FACTORS THE DEPARTMENT OF ENERGY MUST CONSIDER FOR A ROBUST AND DEFENSIBLE PUBLIC INTEREST DETERMINATION

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Congress enacted the Natural Gas Act of 1938 ("NGA") to regulate natural gas facilities, prices, and exports, and to protect interstate gas consumers from exploitation by natural gas companies.[2] The NGA states clearly Congress' intent that "the business of transporting and selling natural gas for ultimate distribution to the public is affected with a public interest, and that Federal regulation in matters relating to the transportation of natural gas and the sale thereof in interstate and foreign commerce is necessary in the public interest."[3]

The NGA prohibits any person from importing or exporting natural gas to any foreign country "without first having secured an order of the Commission authorizing it to do so."[4] Consistent with Congress' recognition of the need to protect the public, the Department of Energy ("DOE") must first conduct a public interest review before authorizing gas exports to non-free trade agreement ("non-FTA") countries. DOE can issue export authorizations "unless, after opportunity for hearing, it finds that the proposed exportation or importation will not be consistent with the public interest."[5] Although the NGA does not define the public interest, it grants the agency broad powers to approve, modify, condition, or deny exports as "necessary or appropriate."[6]

In January, the Biden administration announced a temporary pause on pending export authorizations of liquefied natural gas ("LNG") to non-FTA nations to allow DOE time to update the economic and environmental analyses used to review applications and make the required public interest determinations.[7] As noted in the announcement: "The current economic and environmental analyses DOE uses to underpin its LNG export authorizations are roughly five years old and no longer adequately account for considerations like potential energy cost increases for American consumers and manufacturers beyond current authorizations or the latest

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[2] *See* Sen. Doc. No. 92, part 84A, 70th Cong., 1st Sess. 588-91 (FTC Utility Corporations Rep. 1935); *FPC v Hope Nat. Gas Co.*, 320 U.S. 591, 610 (1944) ("The primary aim of this legislation was to protect consumers against exploitation at the hands of natural gas companies.").

[3] 15 U.S.C. § 717(a)

[4] 15 U.S.C. § 717b(a). The "Commission" is now understood to be the Department of Energy.

[5] *Id*.

[6] *Id*.

[7] Department of Energy, *DOE to Update Public Interest Analysis to Enhance National Security, Achieve Clean Energy Goals, and Continue to Support for Global Allies* (Jan. 26, 2024), https://www.energy.gov/articles/doe-update-public-interest-analysis-enhance-national-security-achieve-clean-energy-goals.

assessment of the impact of greenhouse gas emissions."[8] The White House also cited the need for better understanding the market need for LNG, the impacts of methane emissions on the planet, and the risks to frontline communities who frequently bear the burden of pollution from export facilities.

This white paper provides a baseline set of criteria that DOE must consider in updating the current studies and developing new analyses of topics like environmental justice impacts to ensure that the agency adequately fulfills its statutory obligation to consider the public interest.[9] Furthermore, after DOE completes its review of environmental, economic, and community impacts, we encourage the agency to develop guidance that further informs its public interest evaluations and incorporates all criteria described herein.

Often, communities are left to fight powerful polluting industries on their own when the law mandates that the federal government protect the public's interest. A complete public interest review must consider, among other things, the full scope of environmental factors and impacts of exportation on communities throughout the entire supply chain to be truly protective of those communities. Thus, this decision-making process and its associated studies must consider the whole project, including the life cycle and end use of the LNG as well as the construction and operational impacts of all its components, such as storage facilities, petrochemical plants, export terminals, and carbon capture projects attached thereto. When considering permits for the export of LNG to non-FTA nations, DOE must also consider all aspects of their contribution to climate change, environmental injustice, species extinction, consumer protection, and all other resulting harms to the public interest.

To determine whether exports are in the public interest, DOE should, at minimum, (1) utilize the latest and best available science from non-biased experts,[10] (2) consider various factors affecting the public interest, as described within this report, and (3) develop a meaningful engagement process to garner feedback from communities likely to be impacted by proposed exports to determine the public's receptivity and ways the communities will likely be affected.

The following paragraphs include information on factors affecting the public interest that DOE should consider when evaluating non-FTA export licenses, as well as a public engagement section with recommendations on how DOE should involve the public when conducting public

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[8] The White House, Fact Sheet: Biden-Harris Administration Announces Temporary Pause on Pending Approvals of Liquefied Natural Gas Exports (Jan. 26, 2024), https://www.whitehouse.gov/briefing-room/statements-releases/2024/01/26/fact-sheet-biden-harris-administration-announces-temporary-pause-on-pending-approvals-of-liquefied-natural-gas-exports/.

[9] *See, e.g.*, DOE, *Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports* (June 7, 2018), https://www.energy.gov/sites/prod/files/2018/06/f52/Macroeconomic%20LNG%20Export%20Study%202018.pdf (2018 LNG Export Study); DOE, *Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States*, 79 Fed. Reg. 48,132 (Aug. 15, 2014); DOE, *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States*, 79 Fed. Reg. 32,260 (June 4, 2014); and DOE, *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States: 2019 Update*, 84 Fed. Reg. 49,278 (Sept. 19, 2019).

[10] The best available science is produced by unbiased sources and not fossil fuel associated researchers like Montgomery and Bernstein, who have been called the industry's "go to" economists. *See* Avery Raines, Greenpeace USA, *DOE LNG Studies Analysis* (April 8, 2024), https://www.greenpeace.org/usa/research/doe-lng-studies-analysis/.

interest determinations. The factors included in this report are: (1) global emissions and climate change; (2) public health; (3) environmental justice; (4) species extinction and biodiversity loss; (5) national security; (6) local and national economic impacts; and (7) the global energy transition. This is not an exhaustive list, but a baseline set of concerns developed in deep consultation with impacted stakeholders that must be considered by DOE.

1. Global Emissions and Climate Change Concerns.

As stated by the Third National Climate Assessment: "observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases. These emissions come mainly from burning coal, oil, and gas."[11] Proponents often claim that LNG exports are beneficial for the climate because LNG can substitute for and offset the use of higher-carbon fuels abroad, including coal, but new research indicates that LNG may be worse for the climate over its life cycle than domestically-produced coal,[12] further proving that gas cannot be used as a "bridge fuel" to a more sustainable fuel system. Even assuming some substitution effects, the science is clear: expanded LNG export and use is fundamentally inconsistent with international climate targets and domestic GHG reduction targets.

