, analysis of the climate impacts of additional gas production does not depend on knowing the specific locations where gas production and other activities will occur.³⁰⁴

Third, other impacts also occur at the regional level, and can be meaningfully forecast on the basis of basin- or play-level predictions of gas production, precisely the types of forecasts discussed in the previous section. Most importantly, FERC can foresee how regional increases in gas production will impact regional ozone levels (both in the region where the increase occurs *and in surrounding regions*). Ground-level ozone is formed by the interaction of volatile organic

³⁰³ Attached as Exhibit 84, available at [https://www.eia.gov/outlooks/aeo/nems/documentation/ogsm/pdf/m063\(2018\).pdf](https://www.eia.gov/outlooks/aeo/nems/documentation/ogsm/pdf/m063(2018).pdf).

³⁰⁴ See Department of Energy, *Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States*, at 2 (August 15, 2014) (“With the exception of greenhouse gases (GHG) and climate change, potential impacts of expanded natural gas production and transport would be on a local or regional level.”) (emphasis added), attached as Exhibit 85, available at <https://www.energy.gov/sites/prod/files/2014/08/f18/Addendum.pdf>.

chemicals and nitrogen oxides, and has serious impacts on human health and the environment. EPA has explained that ozone formation and impacts often occur “on a regional scale (*i.e.*, thousands of kilometers).” 76 Fed. Reg. 48,208, 48,222 (Aug. 8, 2011). In some regions, gas production is the primary contributor to ozone levels that violate EPA’s national ambient air quality standards.³⁰⁵

Available models, including the Comprehensive Air-quality Model with extensions (“CAMx”), can predict how an increase in gas production in an individual gas play will affect ozone levels in neighboring regions. One study used this tool to predict that increasing gas development in the Haynesville Shale would significantly impact ozone throughout east Texas/west Louisiana region.³⁰⁶ Nothing indicates that it would be infeasible or exorbitantly expensive to perform similar modeling here. 40 C.F.R. § 1502.22(a). To the contrary, the Bureau of Land Management has performed a similar CAMx analysis to evaluate how gas development on federal land would affect ozone in surrounding regions, as part of NEPA review for a land management plan revision.³⁰⁷ Similarly, EPA demonstrated that it was feasible to model the impact a new rule regarding major sources of air pollution would have on individual ozone regions nationwide. EPA, *Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport* at 60-61 (June 2011).³⁰⁸

Finally, even for impacts that are local in nature, uncertainty as to the specific locations where incremental gas production will occur does not permit FERC to ignore the impact entirely. Even if the precise “*extent*” of these effects is not reasonably foreseeable, the “*nature*” of these

³⁰⁵ Department of Energy, *Addendum* at 28.

³⁰⁶ Susan Kembell-Cook, *et al.*, *Ozone Impacts of Natural Gas Development in the Haynesville Shale*, 44 *Envtl. Sci. & Tech.* 9357, 9360-61 (2010), DOI: 10.1021/es1021137, attached as Exhibit 86.

³⁰⁷ Bureau of Land Management, Continental Divide-Creston Natural Gas Development Project EIS, Air Quality Technical Support Document (Apr. 15, 2016), attached as Exhibit 87, available at <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=77531>.

³⁰⁸ Attached as Exhibit 88, available at <https://www3.epa.gov/crossstaterule/pdfs/FinalRIA.pdf>.

effects is, and as such, FERC “may not simply ignore the effect.”³⁰⁹ For example, in *Mid States*, the court ruled that an agency must address the foreseeable possibility of an increase in coal consumption and the effects thereof, due to the construction of a railway reducing the cost of delivered coal.³¹⁰ An agency may not ignore “the construction of additional [coal-fired] power plants” that may result merely because the agency does not “know where those plants will be built, and how much coal these new unnamed power plants would use.”³¹¹ Thus, FERC must disclose, in the EIS, the fact and nature of these foreseeable effects of gas production that will be induced by the Project.

3. Increasing LNG Exports Will Increase Overseas Gas Use

The Project will also have foreseeable indirect effects resulting from the shipping, regasification, and use of exported LNG. Each of these activities will emit foreseeable amounts of greenhouse gases. The Department of Energy has already demonstrated that it is possible to quantitatively estimate emissions from use of LNG for electricity generation, and other published literature estimates emissions from other foreseeable uses of LNG.³¹²

These emissions are foreseeable, and must be disclosed, even if FERC is unsure as to how foreign energy markets as a whole will balance in response to exported LNG. FERC cannot justify its failure to take a hard look at foreseeable emissions resulting from burning LNG exported via the Projects by speculating that other, more attenuated fuel substitution, might provide an unknown degree of mitigation. Recent peer reviewed research concludes that US LNG exports are likely to play only a limited role in displacing foreign use of coal, and such that US

³⁰⁹ *Mid States*, 345 F.3d at 549.

³¹⁰ *Id.*

³¹¹ *Id.*

³¹² Gilbert, A. Q. & Sovacool, B. K., “US liquefied natural gas (LNG) exports: Boom or bust for the global climate?,” *Energy*, Volume 141, December 15, 2017, pp. 1671-1680. <https://doi.org/10.1016/j.energy.2017.11.098>, attached as Exhibit 89.

LNG exports are likely to increase net global GHG emissions.³¹³ This recent research was not before the agencies in *Freeport II*, 867 F.3d at 202, and demonstrates that there are now tools to perform a more careful and informative analysis than was done in that case.

D. DOE's Prior Analyses of Indirect Effects Are Insufficient

Although DOE previously published several general environmental reports regarding the impacts of natural gas production and the life-cycle greenhouse gas impact of U.S. LNG exports, these prior studies do not provide the hard look at indirect impacts NEPA requires here.

First of all, NEPA, requires that discussion of environmental impacts be provided *in the EIS*. Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, 18034 (Mar. 23, 1981). The propriety of DOE's past reliance on these non-NEPA materials is another issue that the D.C. Circuit has explicitly declined to uphold, instead concluding that the issue was not before it. *Freeport II*, 867 F.3d at 197.

Moreover, these materials are out of date, and do not reflect the enormous amount of research regarding the impacts of gas production that has been published since they were issued. Physicians, Scientists, and Engineers for Healthy Energy maintains a database of peer-reviewed literature regarding the environmental and public health impacts of shale and tight gas production, the Repository for Oil and Gas Energy Research.³¹⁴ This database identifies 1,548 publications dated after August, 2014.³¹⁵ FERC cannot rely on material DOE published in 2014, years before the pending applications were even submitted, without taking a hard look at whether that material continues to constitute "high quality information," 40 C.F.R. § 1500.1(b) and provide "full and fair discussion of significant environmental impacts," 40 C.F.R. § 1502.1.

³¹³ See, e.g., Gilbert et al. 2017, *supra* note 312.

³¹⁴ <https://www.psehealthyenergy.org/our-work/shale-gas-research-library/>

³¹⁵ https://www.zotero.org/groups/248773/pse_study_citation_database/items/order/dateModified/sort/desc (last visited Nov. 30, 2018).

One example of how DOE's 2014 materials no longer represent the scientific consensus is that recent data indicates much higher greenhouse gas emission rates for gas production. These materials assert that 1.3 and 1.4 percent of extracted gas is released as methane between the well and liquefaction facility.³¹⁶ This estimate was based on "bottom-up" methodology, which aggregated measurements of emissions from individual components—*e.g.*, measurement of an individual pneumatic controller. Even at the time these reports were published, "top-down" studies, which measure total changes in atmospheric methane concentrations around gas production sites, indicated that these figures were a gross underestimate of total emissions.³¹⁷ More recent and more thorough bottom up studies have affirmed that the DOE's 2014 estimates were too low, and has generally supported the estimates provided by earlier top-down analyses, estimating that roughly 2.3% of extracted natural gas leaks to the atmosphere.³¹⁸

X. The DEIS Fails to Adequately Address Climate Change

The DEIS fails to take the required hard look at greenhouse gas emissions and climate change for multiple reasons.

First, the DEIS fails to even acknowledge the Project's net operational greenhouse gas emissions. Because the impacts of greenhouse gas emissions occur only cumulatively, the only reasonable way to report these emissions is to report the total greenhouse gas emission increase that will result from the project. Here, however, the DEIS arbitrarily segments emissions from different sources: stationary sources, mobile sources, and, most significantly, generation of the

³¹⁶ Export LCA, 6-8.

³¹⁷ See, *e.g.* Brandt, A.R., *et al.*, *Methane Leaks from North American Natural Gas Systems*, Science, Vol. 343, no. 6172 at pp. 733-735 (Feb. 14, 2014), attached as Exhibit 90.