Moreover, the substitution effect is likely overstated. Data suggests that in part due to the high price of LNG relative to coal in China, LNG is not meaningfully replacing coal in in that country.[13] Similarly, LNG exports are not significantly reducing coal use in Europe, the recipient of most recent U.S. LNG exports. While coal consumption is declining in the European Union, so also is overall gas consumption due to expansion of renewable energy and other factors.[14] Demand for LNG in Europe has likely peaked and is expected to continue to decline as the EU pursues its own decarbonization goals.[15]

The greenhouse gas emissions from the extraction, transport, liquefaction, overseas tanker transport, and regasification—during which even more carbon dioxide and methane are emitted—are nearly equal to the emissions produced from the actual burning of the gas, effectively doubling the climate impact of each unit of energy created from gas transported

[11] U.S. Global Change Res. Prog., *Climate Change and the American People* (2014), at 2, https://nca2014.globalchange.gov/downloads/low/NCA3_Full_Report_0c_Climate_Change_and_American_People_LowRes.pdf.
[12] Robert Howarth, *The Greenhouse Gas Footprint of Liquefied Natural Gas (LNG) Exported from the United States* (rev. March 24, 2024) (forthcoming 2024), https://www.research.howarthlab.org/publications/Howarth_LNG_assessment_preprint_archived_2023-1103.pdf.
[13] Institute for Energy Economics & Financial Analysis (IEEFA), *U.S. LNG Exports: Risky, Dirty, and Bad for U.S. Consumers* (2024), https://ieefa.org/sites/default/files/2024-01/LNG%20Factsheet.pdf.
[14] Nat. Res. Def. Council, *Liquefied Natural Gas Has Limited Impact in Displacing Coal Emissions* (Jan. 24, 2024), https://www.nrdc.org/bio/jake-schmidt/us-liquefied-natural-gas-has-limited-impact-coal#:~:text=Given%20this%2C%20it%20is%20hard,is%20simply%20gas%20replacing%20gas.&text=The%20EU%20is%20also%20shrinking,export%20sector%20and%20its%20investors.
[15] European Union Agency for the Cooperation of Energy Regulators (ACER 2024), *Analysis of the European LNG Market Developments* (April 19, 2024), https://www.acer.europa.eu/monitoring/MMR/LNG_market_developments_2024#:~:text=EU%20LNG%20demand%20is%20likely,supply%20agreements%20signed%20before%202022.

overseas.[16] One review of DOE and other data found that if all proposed LNG projects are approved, the combined GHGs associated with U.S.-produced LNG could exceed that of 1000 coal fired power plants.[17] Even a 0.2 percent methane leakage from gas infrastructure, which is likely a significant underestimate, puts the climate risk from LNG on par with coal.[18]

The United States is the world's largest oil and gas producer, and a dominant driver of global fossil fuel expansion.[19] North America is responsible cumulatively for 23% of global carbon dioxide emissions from 1850 to 2019 and leads the world in net emissions per capita.[20] The climate emergency, caused primarily by fossil fuels, poses an existential threat to every aspect of society. From the spread of disease, to destabilizing food and water security and the unraveling of natural ecosystems, the climate crisis is already killing people across the nation and world and is costing the U.S. economy billions in damages every year.[21]

The social costs of greenhouse gas emissions related to LNG exports must be considered. The Institute for Policy Integrity compared the climate costs and macroeconomic benefits using DOE's published studies and found that the gross climate costs of LNG export exceed economic benefits by a factor of 1.93 to 18.85, with a central cost-to-benefit ratio of 9.61 (assuming no downstream use of carbon sequestration).[22] In other words, for every scenario evaluated, the analysis found that climate costs exceeded economic benefits. As the study concluded: "our findings provide a potential basis for DOE to rationally conclude that future export applications do not serve the public interest. At a minimum, our analysis supports DOE's efforts to more closely scrutinize export applications and provides important data points for the agency's consideration."[23]

Additionally, DOE should consider emerging U.S. and international policy goals for addressing climate change before approving more LNG exports. In 2015, the nations of the world recognized that limiting warming to 1.5°C is necessary to avoid catastrophic and irreversible changes to ecosystems and communities and agreed to use best efforts to implement measures to achieve that goal in the Paris Agreement to the United Nations Framework

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[16] Nat. Res. Def. Council, *Sailing to Nowhere: Liquefied Natural Gas Is Not An Effective Climate Strategy* (Dec. 2020), https://www.nrdc.org/sites/default/files/sailing-nowhere-liquefied-natural-gas-report.pdf [hereinafter "NRDC report"].

[17] Jeremy Symons, *Status of U.S. LNG Export Permits and Associated Greenhouse Gas Emissions* (Nov. 2023) at 16, https://www.symonspa.com/post/report-status-of-u-s-lng-export-permits-and-associated-greenhouse-gas-emissions.

[18] Deborah Gordon & Shannon Hughes, *Reality Check: Natural Gas's True Climate Risk* (July 13, 2023), https://rmi.org/reality-check-natural-gas-true-climate-risk/.

[19] SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report 2021 (2021), at Table 4.1, http://productiongap.org/2021report.

[20] IPCC, Climate Change 2022: Mitigation of Climate Change (2022), at 10, https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf.

[21] About 12.8% of U.S. households currently do not have food security—defined as access by all people at all times to enough food for an active, healthy life—and more than 44.2 million people live in food insecure homes. USDA, Econ. Res. Serv., *Food Security in the U.S., Key Statistics & Graphs* (last updated Oct. 25, 2023), https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/key-statistics-graphics/. *See also* Public Health Inst./Ctr. for Climate Change & Health, *Food Security, Climate Change, and Health* (2016), https://climatehealthconnect.org/wp-content/uploads/2016/09/FoodSecurity.pdf.

[22] Minhong Xu & Max Sarinsky, Inst. for Policy Integrity, *The Climate Costs and Economic Benefits of LNG Export* (Jan. 26, 2024), at 8 tbl.3, https://policyintegrity.org/publications/detail/the-climate-costs-and-economic-benefits-of-lng-export.

[23] *Id*. at 1-2.

Convention on Climate Change ("Paris Agreement").[24] In 2021, President Biden issued Executive Order 14,008 declaring: "It is the policy of my Administration that climate considerations shall be an essential element of United States foreign policy and national security."[25] Later that year, President Biden announced a new target for the U.S. of a 50-52 percent reduction from 2005 greenhouse gas levels by 2030 and net-zero emissions by 2050.[26] More recently at COP28, countries including the U.S. committed to "transition away from fossil fuels."[27]

At the same time, the total annual emissions from 17 major fossil fuel projects approved by the Biden administration (1,642 million metric tons CO2e per year) greatly exceed the annual domestic emissions reductions projected to result from the Inflation Reduction Act and other climate policy (879 million metric tons CO2e per year) in 2030 as modeled by the U.S.[28] Absent major shifts in policy, U.S. production of both oil and gas is projected to increase more than twice as much as any other country by 2030.[29] Decisions by the United States to produce and export *even more* LNG would undermine the Biden administration's stated policy priorities and the nation's commitment to the COP 28 and Paris agreements.[30] As a global leader, the U.S. failing to meet its climate commitments sends the wrong message to other nations and severely decreases the likelihood of meeting global emission reduction targets.

Scientists have overwhelmingly concluded that without limits on fossil fuel production and deep and rapid emissions reductions, warming will exceed 1.5°C[31] and will result in catastrophic damage throughout the country and the world.[32] The continued operation of existing

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[24] Paris Agreement to the United Nations Framework Convention on Climate Change (Dec. 12, 2015), T.I.A.S. No. 16-1104, https://www.state.gov/16-1104/.

[25] The White House, *Executive Order on Tackling the Climate Crisis at Home and Abroad* (Jan. 27, 2021), https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.

[26] The White House, *FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies* (April 22, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/.