³¹⁸ Alvarez *et al.*, Assessment of methane emissions from the U.S. oil and gas supply chain, Science 361, 186–188 (Jul. 13, 2018), DOI: 10.1126/science.aar7204, attached as Exhibit 91 and available at <http://science.sciencemag.org/content/early/2018/06/20/science.aar7204>

electricity that will supply the facility. DEIS 4-174, 4-175, 3-19. Although the DEIS's section labeled "operating emissions and mitigation" discloses carbon dioxide equivalent emissions of 363,643 tons per year, adding in the indirect emissions caused by electricity consumption increases this total by 1,777,000, to more than two million.³¹⁹

Second, the figures provided in the DEIS underestimate emissions by using outdated estimates of the potency of greenhouse gases (GHGs) other than carbon dioxide. The DEIS addresses these other GHGs by converting them to CO₂e. *E.g.*, DEIS 4-159. However, the conversion factor (global warming potential or GWP) used for methane, the predominant non-carbon-dioxide greenhouse gas at issue here, is sorely outdated, and fails to account for short- and medium-term impacts. The DEIS uses a GWP value of 25 for methane. *Id.* Although the DEIS provides no explanation for either the source of this number or FERC's reason for choosing it, the figure corresponds with the value presented by the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in 2007 to reflect the impact of methane on a hundred-year timescale. In September 2013, five years *before* publication of the DEIS, IPCC released its Fifth Assessment Report, which includes superseding and significantly higher estimates for the GWP of methane. IPCC, *Climate Change 2013, The Physical Science Basis*, Chapter 8, 713-14 (Sept. 2013).³²⁰ This report increased the 100-year-timeframe estimates methane from fossil fuels to 36 when the effects of oxidation are taken into account.³²¹ *Id.* This report also explained that on a 20-

³¹⁹ We also reiterate that the EIS must also broaden its analysis to include emissions from the entire natural gas lifecycle.

³²⁰ Attached as Exhibit 92, available at http://ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf.

³²¹ For a discussion of the effects of oxidation on methane's GWP, see Bradbury, et al., Dep't of Energy, Office of Energy Policy and Systems Analysis, *Greenhouse Gas Emissions and Fuel Use within the Natural Gas Supply Chain – Sankey Diagram Methodology* (July 2015), at 10, attached as Exhibit 93 available at https://www.energy.gov/sites/prod/files/2015/07/f24/QR%20Analysis%20-%20Fuel%20Use%20and%20GHG%20Emissions%20from%20the%20Natural%20Gas%20System%2C%20Sankey%20Diagram%20Methodology_0.pdf.

year timeframe, methane's impact is even more severe, causing 87 times the warming of an equivalent mass of carbon dioxide (also accounting for the effects of oxidation). *Id.* The 20-year GWP for methane is particularly relevant because it corresponds much more closely to the average time that methane actually remains in the atmosphere before decaying into CO₂, which is 12.4 years.³²² There is no dispute that the Fifth Assessment Report values represent a more accurate estimate of the impact of each ton of methane emissions.³²³

More broadly, courts have consistently recognized that the IPCC summaries represent the scientific consensus.³²⁴ Here, the DEIS violates NEPA's obligation to use "high quality information," 40 C.F.R. § 1500.1(b) and provide "full and fair discussion of significant environmental impacts," 40 C.F.R. § 1502.1, by relying on an estimate of methane's impacts that was known to be outdated and an understatement of the true potency of this pollutant, by failing to disclose that the analysis it provided only considered long term (100-year) impacts, and by failing to use available tools, such as the estimate of methane's 20-year GWP, to address more near-term impacts. Each of these failures violates NEPA. *See W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *16 (D. Mont. Mar. 26, 2018) (holding that agency violated NEPA by estimating emissions solely on the basis of methane

³²² See Exhibit 92, at 731, Appendix 8.A.

³²³ See Department of Energy, Order 3357-C, FE Docket 11-161-LNG, at 30 (Dec. 4, 2015), Exhibit 94 and available at https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2011/applications/or_d3357c.pdf; Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1-9 to 1-10 (Apr. 12, 2018), Exhibit 95 and available at https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf; *id.* Annex 6, A-437, Exhibit 96 and available at https://www.epa.gov/sites/production/files/2018-01/documents/2018_annex_6.pdf

³²⁴ *Massachusetts v. E.P.A.*, 549 U.S. 497, 508-512 (2007) (The IPCC is recognized as "a multinational scientific body ... [d]rawing on expert opinions from across the globe"); *Coal. for Responsible Regulation, Inc. v. E.P.A.*, 684 F.3d 102, 119 (D.C. Cir. 2012), *aff'd in part, rev'd on other grounds in part sub nom. Util. Air Regulatory Grp. v. E.P.A.*, 134 S. Ct. 2427 (2014), and *amended sub nom. Coal. for Responsible Regulation, Inc. v. Env'tl. Prot. Agency*, 606 F. App'x 6 (D.C. Cir. 2015) (IPCC's "peer-reviewed assessments synthesized thousands of individual studies on various aspects of greenhouse gases and climate change and drew 'overarching conclusions' about the state of the science in this field.").

GWP of 25).

Third, the estimates provided in the DEIS do not include foreseeable indirect effects relating to gas production and use, or production of the electricity that will be consumed by the project, as we discuss *supra*.

Fourth, the DEIS Provides no meaningful discussion of the significance or impacts, as well as the amount, of the greenhouse gas emissions associated with the project. *Sierra Club v. FERC*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (“*Sabal Trail*”). The DEIS’s assertion that FERC “cannot determine whether or not the Project’s contribution to cumulative impacts on climate change would be significant” because “cannot determine the Project’s incremental physical impacts due to climate change on the environment” is arbitrary. DEIS 4-306.

Contrary to the DEIS’s assertions, FERC *can* meaningfully discuss incremental physical impacts. In 2017, the U.S. Global Change Research Project again confirmed and quantified a broad range of environmental impacts resulting from greenhouse gas emissions,³²⁵ including discussing how changes in temperature, rainfall, and flood risk from sea level rise will vary for individual regions in the United States.³²⁶ In late 2018, this same federal project discussed impacts that are *already occurring* in communities around the country.³²⁷ Because the tools used to assess current and future impacts of climate change respond to different emission scenarios, it is possible to meaningfully discuss the *incremental* impact of the emissions at issue here. Greenhouse gas emissions are largely interchangeable—an additional million tons of carbon dioxide emitted in 2030, for example, will have the same impact regardless of whether it is

³²⁵ U.S. Global Change Research Program, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I, doi: 10.7930/J0J964J6 (Nov. 3, 2017), available at https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf and attached as Exhibit 97.

³²⁶ See, e.g., *id.* at 334.

³²⁷ U.S. Global Change Research Program, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, doi: 10.7930/NCA4.2018 (Nov. 2018), Exhibit 98 and available at https://nca2018.globalchange.gov/downloads/NCA4_Report-in-Brief.pdf.

emitted as a result of the Annova Project or as a result of some other activity elsewhere in the world.

We encourage FERC to provide further context regarding the significance and impact of these emissions by using the Interagency Working Group's social cost of carbon protocol.³²⁸ Climate change is the quintessential cumulative impact problem, and the individual physical changes that will result from any particular action will inevitably appear insignificant to the public. Just as the public and decisionmakers "cannot be expected to convert curies or mrems into such costs as cancer deaths," the EIS's readership cannot be expected to understand whether an individual project's miniscule marginal increase contribution to increased temperature, sea levels, *etc.* is cause for concern. *Natural Res. Def. Council, Inc. v. U. S. Nuclear Regulatory Comm'n*, 685 F.2d 459, 487 n.149 (D.C. Cir. 1982) *rev'd on other grounds sub nom. Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 106-107 (1983). Because individual contributions to climate change are so small, but the cumulative problem is so large, meaningfully disclosing the impact of greenhouse gas emissions requires some tool beyond merely identifying physical changes in the environment attributable to an individual project's emissions.

NEPA does not, of course, require agencies to monetize adverse impacts in all cases. *See* 40 C.F.R. § 1502.23. The statute does, however, require FERC to take a hard look at the "ecological ..., aesthetic, historic, cultural, economic, social, [and] health," effects of its actions, "whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8. Monetization of costs may be required where available "alternative mode[s] of [NEPA] evaluation [are] insufficiently detailed to aid the decision-makers in deciding whether to proceed, or to provide the information the public needs to evaluate the project effectively." *Columbia Basin Land Prot. Ass'n v. Schlesinger*,

³²⁸ Social Cost of Carbon 2010, <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>, attached as Exhibit 99, at 24-25.