[27] Jennifer A. Dloughy, et al., *COP28 Ends With Historic Deal To 'Transition Away' From Planet-Warming Fossil Fuels*, Time, Dec. 13, 2023, https://time.com/6417228/cop28-deal-transition-away-fossil-fuels/

[28] Ctr. for Biological Diversity, *Out Polluting Progress: Carbon Emissions From Biden Approved Fossil Fuel Projects Undermine CO2 Cuts From Inflation Reduction Act* (Nov. 2023), at 5, https://www.biologicaldiversity.org/programs/climate_law_institute/pdfs/Out-Polluting-Progress-Report-2023.pdf.

[29] Achakulwisut, Ploy & Peter Erickson, *Trends in Fossil Fuel Extraction: Implications for a Shared Effort to Align Global Fossil Fuel Production with Climate Limits*, Stockholm Envtl. Inst. Working Paper (April 2021), at Figure 3, https://www.sei.org/publications/trends-in-fossil-fuel-extraction/.

[30] *See* NRDC Report, *supra* note 16.

[31] "Long-term LNG expansion for use in the power sector is not compatible with 1.5 °C and 2 °C pathways even under 100% coal-to-gas substitution." Shuting Yang, Sara Hasings-Simon, & Arvind Ravikumar, *Global Liquefied Natural Gas Expansion Exceeds Demand for Coal-to-Gas Switching in Paris Complaint Pathways*, Envtl. Res. Letters (2022), https://iopscience.iop.org/article/10.1088/1748-9326/ac71ba/pdf.

[32] Intergovernmental Panel on Climate Change (IPCC), *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* (V. Masson-Delmotte et al.

fossil fuel infrastructure alone will produce warming in excess of 1.5°C, requiring that some existing facilities be retired early. There is simply no room in the carbon budget for new or expanded fossil fuel production and exports. DOE's public interest determination must account for the growing evidence of climate harms stemming from fossil fuel production and export, and it should reflect U.S. commitments to begin a transition away from such fuel sources. DOE should not approve a project if doing so jeopardizes national and global climate commitments.

2. Public Health Concerns: The export of LNG impacts the health of American citizens and communities overseas.

DOE must also meaningfully review and account for the cumulative impacts of the natural gas industry on communities in the United States and abroad. Natural gas poses significant public health burdens[33] and contributes heavily to the health emergency created by climate change. In particular, LNG poses unique and immediate risks to public health through explosions, air pollution, water pollution, noise, and mental health impacts.[34] Overall, according to a Harvard analysis, the estimated financial burden of natural gas health impacts ranged from $130 to $170 billion in 2018.[35] The American Public Health Association has stated that a rapid transition away from fossil fuels is necessary to save lives and advance health equity.[36]

Air pollution from U.S. oil and natural gas production causes roughly $77 billion in health impacts nationwide every year.[37] The construction and operation of LNG export facilities pollute air and endanger groundwater and surface water.[38] LNG exports rely on the construction and operation of onshore and offshore infrastructure such as terminals, pipelines, and deepwater ports all of which are major sources of air pollutants that affect the health of people living in nearby communities and contribute to regional air pollution problems.[39] Mobile and stationary emission sources associated with the onshore and offshore operation of export facilities include

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eds., 2018), https://www.ipcc.ch/sr15/ [hereinafter IPCC, Global Warming of 1.5°C].; Intergovernmental Panel on Climate Change, *Summary for Policymakers. I, in: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte et al. eds., 2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i.

[33] Jonathan J. Buonocore et al., *A Decade of the U.S. Energy Mix Transitioning Away from Coal: Historical Reconstruction of the Reductions in the Public Health Burden of Energy*, 2021 Envtl. Res. Letters 16, https://iopscience.iop.org/article/10.1088/1748-9326/abe74c/pdf. *See generally* Radhika Duvvuri, *Unveiling the Public Health Burden of Natural Gas*, Union of Concerned Scientists (July 19, 2021), https://blog.ucsusa.org/science-blogger/public-health-burden-natural-gas/ [hereinafter "Union of Concerned Scientists"].

[34] Envtl. Health Project, *Liquefied Natural Gas (LNG): Health and Climate Impacts* (Aug 10, 2023), https://www.environmentalhealthproject.org/post/liquefied-natural-gas-lng-health-and-climate-impacts#:~:text=LNG%20plants%20emit%20carbon%20monoxide,eyes%2C%20nose%2C%20and%20lungs [hereinafter "Envtl. Health Project"].

[35] Union of Concerned Scientists, *supra* note 33.

[36] Am. Public Health Ass'n, *Lancet Countdown on Health and Climate Change: Policy Brief for the United States of America* (2023), https://www.lancetcountdownus.org/2023-lancet-countdown-u-s-brief/ at 8 [hereinafter "*Lancet Countdown*"].

[37] Jonathan J. Buonocore et al., *Air Pollution and Health Impacts of Oil & Gas Production in the United States*, Envtl. Res. Health (2023), at 5, https://iopscience.iop.org/article/10.1088/2752-5309/acc886/pdf [hereinafter "Envtl. Res. Health"].

[38] Envtl. Health Project, *supra* note 34.

[39] Oil & Gas Threat Map, Texas, https://oilandgasthreatmap.com/threat-map/texas/ (last visited May 13, 2024).

onshore terminals, pipelines, trucks, marine vessels, locomotives, cargo handling equipment, refineries, and storage facilities.[40]

LNG exporters utilize venting and flaring to release or burn away excess natural gas emitting harmful pollutants into the atmosphere worsening air quality.[41] Even worse, these emissions are largely underreported.[42] The major air pollutants emitted by LNG export activities that can affect human health include diesel exhaust, particulate matter, nitrogen oxides, sulfur oxides, ozone, carbon monoxide, heavy metals like mercury, dioxins, and volatile organic compounds.[43] Exposure to these pollutants can irritate skin, eyes, nose, and lungs and cause headaches, coughing, dizziness, lung disease, asthma, and other respiratory illnesses.[44] Furthermore, exposure by pregnant women can lead to heart disease, cancer, damage to the internal organs, heart attacks, and premature death.[45] Long term exposure can lead to heart disease, cancer, damage to the internal organs, heart attacks, and premature death.[46] Children are disproportionately harmed because they tend to spend more time outdoors than adults, leading to greater opportunity for exposure.

Flaring has caused an estimated $7.4 billion in health impacts and 710 premature deaths annually in the United States.[47] When approving exports at a new facility, DOE should also assess likely amount of real-world flaring that often occurs at existing sites, despite efforts to regulate the practice. These harms are not limited to communities near where oil and gas is produced. Studies have found that densely populated cities, with little to no oil and gas drilling, are also experiencing elevated levels of asthma from oil and gas.[48]

LNG liquefaction plants and export terminals require years of disruptive, noisy construction followed by a lifetime of uncertainty over the long-term health and safety impacts of the facility causing an increase in stress, anxiety, and depression.[49] Furthermore, noise pollution caused by trucks and other vessels as well as large banks of light used at onshore port