643 F.2d 585, 594 (9th Cir. 1981); *see also* *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1201 (9th Cir. 2008) (NHTSA violated NEPA where it failed to monetize the benefits of GHG emission reductions from more stringent fuel economy standards even while it monetized the adverse costs of such standards due to depressed automobile sales and employment).

In another recent case concerning an energy infrastructure project, where the agency's NEPA analysis quantified greenhouse gas emissions but claimed that it was impossible to discuss the effects thereof, the court ruled that the agency's refusal to use the social cost of carbon to illustrate the impact of these emissions was arbitrary and capricious. *High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174, 1190-91 (D. Colo. 2014); *see also* *Montana Env't'l Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1097 (D. Mont. 2017), *amended in part, adhered to in part sub nom. Montana Env'tl. Info. Ctr. v. United States Office of Surface Mining*, No. CV 15-106-MDWM, 2017 WL 5047901 (D. Mont. Nov. 3, 2017).

Although they likely underestimate the true costs of GHG emissions, the IWG's social cost metrics remain the best estimates yet produced by the federal government for monetizing the impacts of GHG emissions and are "generally accepted in the scientific community," 40 C.F.R. § 1502.22(b)(4). This is true notwithstanding Executive Order 13,783, which disbanded the Interagency Working Group and formally withdrew its technical support documents.³²⁹ Indeed, that Executive Order did not find fault with any component of the IWG's analysis. To the contrary, it encourages agencies to "monetiz[e] the value of changes in greenhouse gas emissions" and instructs agencies to ensure such estimates are "consistent with the guidance contained in

³²⁹ Exec. Order. No. 13,783 § 5(b), 82 Fed. Reg. 16,093 (Mar. 28, 2017).

OMB Circular A-4.”³³⁰ The IWG tool, however, illustrates how agencies can appropriately comply with the guidance provided in Circular A-4: OMB participated in the IWG and did not object to the group’s conclusions. As agencies follow the Circular’s standards for using the best available data and methodologies, they will necessarily choose similar data, methodologies, and estimates as the IWG, since the IWG’s work continues to represent the best estimates presently available.³³¹ Thus, the IWG’s 2016 update to the estimates of the social costs of greenhouse gases remains the best available and generally accepted tool for assessing the impact of greenhouse gas emissions, notwithstanding the fact that this document has formally been withdrawn.³³²

In other proceedings, FERC has offered various arguments against using the social cost of carbon protocol that all seriously misunderstand the tool. The estimates of social cost are based on reasonable forecasts of the actual physical effects greenhouse gas emissions will have on the environment, including temperature, sea level rise, ecosystem services, and other physical impacts, together with assessments of how these physical changes will impact agriculture, human health, *etc.* The social cost protocol identifies the social cost imposed by a ton of emissions’ pro rata contribution to these environmental problems. As explained above, this either amounts to an assessment of physical impacts or the best available generally accepted alternative to such an assessment; either way, the tool is appropriate for use under NEPA. 40 C.F.R. § 1502.22(b)(4).

Nor is lack of consensus as to a single most appropriate intergenerational discount rate a

³³⁰ *Id.* § 5(c).

³³¹ Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 *SCIENCE* 6352 (2017) (explaining that, even after Trump’s Executive Order, the social cost of greenhouse gas estimate of around \$50 per ton of carbon dioxide is still the best estimate), available at http://policyintegrity.org/files/publications/Science_SCC_Letter.pdf and attached as Exhibit 100.

³³² U.S. Interagency Working Group on the Social Cost of Greenhouse Gases (IWG), “Technical support document: Technical update of the social cost of carbon for regulatory impact analysis under executive order 12866 & Addendum: Application of the methodology to estimate the social cost of methane and the social cost of nitrous oxide” (August 26, 2016), available at https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf and attached as Exhibit 101.

reason for refusing to use the social cost protocols. As the 2010 Technical Support Document explained, a range of three discount rates—2.5, 3, and 5 percent—“reflect reasonable judgments” and “span a plausible range” of appropriate discount rates, and are consistent with OMB Circular A-4.³³³ (The IWG also recommended use of a 3 percent rate at the 9^{5th} percentile to model climate “tipping points”).