[40] U.S. EPA, *Ports Primer: 7.1 Environmental Impacts*, Community-Port Collaboration (Dec. 14, 2023), https://www.epa.gov/community-port-collaboration/ports-primer-71-environmental-impacts [hereinafter "*Ports Primer*"]; United Nations Econ. & Soc. Comm'n for Asia and the Pacific, *Assessment of the Environmental Impact of Port Development* (1992), https://www.unescap.org/sites/default/files/pub 1234 fulltext.pdf.
[41] Huy Tran et al., *Air Quality and Health Impacts of Onshore Oil and Gas Flaring and Venting Activities Estimated Using Refined Satellite- Based Emissions*, GeoHealth (March 5, 2024), https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2023GH000938 [hereinafter "*Air Quality and Health*"]
[42] *Id*.
[43] *Id*; Trade, Health & Env't Impact Project, *Importing Harm: U.S. Ports' Impacts on Health and Communities*, THE Impact Policy Brief Series (2012), https://envhealthcenters.usc.edu/wp-content/uploads/2016/11/Impact-Project-Ports-issue-brief-2012-1.pdf [hereinafter "Trade, Health & Env't Impact Project"]; Physicians for Social Responsibility, *Climate and Health Risks of Liquefied Natural Gas* (Nov. 2019), at 7, https://psr.org/wp-content/uploads/2019/11/LNG-WHITE-PAPER-11262019.pdf [hereinafter "PSR Report"].
[44] Envtl. Health Project, *supra* note 34; Terry L. Jones, *LNG Export Terminals Pose a Growing and Invisible Threat: Air Pollution*, Louisiana Illuminator, Feb. 6, 2023, https://lailluminator.com/2023/02/06/lng-export-terminals-pose-a-growing-and-invisible-threat-air-pollution/
[45] PSR Report, *supra* note 43 at 7.
[46] *Id*; Union of Concerned Scientists, *supra* note 33.
[47] *Air Quality and Health*, *supra* note 41.
[48] Envtl. Res. Health, *supra* note 37 at 9.
[49] Envtl. Health Project, *supra* note 34.

and transport facilities that shine on adjacent residential properties impact human health and welfare of the people in neighboring communities.[50]

When evaluating the air, water, and noise pollution concerns of proposed exports as it relates to the public interest, DOE must review baseline air, water, and sound quality data at the location where the export facility is located and the cumulative impact of additional exports. Additionally, DOE must analyze specifically the resulting impacts of pollution on children, elderly, and other vulnerable populations and the number of people likely to experience negative health impacts based on the accumulation of pollution in a community. It must consider the proximity of these facilities to communities and the potential to exacerbate already existing health impacts to overburdened frontline communities. For example, there are currently seven proposed or permitted LNG export terminals in Southwest Louisiana in the Cameron Parish and Calcasieu Parish region. These areas are already out of compliance with EPA's National Ambient Air Quality Standards, significantly overburdened with pollution, and face elevated cancer risks from air toxins. Further approval of exports in this area risks making this dangerous air quality worse.

Although DOE's decision to grant an export permit is separate from decisions by FERC and other federal agencies to permit construction of facilities, they are often inextricably linked. While DOE has delegated facility specific approvals to FERC, and that agency must specifically account for the impacts of those facilities, DOE must consider the industry's cumulative impacts and can only approve new exports with the public interest in mind. Export approval is often the lynchpin of new project viability, thus DOE's public interest determination for LNG exports should clearly explain whether the benefits of the entire project outweigh the potentially significant harms it poses to communities and natural resources.

3. Environmental Justice: The export of LNG and the fossil fuel economy promote injustice.

DOE has stated that it will study the environmental justice implications of LNG export decisions during the current pause on export authorizations. Not only must DOE study and account for environmental justice impacts generally, but it should develop a robust and meaningful process, as described further below, for engaging affected communities to fully understand localized impacts that may be unappreciated or undervalued in DOE's global screens.

All of the aforementioned public health harms caused by LNG exports and its associated infrastructure disproportionately harm Black, Brown, Indigenous and low-income communities, and perpetuate the systemic racism and energy violence entrenched in the nation's fossil fuel energy system.[51] For example, Black people in the U.S. have 1.54 times the exposure to

[50] Trade, Health & Env't Impact Project, *supra* note 43.
[51] Tim Donaghy & Charlie Jiang, Greenpeace, Gulf Coast Ctr. for Law & Pol'y, *Red, Black & Green Movement & Movement for Black Lives, Fossil Fuel Racism* (2021), https://www.greenpeace.org/usa/wp-content/uploads/2021/04/Fossil-Fuel-Racism.pdf; Robin Saha, Robert D. Bullard, & Liza T. Powers, *Liquefying the Gulf Coast: A Cumulative Impact Assessment of LNG Buildout in Louisiana and Texas*, Robert D. Bullard Venter for Environmental and Climate Justice (May 2024), https://www.bullardcenter.org/resources/liquefied-natural-gas-lng.

particulate matter[52] compared to the overall population, while populations of color have 1.28 times higher burden than the general population.[53]

Export projects are very often concentrated in and directly harm communities of color and low-income communities that are already overburdened with water restrictions, air and water pollution, depression of property values, destruction of natural resources including the conversion of wetlands and disproportionately high health risks including premature mortality, heart and lung disease, increased cancer risk and respiratory symptoms, as well as other impacts.[54] The onshore infrastructure that support export facilities, such as onshore terminals and pipelines, and the induced oil and gas production, have been shown to be disproportionately sited in communities of color and low-income communities.[55] For example, African Americans are 31.9% of the Louisiana population but comprise 71.7% of residents surrounding Plaquemines LNG.[56] The populations surrounding four of the seven LNG export facilities in Texas are 85.7% Hispanic while comprising 40% of the state population.[57] DOE must consider how new and increased export authorizations will expand the life of an export terminal, and the effect that has long-term on a community's air quality, water quality, water quantity, housing prices, and ecology. In doing so, DOE's environmental justice analysis should incorporate the analytical model that the Environmental Protection Agency articulated in its Technical Guidance for Assessing Environmental Justice in Regulatory Analysis[58] and apply it to a wholesale analysis of LNG exports impacts on environmental justice communities.

LNG exports are also contributing to the displacement of communities. Fossil-fueled climate disasters leading to dwindling water supplies, chaotic insurance markets, and land loss

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[52] An air pollutant linked to a wide variety of health harms including respiratory conditions, heart attacks, and premature death. *See* U.S. EPA, *Health and Environmental Effects of Particulate Matter (PM)* (Aug. 30, 2022), https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm; *See also* Karn Vohra et al., *Global Mortality from Outdoor Fine Particulate Pollution Generated by Fossil Fuel Combustion: Results from GEOS-Chem*, 195 Envtl. Res. 110754 (2021), https://www.sciencedirect.com/science/article/abs/pii/S0013935121000487.

[53] Ihab Mikati et al., *Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status*, 108 Am. J. of Public Health 480 (2018), https://ajph.aphapublications.org/doi/10.2105/AJPH.2017.304297.

[54] *See, e.g.*, Robert D. Bullard et al., *Toxic Wastes and Race at Twenty: 1987-2007* (2007), http://www.ejnet.org/ej/twart.pdf; Adrian Wilson et al., NAACP, Indigenous Env't Network & Little Village Env't Just. Org., *Coal Blooded: Putting Profits Before People* (2012), https://naacp.org/resources/coal-blooded-putting-profits-people; U.S. EPA, EJ Screening Report for Clean Power Plan (2015), https://archive.epa.gov/epa/sites/production/files/2016-04/documents/ejscreencpp.pdf.