Although some analysts assert that any analysis of multi-generational, potentially catastrophic problem such as climate change merits a lower discount rate than this range would reflect, the IWG’s “central” value of 3 percent falls within the range supported by a majority of economists.³³⁴ Indeed, the Circular itself provides a general recommendation for a 3 percent rate; and while it also identifies 7 percent rate as appropriate for use in other circumstances, the Circular itself states that the 7 percent figure should not be used when assessing impacts that, like climate change, will affect the public as a whole. Furthermore, OMB, together with the rest of the Interagency Working Group, has explicitly affirmed that the 7 percent rate is inappropriate when addressing climate change.³³⁵ Thus, as explained by the IWG, uncertainty as to the most appropriate discount rate is a reason to provide social cost estimates using the range of plausible rates—which FERC and other agencies have done in other proceedings³³⁶—but it is not a reason for ignoring the social cost of greenhouse gas emissions entirely. *Center for Biological Diversity,*

³³³ IWG 2010 Social Cost of Carbon TSD at 17-18, 23.

³³⁴ See Peter Howard & Derek Sylvan, *The Economic Climate: Establishing Expert Consensus on the Economics of Climate Change* (Inst. Policy Integrity Working Paper 2015/1), attached as Exhibit 102; M.A. Drupp, et al., *Discounting Disentangled: An Expert Survey on the Determinants of the Long-Term Social Discount Rate* (London School of Economics and Political Science Working Paper, May 2015) (finding consensus on social discount rates between 1-3%), attached as Exhibit 103.

³³⁵ Interagency Working Group on the Social Cost of Carbon, *Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12,866* at 36 (July 2015), available at <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf> and attached as Exhibit 104.

³³⁶ See, e.g., FERC, Final EIS, Constitution Pipeline and Wright Interconnect Projects, CP13-499 (Oct. 2014), Accession No. 20141024-4001, at 4-256 to 4-257 (“For 2015, the first year of project operation, ... the project’s social cost of carbon for 2015 would be \$1,638,708 at a discount rate of 5 percent, \$5,325,802 at 3 percent, and \$8,330,100 at 2.5 percent.”).

538 F.3d at 1200 (disagreement over cost of carbon emissions does not allow agency to forgo estimating cost where, “while the record shows ... a range of values, the value of carbon emissions reduction is certainly not zero.”).

Failure to grapple with the importance and consequences of greenhouse gas emissions undermines other aspects of the Project analysis. For example, had FERC concluded that the climate impacts were significant, this would have supported more meaningful evaluation of alternatives that could potentially reduce these impacts. More broadly, estimating social cost of greenhouse gas emissions will help the public and FERC understand whether the adverse consequences of the Project’s emissions are severe enough to warrant consideration in the public interest/public convenience and necessity analyses, and, indeed, whether these emissions tip the balance toward the conclusion that the project is contrary to, and not required by, the public convenience and necessity. The current DEIS provides no information to use in answering these questions; it is indisputable that estimating the impacts of emissions using the social cost protocols would speak to these issues, regardless of whether FERC concludes that the monetized impact is or is not significant. Although FERC has discretion to choose among reliable methodologies for evaluating impacts, that discretion does not allow FERC to provide *no* evaluation whatsoever when a generally accepted methodology is available. 40 C.F.R. § 1502.22(b)(4), *see also N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) (holding that agency decision not to survey for wildlife prior to approving project was not a valid exercise of discretion as to assessment methodology).

Thus, the DEIS’s assertion that it is impossible to discuss the impact or significance of the Project’s greenhouse gas emissions is arbitrary. DEIS 4-306. FERC must use available generally accepted tools to address the impact of these emissions, 40 C.F.R. 1502.22, and employ

reasonable forecasting in its analysis. FERC's refusal to use available modeling tools, such as the estimates of the social cost of carbon and other greenhouse gases, violates NEPA.

XI. The DEIS Fails to Adequately Address Cumulative Impacts

An EIS must consider not only the direct adverse impacts of a project, but also its probable secondary, indirect, and cumulative impacts. A project's "cumulative impact" is defined in the federal regulations as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7.

The Fifth Circuit has held that a "meaningful cumulative-effects study must identify: (1) the area in which effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions—past, proposed, and reasonably foreseeable—that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate." *Fritiofson v. Alexander*, 772 F.2d 1225, 1245 (5th Cir. 1985) (citing *Cabinet Mountains Wilderness/Scotchman's Peak Grizzly Bears v. Peterson*, 685 F.2d 678, 683-84 (D.C. Cir. 1982)).

The DEIS undertakes a cumulative impacts analysis.³³⁷ Significant impacts to some resources, including impacts to ocelots and jaguarundis, of these resources are expected. The comments above identify flaws in the cumulative impacts analysis for some specific resources

³³⁷ DEIS Part 4.13.

(e.g., habitat for endangered species). But the analysis fails to satisfy the “hard look” NEPA standard for additional reasons.

First, FERC’s analysis of past actions and its approach to the incremental analysis from proposed and reasonably foreseeable actions is insufficient. In the Rio Grande LNG DEIS and the Texas LNG DEIS, FERC undertook a “broad, aggregated approach” to past actions.³³⁸ In the Annova LNG DEIS, FERC states that it will focus on the current aggregate effects of past actions by considering these past impacts as part of the environmental baseline which is described and evaluated in the document. DEIS at 4-259. But in practice, this means the same thing: simply describing the current regional landscape on a high level without actually analyzing past actions’ impact on resources that will be affected by the Annova LNG Project. No real analysis of these past actions, or their cumulative impacts, is disclosed. For example, in its wetlands analysis, FERC aggregates the total known wetland impacts associated with the Annova LNG Project and other known projects to arrive at 812 acres of impact. DEIS 4-276.³³⁹ (Commenters note that the cumulative impacts to wetlands was described as 546.9 acres of impact in the Rio Grande LNG DEIS and 676.3 acres of impact in the Texas LNG DEIS.) The agency then derives an estimated total acreage of wetlands present in the Bahia Grande-BSC HUC-12 subwatershed, and performs an incremental analysis of the impacts relative to this total acreage. *See* DEIS 4-276 – 277. No further description or analysis of past wetland impacts, whether qualitative or quantitative, is included in the DEIS.

The CEQ regulations on cumulative impacts first require the regulatory agency to look at the “incremental impact” of a project; the incremental impact must then be added to the

³³⁸ *See, e.g.*, DEIS for Texas LNG at 4-263.

environmental baseline, which includes all past and present actions that impact the affected area. 40 C.F.R. § 1508.7. By combining the incremental impact with the environmental baseline of impacts to the same affected resource, an agency can determine the total impacts to the area. In undertaking this analysis, it is imperative to understand the total cumulative impacts from existing, proposed, and reasonably foreseeable projects because the proposed action may be the “straw that breaks the back of the environmental camel,” *Hanly v. Kleindienst*, 471 F.2d 823, 832 (2d Cir. 1972), resulting in overall significant impacts on the area. But the DEIS fails to quantify the past impacts (even in aggregate form) to many resources.

By employing an erroneous form of ‘incremental analysis,’”³⁴⁰ federal agencies will presumably be able to authorize, for example, the destruction of all remaining wetlands, as long as each increment is small relative to the body of wetlands that remain in a watershed, without accounting for wetlands that have already been destroyed by past actions. The same is true for many affected resources. This is contrary to the Fifth Circuit’s holding in *Fritiofsen*, which requires the agency to identify “the overall impact that can be expected if the individual impacts are allowed to accumulate.”³⁴¹ FERC must include a detailed analysis of the impacts that already exist in this sub-region of Texas for each affected resource to serve as an environmental baseline to which the impacts from this project and other foreseeable projects is added. The analysis in the DEIS fails to meet this requirement.

Second, the 404(b)(1) Guidelines echo the importance of assessing cumulative impacts. The fundamental policy of the 404(b)(1) Guidelines is that “dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not

³⁴⁰ The Court of Appeals for the D.C. Circuit has recognized that an “incremental analysis” approach fails to comply with statutory requirements. *Grand Canyon Trust v. FAA*, 290 F.3d 339, 341 (D.C. Cir. 2002).

³⁴¹ 772 F.2d at 1245.

have an unacceptable adverse impact either individually *or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern*,”³⁴² including specific wetland types (e.g., mangrove habitat). The DEIS fails to adequately disclose cumulative impacts to specific aquatic resources and without a final mitigation plan being made available concurrent with the DEIS, it is not possible for the public to meaningfully comment on the cumulative impacts to these resources.