[55] *See, e.g.*, Glenn S. Johnson et al., *Air Quality and Health Issues Along Houston's ship Channel: An Exploratory Environmental Justice Analysis of a Vulnerable Community (Pleasantville)*, 21 Race, Gender & Class 273 (2014), https://www.jstor.org/stable/43496996; Tim Donaghy, Research Brief: Environmental Justice Across Industrial Sectors, Greenpeace USA (Apr. 12, 2021), https://www.greenpeace.org/usa/research/environmental-justice-industrial-sectors/; Yukyan Lam et al., NRDC and Texas Envtl. Justice Advocacy Series, *Toxic Air Pollution in the Houston Ship Channel: Disparities Show Urgent Need for Environmental Justice* (2021), https://www.nrdc.org/sites/default/files/air-pollution-houston-ship-channel-ib.pdf.

[56] Saha, Bullard & Powers, *supra* note 51 at 67.

[57] *Id.* at 68.

[58] U.S. EPA, Technical Guidance for Assessing Environmental Justice in Regulatory Analysis, EPA-HQOW-2023-0222-213 (2016); Env't Prot. Agency, Draft Revision of Technical Guidance for Assessing Environmental Justice in Regulatory Analysis, EPA-HQ-OA-2013-0320 (Nov. 15, 2023). *See also, e.g.*, Comments of the Inst. for Policy Integrity, Re: Programmatic Review of Liquefied Natural Gas Export Program, (March 20, 2024), at 13, https://policyintegrity.org/documents/Comments_of_the_Institute_for_Policy_Integrity_4.pdf.

due to sea level rise are compelling more people to move elsewhere.[59] For example, from 2021 to 2022, four of the ten counties in the United States with the largest population loss were on the Louisiana coast near export terminals, with decreases of 5.1% in St. John the Baptist Parish, 3.9% in Terrebonne Parish, 3.3% in Plaquemines Parish, and 2.7% in St. Charles Parish.[60] The oil and gas industry's direct and indirect impacts have caused significant chemical, biological, and physical damage to the Louisiana coastal environment. The impact of these changes on the livelihoods, infrastructure, economy, culture, and ecosystem goods and services of coastal Louisiana have been well documented.[61]

As an example, the increased vessel traffic from LNG exports impacts riverbanks, increases coastal erosion and wetland conversion, and harms local fisheries that communities depend upon. While sponsors of new industrial projects often claim they will bring valuable jobs to impoverished communities, due to tax abatements and other industry schemes, local community members often experience a different reality.[62] Onshore and offshore LNG export structures risk hundreds of spills over their lifetime, endanger communities and property rights, and jeopardize tourism and fishing industries that depend on thriving coastal and ocean environments affecting multiple key industries and resources that local communities depend on. People are moving because they have lost their homes, businesses, jobs, or their entire town due to the direct impacts of export industries and fossil fuel-induced climate change. The costs of these forced evictions are broad culturally and economically.

Tribal nations that have inhabited communities for generations particularly face loss of history, culture, and tradition unique to their land.[63] The environmental harms caused by LNG exports and associated infrastructure in communities in Louisiana and Texas have infringed upon tribal nations' cultural identities including their ability to live off the land and their rights to maintain their ancestral homelands. Even worse, there is no federal relocation institutional framework to help communities relocate in a way that protects human rights and combats the generations of harm to Indigenous peoples.

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[59] *See, e.g.*, Laura Bliss, 10 Years Later, *There's So Much We Don't Know About Where Katrina Survivors Ended Up*, Bloomberg, Aug. 25, 2015, https://www.bloomberg.com/news/articles/2015-08-25/8-maps-of-displacement-and-return-in-new-orleans-after-katrina.

[60] Bernardo A. Bastien-Olivera, David Batker, Jared Soares, John Day, Luke Boutwell, and Tania Briceno, *Wetland Loss in Coastal Louisiana Drives Significant Resident Population Declines*, Sustainability (2023), at 1, https://www.mdpi.com/2071-1050/15/11/8941.

[61] *Id*. at 3; William H. Frey & Audrey Singer, The Brookings Institution, *Katrina and Rita Impacts on Gulf Coast Populations: First Census Findings* (June 2006), https://www.brookings.edu/wp-content/uploads/2016/06/20060607_hurricanes.pdf.

[62] Trevor Bach, *Sentenced to Death: What It's Like Living in a Cancer-Plagued Oil Town*, Vice News, Jan 2, 2020, https://www.vice.com/en/article/3a8nk3/sentenced-to-death-what-its-like-living-in-a-cancer-plagued-oil-town.

[63] Hilary Beaumont, *Communities on U.S. LNG Front Ask Biden to Reject Export Terminal*, Al Jazeera, Dec. 11, 2023, https://www.aljazeera.com/economy/2023/12/11/communities-on-us-lng-front-line-ask-biden-to-reject-export-terminal (noting how members of the Isle de Jean Charles Tribal Community off the coast of Louisiana, have twice been displaced by fossil fuel projects and climate impacts); Jeffery U. Darensbourg, *Indigenous People of Louisiana and the Oil Industry: An Ishak Reflection*, The Equation (Union of Concerned Scientists), Oct. 30, 2019, https://blog.ucsusa.org/science-blogger/indigenous-people-of-louisiana-and-the-oil-industry/; Dylan Baddour, *Texas Indigenous Leaders Target Banks in Fight Against Natural Gas Export Terminals in Rio Grande Valley*, Texas Tribune, Oct. 18, 2022, https://www.texastribune.org/2022/10/18/texas-lng-natural-gas-export-terminals-brownsville-comecrudo-tribe/ (discussing impacts to the Carrizo Comecrudo tribe); Bekah Hinojosa, *Rio Grande Valley Native Lands Under Threat by LNG Companies*, Sierra Club Lone Star Chapter, Nov. 21, 2016, https://www.sierraclub.org/texas/blog/2016/11/rio-grande-valley-native-lands-under-threat-lng-companies.

Currently, DOE's net economic benefit analysis ignores the negative economic, social, and public health impacts involuntarily imposed on environmental justice communities. LNG export facilities pose significant cultural, economic, and environmental harms as well as disproportionate health and safety concerns that should be evaluated and considered when determining whether an LNG export authorization is in the public interest. As President Biden declared in Executive Order 14008, "[w]e must deliver environmental justice in communities all across America," and he directed agencies to "make achieving environmental justice part of their missions."[64] Part of that action requires that DOE recognize and evaluate LNG's impacts to communities' quality of life including but not limited to public health, economic advancement, housing, and career opportunities. The current net economic analysis ignores the loss of tax revenue from LNG tax breaks and the reality of the promised economic growth for communities. When evaluating the public interest, DOE must not take for granted project sponsors' projected economic impact but assess their track record and willingness to be held accountable for building wealth in a community.

Environmental justice requires ALL people to be fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens like forced migration. It also requires equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices. DOE's public interest determination must heavily weigh these paramount concerns. The authorization of new LNG non-FTA export licenses can undermine the overwhelming public interest in preventing and redressing environmental racism and promoting environmental justice. Thus, DOE must not only consider the impacts acknowledged herein but engage with impacted communities to assess and understand the environmental justice impacts of existing and proposed LNG exports.

We also encourage DOE to require companies seeking export authorizations to disclose certificates of insurance as a requirement of the process to determine whether the requested exports are consistent with the public interest. Many LNG exporting companies do not carry sufficient insurance to cover catastrophic risks associated with exporting LNG which leaves communities already overburdened with the potential threats of these facilities increasingly vulnerable. Local communities will be the most impacted by explosions, spills, and other safety events occurring at LNG export terminals and their attached facilities. Insurance companies are enabling and profiting from the LNG buildout through underwriting, investing, and financing of each facility, yet they are not required to disclose which facilities they are backing, leaving the public in the dark. Even worse, when the communities burdened by this infrastructure experience safety incidents and weather events, survivors struggle with the aftershocks for years while insurance companies raise rates or pull out of markets entirely.[65] DOE should provide additional safeguards to ensure communities will not bear the brunt of LNG disasters. Requiring companies

[64] Exec. Order No. 14,008, 86 Fed. Reg. 7,619 (Jan 27, 2021), https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad. Likewise, E.O. 12,898 issued by President Clinton requires agencies "[t]o the greatest extent practicable and permitted by law. . . [t]o make achieving environmental justice part of [their] mission by identifying and addressing… disproportionately high and adverse human health or environmental effects of [their] . . . activities on minority populations and low-income populations." Exec. Order 12,898, 32 C.F.R. 651.17 (Feb 11, 1994).

[65] Mia DeFelice, *How Climate is Driving a "Great Displacement" in the U.S.,* Food & Water Watch (Jan. 30, 2024), https://www.foodandwaterwatch.org/2024/01/30/lfl-great-displacement/

to publicly release the names and types of insurance they retain is essential information needed for local communities and to satisfy the public interest.

The DOE public interest assessment should also include corporate suitability standards for export applicants. For example, Public Citizen's protest of Energy Transfer's Lake Charles LNG application was a case of "first impression" because it is the "first instance that a corporation with a criminal record" sought permission to export LNG.[66] DOE must develop explicit standards denying applicants with criminal convictions or a history of compliance issues and compel applicants to disclose all adjudications and adverse final actions taken by an ultimate trier of fact, such as court decisions and administrative hearings at the state or federal level.

Additionally, DOE should assess an applicant's emergency response plans, and the care the company has taken to prepare nearby communities. Many community members living near LNG export terminals report being unaware of how to protect themselves and their families in the case of an emergency. Emergency preparedness is accomplished with continued work over the course of an export terminal's existence. When Freeport LNG exploded, residents were not notified of the explosion despite plans to text nearby residents in the case of an emergency. This example illustrates why project sponsors must demonstrate a commitment to long-term maintenance and refinement of emergency preparedness plans and actions.

4. Biodiversity: LNG contributes to species extinction and biodiversity loss.

LNG exports have many negative impacts on marine life and the critical habitat of endangered species. Construction and operation of these facilities adversely impact protected species through noise pollution, discharge of toxic chemicals, and physical habitat disturbance/alteration. LNG onshore infrastructure causes habitat destruction and conversion through dredging and filling shoreline habitat and shoreline stabilization and hardening.[67] Once operational, LNG facilities also impact habitat, water quality and species behavior through the discharge of seawater, debris and contaminants.[68] Export facilities can also negatively impact fish eggs and larvae posing significant threats to species survival, behavior and physiology.[69] Additionally, waste from ships and other port activities can result in loss or degradation of habitat areas and harm to marine life. Ships and other vessels also disturb, run over, injure, and kill a variety of marine animals. Marine animals can also be taken into ships and then transported to new habitats where they may become invasive species and introduce new diseases.[70] When analyzing the full lifecycle of LNG, the ecological impacts become starker. Some LNG will be turned into plastic products which have their own impacts on biodiversity, particularly marine life.[71]

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[66] Public Citizen, Intervention and Protest of Lake Charles Exports, LLC, Docket No. 23-87-LNG (filed Nov. 6, 2023), https://www.citizen.org/wp-content/uploads/EnergyTransferLakeCharles.pdf.
[67] Mid-Atlantic Fishery Mgmt. Council, *Liquefied Natural Gas Anthropogenic Activity Background*, https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/565df660e4b0cf0568d824c7/1448998496002/Background_Liquefied+Natural+Gas.pdf at 2 [hereinafter "*LNG Background*"].
[68] *Id.*
[69] *Id.*
[70] *Ports Primer*, *supra* note 40.
[71] Nat. Res. Def. Council, *Liquefied Natural Gas 101* (Feb 9, 2024), https://www.nrdc.org/stories/liquefied-natural-gas-101#whatis.

Offshore export facilities can also have additional impacts on the nearshore environment. The construction of pipelines linking to onshore LNG plants can lead to habitat destruction and conversion, suspension of sediments including contaminated sediments, and alteration of sediment movement and water flows around pipes.[72] Biocides like copper and aluminum compounds are used to coat pipeline surfaces to prevent the growth of marine organisms.[73] These compounds can leach into surrounding waters and accumulate in substrates, potentially exposing organisms living or feeding on the bottom to toxins.[74] The export of LNG also creates the significant risk of oil spills and brine spills which can kill wildlife and cause devastating effects over large areas. For many species, the harms from the fossil fuel-based energy system have led to mortality, changes in behavior, population declines, disruptions to community composition, and loss of ecosystem function.

On a larger scale, climate change is causing widespread harm to life across the planet, disrupting species' distribution, timing of breeding and migration, physiology, vital rates, and genetics—in addition to increasing species extinction risk.[75] Climate change is already affecting 82% of key ecological processes that underpin ecosystem function and support basic human needs.[76] One million animal and plant species are now threatened with extinction, with fossil fuel caused climate change as a primary driver.[77] This threat will only accelerate with continued greenhouse gas pollution and temperature rise. At 2°C compared with 1.5°C of temperature rise, the number of vertebrate and plant species losing more than half their range would double, and the number of invertebrate species losing over half their range would triple.[78] Meanwhile, according to the IPCC *Climate Change 2022: Impacts, Adaptation and Vulnerability* report, at 2°C, the proportion of terrestrial and freshwater species at very high risk of extinction could reach 18% while at 1.5°C it could reach 14%.[79] Numerous studies have projected catastrophic species losses during this century if climate change continues unabated: 15 to 37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario;[80] the potential extinction of 10 to 14% of species by 2100;[81] global extinction of 5% of species with 2°C of warming and 16% of species with business-as-usual warming;[82] the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the

[72] *LNG Background*, *supra* note 67 at 3.
[73] *Id.* at 4.
[74] *Id.*
[75] Rachel Warren et al., *Increasing Impacts of Climate Change Upon Ecosystems with Increasing Global Mean Temperature Rise*, 106 Climatic Change 141 (2011).
[76] Brett R. Scheffers et al., *The Broad Footprint of Climate Change from Genes to Biomes to People*, 354 Science 719 (2016).
[77] Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Services (IPBES), *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, IPBES secretariat, Bonn, Germany (2019), https://ipbes.net/global-assessment.
[78] IPCC, Global Warming of 1.5°C, *supra* note 32 at Section C.1.1., Figure SPM 3b (Pathway 1)
[79] Intergovernmental Panel on Climate Change, *Summary for Policymakers. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (2022), https://www.ipcc.ch/report/ar6/wg2/ at SPM-14.
[80] Chris D. Thomas et al., *Extinction Risk from Climate Change*, 427 Nature 145 (2004).
[81] Ilya M. D. Maclean & Robert J. Wilson, *Recent Ecological Responses to Climate Change Support Predictions of High Extinction Risk*, 108 PNAS 12337 (2011).
[82] Mark C. Urban, *Accelerating Extinction Risk from Climate Change*, 348 Science 571 (2015).