Third, the DEIS does not include a separate cumulative impact analysis for air impacts as an appendix. This is surprising, since the Rio Grande LNG DEIS and Texas LNG DEIS both included a cumulative analysis of these air impacts.³⁴³ Instead, a short description of these cumulative impacts was provided in the first volume of the DEIS. DEIS at 4-302ff. This analysis, like those provided for the other projects, is flawed. The analysis compiled the cumulative impacts for five criteria pollutants (NO₂, CO, PM_{2.5}, PM₁₀, and SO₂) at specified averaging periods for comparison to the primary NAAQS. *Id.* However, the Clean Air Act has set NAAQS for six common air pollutants; the cumulative impacts analysis fails to include ground-level ozone (O₃). *See* DEIS 4-159 (recognizing the EPA establishing NAAQS for these six criteria pollutants). A cumulative impacts analysis should be undertaken for ozone based on TCEQ modeling guidance. This analysis should be disclosed to the public.

This is particularly important because there has been inconsistent information provided in the Rio Grande LNG DEIS, the Texas LNG DEIS, this DEIS, and in TCEQ’s modeling analysis regarding projected maximum 8-hour ozone impacts. For example, the Texas LNG DEIS does not estimate maximum 8-hour ozone impacts of the Project. It includes estimated combined construction, commissioning, and operational emissions for NO_x (ranging from 63.4 tpy to 417.6

³⁴² 40 C.F.R. § 230.1(c) (emphasis added).

³⁴³ *See* Rio Grande LNG DEIS at App. O; Texas LNG DEIS at App. F.

tpy), but does not use AERMOD to calculate the five-year average of the maximum 8-hour NO_x predicted concentrations to estimate a maximum 8-hour ozone concentration.³⁴⁴ The Rio Grande LNG DEIS stated that its modeling estimated the maximum 8-hour ozone impacts of the Rio Grande Project to be 2.3 parts per billion of ozone, which, when considered with the background concentration of 57 ppb, would not exceed the standard of 70 ppb.³⁴⁵ However, the TCEQ Executive Director's Source Analysis and Technical Review for the Rio Grande LNG Project came to a significantly different conclusion.³⁴⁶ The air quality analysis for ozone, based on EPA Region 6 guidance, found that the highest five year average for NO_x would be 3.87 ppb and the 8-year maximum predicted increase of ozone would be 11.6 ppb for the Rio Grande LNG Project, without considering either of the other two LNG facilities.³⁴⁷ Adding 11.6 ppb to the 8-hour ozone background of 57 ppb will result in 68.6 ppb of ozone at a distance of 10km – without any other sources added.³⁴⁸ It stands to reason that additional sources, including Texas LNG and Annova LNG, could result in a cumulative impact exceeding the ozone standard at a distance of 10km. This discrepancy must be reconciled by FERC during its review and a cumulative analysis, based on EPA guidance for PSD analysis for ozone, must be undertaken for all three LNG projects. Finally, FERC must take a hard look at the data, assumptions, and conclusions in this cumulative impacts analysis to satisfy its NEPA obligations and to ensure that the data presented in the Annova LNG DEIS, the Texas LNG DEIS, the Rio Grande LNG DEIS, and TCEQ documents is consistent and methodologically sound.³⁴⁹

³⁴⁴ Texas LNG DEIS at 4-184.

³⁴⁵ Rio Grande LNG DEIS at 4-258.

³⁴⁶ See Exhibit 105, TCEQ Interoffice Memorandum for Rio Grande LNG, LLC's NSR Authorization No. 140792/PSDTX 1498 (Nov. 16, 2018).

³⁴⁷ *Id.* at 12.

³⁴⁸ *Id.* at 13.

³⁴⁹ See, e.g., Texas LNG DEIS, App. F at 2 (noting that the Texas LNG concentration ranks differ from TCEQ modeling guidance).

XII. Conclusion

For the reasons state above, FERC's draft EIS for the Annova LNG export terminal fails to satisfy the requirements of the National Environmental Policy Act. Accordingly, FERC cannot move forward with approving this Project without addressing these deficiencies with either a revised draft EIS or, less preferably, a draft supplemental EIS, either of which must be circulated for further public review and comment.

Respectfully submitted February 4, 2019,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Oakland, CA this 4th Day of February, 2019.



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