current emissions pathway, in a sample of 48,786 species; [83] and the loss of a third or more of animals and plant species in the next 50 years.[84]

The current U.S. energy system based on fossil fuel extraction and use is fundamentally damaging to wildlife. Fossil fuel production, transmission, generation, and waste disposal activities cause a wide array of harms to species and ecosystems, such as destroying and fragmenting wildlife habitat, reducing water supplies often in water-stressed areas, causing air, noise, and light pollution, contaminating surface and ground water, and facilitating the spread of ecologically disruptive invasive species,[85] with similar harms in the offshore marine environment.[86] Scientists have called for a rapid transformation of our energy system away from fossil fuels to avoid a mass extinction event.[87]

DOE's public interest determination must consider the effect of LNG export approvals on the nation's biodiversity heritage. Although the Endangered Species Act requires all federal agencies to "insure that any action authorized, funded, or carried out" is "not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of a species critical habitat,[88] DOE's obligation is not limited to formal Section 7 consultation with the U.S. Fish & Wildlife Service and the National Marine Fisheries Service. The ESA also requires DOE to affirmatively promote the conservation of listed species.[89] At a minimum, DOE's public interest determination should recognize and weigh the impacts to listed species, their habitat, and their chances of recovery.

5. National Security: The continued export and use of LNG are a threat to key economic sectors and national security.

LNG exports and its contributions to climate change pose significant national security concerns. LNG is a volatile and potentially explosive material; a full LNG tanker carries the energy equivalent of 55 atomic bombs, making it a potential target for terrorist attacks.[90] In U.S. coastal regions, rising sea levels, higher storm surge, and increased erosion could damage or

[83] Rachel Warren et al., *Quantifying the Benefit of Early Climate Change Mitigation in Avoiding Biodiversity Loss*, 3 Nature Climate Change 678 (2013).
[84] Cristian Román-Palacios & J.J. Wiens, *Recent Responses to Climate Change Reveal the Drivers of Species Extinction and Survival*, 117 PNAS 4211 (2020).
[85] Nathalie Butt et al., *Biodiversity Risks from Fossil Fuel Extraction*, 342 Science 425 (2013); Margaret C. Brittingham et al., *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and Their Habitats*, 48 Envtl. Sci. & Tech. 11034 (2014); Paul D. Pickell et al., *Monitoring Forest Change in Landscapes Under-going Rapid Energy Development: Challenges and New Perspectives*, 3 Land 617 (2014); Sara Souther et al., *Biotic Impacts of Energy Development from Shale: Research Priorities and Knowledge Gaps*, 12 Frontiers in Ecology & the Env't 330 (2014); Brady W. Allred et al., *Ecosystem Services Lost to Oil and Gas in North America*, 348 Science 401 (2015); Michael B. Harfoot et al., *Present and Future Biodiversity Risks from Fossil Fuel Exploitation*, 11 Conservation Letters e12448 (2018).
[86] Rubén Venegas-Li et al., *Global Assessment of Marine Biodiversity Potentially Threatened by Offshore Hydrocarbon Activities*, 25 Global Change Biology 2009 (2019).
[87] Anthony D. Barnosky, *Transforming the Global Energy System Is Required to Avoid the Sixth Mass Extinction*, 2 MRS Energy & Sustainability E10 (2015).
[88] 16 U.S.C. 1536(a)(2).
[89] 16 U.S.C. 1536(a)(1); Memo from Sarah Krakoff, Deputy Solicitor for Parks and Wildlife to Martha Williams Director, U.S. Fish & Wildlife Serv., on Federal Agency Obligations under Section 7(a)(1) of the Endangered Species Act, Feb. 6, 2024. https://www.fws.gov/sites/default/files/documents/federal-agency-obligations-under-section-7-a-1-memo-2024-02-06.pdf.
[90] PSR Report, *supra* note 43 at 8.

destroy critical infrastructure. Sea level rise and higher storm surge in coastal regions increases the risk of major coastal impacts on transportation infrastructure, including flooding of airports, ports and harbors, roads, rail lines, tunnels, and bridges.[91] In Western states, higher temperatures and more frequent or severe heat waves could buckle railways, damage roads, and strain power systems.[92] Furthermore, climate change caused primarily by oil and gas activities also affects "key economic sectors" such as agriculture and water which has profound effects on food security and threatens overall economic stability.[93] The Department of Defense ("DOD") has elevated climate change as a national security priority.[94]

> Climate change is an urgent and growing threat to our national security contributing to increased natural disasters, refugee flows, and conflicts over basic resources like food and water. The present-day effects of climate change are being felt from the Arctic to the Midwest. Increased sea levels and storm surges threaten coastal regions, infrastructure, and property. In turn, the global economy suffers, compounding the growing costs of preparing and restoring infrastructure.[95]

The pressures caused by climate change are felt globally and will influence resource competition and aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions which are conditions that can enable terrorist activity and violence.[96] As Assistant Secretary of the United States Army Rachel Jacobson stated, "climate change is a threat to global peace and security" urging that this growing threat poses a need to act now.[97]

In addition to considering the national security implications of accelerating climate change with expanded LNG exports, DOE must also take a hard look at our country's current export capacity and the demand of our allies for LNG imports into the future. The Institute for Energy Economics and Financial Analysis ("IEEFA") predicts that Europe's demand for LNG will peak by 2025,[98] years before currently approved export authorizations will expire. Additionally, Europe's demand has fallen over the past year despite Russia's invasion of Ukraine.[99] The demand for LNG has already declined[100] and is expected to continue to trend

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[91] Obama Report Archives, *Findings from Select Federal Reports: The National Security Implications of Climate Change* (2015) at 3, https://obamawhitehouse.archives.gov/sites/default/files/docs/National_Security_Implications_of_Changing_Climate_Final_051915.pdf.
[92] *Id*. at 2.
[93] *Id.* at 3.
[94] U.S. Dep't of Defense, *Tackling the Climate Crisis* (visited May 10, 2024), https://www.defense.gov/spotlights/tackling-the-climate-crisis/.
[95] White House, National Security Strategy, February 2015 Domestic Energy Prices in Obama Report Archives, *Findings from Select Federal Reports: The National Security Implications of Climate Change* (2015), at 3, https://obamawhitehouse.archives.gov/sites/default/files/docs/National_Security_Implications_of_Changing_Climate_Final_051915.pdf.
[96] *Id*. at 8.
[97] U.S. Dep't of Defense, *DOD Officials Highlight Climate and Energy Security Issues at International Conference*, Defense Department News (Dec. 11, 2023), https://www.defense.gov/News/News-Stories/Article/Article/3614103/dod-officials-highlight-climate-and-energy-security-issues-at-international-con/
[98] Sam Reynolds & Ana Maria Jaller-Makerewicz, IEEFA, *The U.S. Pause on LNG Export Permits Does Not Threaten Energy Security in Europe and Asia* (Feb. 08, 2024), https://ieefa.org/resources/us-pause-lng-export-permits-does-not-threaten-energy-security-europe-and-asia.
[99] IEEFA, *European LNG Tracker*, https://ieefa.org/european-lng-tracker.
[100] Int'l Energy Agency (IEA), *Gas Market Report, Q3-2022* (2022), https://www.iea.org/reports/gas-market-report-q3-2022.

downward calling into question the need for new export authorizations or increased capacity at existing export terminals. IEFFA found European gas demand is expected to fall further by 2030, noting that LNG export capacity in 2030 will be 76 percent higher than Europe's forecasted demand.[101]

6. Local and National Economic Impacts: LNG exports disrupt domestic energy markets exposing consumers to higher price burdens.

As numerous studies have now shown, expanded LNG exports lead to higher energy prices for domestic consumers.[102] Yet, DOE has never actually examined the distributional impacts of LNG exports on families at different incomes and geographies and provides no assessment of the impact exports have on energy burdens of communities of color. Nor has DOE (or FERC) properly evaluated the winter 2021-2022 gas price impacts in the LNG context, even though FERC concluded that LNG exports were the "primary" source of gas price increases in 2021-2022.[103] These price increases harm both households and industrial energy consumers not only in increased power and heat bills, but also knock-on effects like dangerous utility shutoffs and cyclical poverty for low-income families and communities of color.[104] Given that a primary purpose of the Natural Gas Act's public interest determination is "to protect consumers against exploitation at the hands of natural gas companies,"[105] DOE should conduct a distributional analysis to determine how LNG exports may disproportionally harm lower-income families through higher energy burdens.

In response to Europe's invasion of Ukraine, the U.S. announced a plan to reduce Europe's reliance on Russian oil and gas which included an increase in LNG exports to support Europe's energy needs.[106] U.S. total spending on natural gas soared to $269 billion in 2022, up from $150 billion in 2019, the last "normal" year before COVID-19 and Russia roiled U.S. gas

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[101] IEFFA, *As the U.S. Builds New LNG Terminals, Europe Reduces Gas Demand and Diversifies Energy Sources* (Jan. 2024), https://ieefa.org/resources/us-builds-new-lng-terminals-europe-reduces-gas-demand-and-diversifies-energy-sources

[102] *See, e.g.*, U.S. Energy Info. Admin. ("U.S. EIA"), AEO2023 *Issues in Focus: Effects of Liquefied Natural Gas Exports on the U.S. Natural Gas Market* (May 2023), https://www.eia.gov/outlooks/aeo/IIF_LNG/pdf/LNG_Issue_in_Focus.pdf ("[H]igher LNG exports create a tighter domestic natural gas market (all else held equal), increasing domestic natural gas prices."). ."); U.S. EIA, *Winter Fuels Outlook* (Oct. 2021) at 1, https://www.eia.gov/outlooks/steo/special/winter/2021_Winter_Fuels.pdf (noting that under the current-policy scenario, which includes a 28% increase in global LNG between 2022 and 2030, U.S. natural gas prices are expected to be 67% higher ($4.00 per MMBtu) when compared to the net-zero scenario, which includes a 6% increase in global LNG between 2022 and 2030, ($2.40 per MMBtu) by 2030); Clark Williams-Derry, *Gas Exports Cost U.S. Consumers More Than $100 Billion Over 16-month period*, IEEFA (Jan. 29, 2024), https://ieefa.org/resources/gas-exports-cost-us-consumers-more-100-billion-over-16-month-period.

[103] FERC, Winter Energy Market and Reliability Assessment (Oct. 21, 2021) at 2, https://ferc.gov/sites/default/files/2021-10/Winter%20Assessment%202021-2022%20-%20Report.pdf.

[104] Ctr. for Biological Diversity, Energy & Policy Institute, BailoutWatch, *Powerless in the United States* (2023) at 4-15, 18, https://www.biologicaldiversity.org/programs/energy-justice/pdfs/Powerless-in-the-US_Report.pdf.

[105] *FPC v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944).

[106] Emily Rauhala et al., *Biden, E.U. Announce Plan to Reduce Europe's Reliance on Russian Energy*, Wash. Post, Mar. 25, 2022, https://www.washingtonpost.com/world/2022/03/25/biden-eu-energy/.

markets.[107] Surging exports triggered a surge in U.S. gas prices.[108] The increased exports in the past years shortchanged U.S. supplies, dropped stockpiles to multi-year lows, and rocketed wholesale gas prices to their highest levels in more than a decade.[109]

While DOE and numerous LNG export applicants have cited the need for U.S. LNG exports to provide energy security for our European allies, the crisis in the Ukraine has also provided opportunities for the natural gas industry and financial traders to engage in price-gouging. Most U.S. LNG exports are controlled by so-called "portfolio traders," which include Big Oil (Shell, BP, Conoco, Exxon, etc.) and the commodity trading houses (Gunvor, Trafigura, Mercuria, etc.). Their business model is to take relatively inexpensive U.S. LNG and resell it to third parties at a significant markup, exploiting the arbitrage between different global price indices to engage in price-gouging. This price-gouging results in record profits for the portfolio traders, at the expense of global energy security for our allies. According to some reports, energy traders are making as much as $200 million in net profit per LNG shipment to Europe, well above expected market rates.[110] DOE's public interest test should attempt to regulate the prices charged by these portfolio players to eliminate their profiteering or disallow such price gouging as a condition of assessing the public interest.

Reports of increased natural gas demand in the United States must also be considered before authorizing new exports.[111] Multiple U.S. utilities are revising their energy demand forecasts to account for the rapid expansion of power-hungry data centers and artificial intelligence ("AI") generation centers—which are leading to increased buildout of gas plants.[112] According to a recent Grid Strategies report, "the era of flat power demand is over."[113] While there are many potential responses to this increased demand, and consistent with serious climate,

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[107] IEEFA, *Gas Exports Cost U.S. Consumers More Than $100 Billion Over 16-month Period* (January 2024), https://ieefa.org/resources/gas-exports-cost-us-consumers-more-100-billion-over-16-month-period [hereinafter "IEEFA Report"].
[108] U.S. EIA, *Effects of Liquefied Natural Gas Exports on the U.S. Natural Gas Market*, at 7, www.eia.gov/outlooks/aeo/IIF_LNG/.
[109] IEEFA Report, *supra* note 107.
[110] Harry Robertson, *Energy Traders Are Making a Killing Exporting US Natural Gas to Europe As Prices Soar*, Markets Insider, Aug 13, 2022, https://markets.businessinsider.com/news/commodities/usnatural-gas-exports-europe-surge-energy-crisis-trader-profits-2022-8.
[111] *AI Boom to Fuel Natural Gas Demand in Coming Years, Report Says*, Reuters, Apr. 23, 2024, https://www.reuters.com/business/energy/ai-boom-fuel-natural-gas-demand-coming-years-report-says-2024-04-23/; Evan Halper, *Amid Explosive Demand, America Is Running Out of Power*, Wash. Post, Mar. 7, 2024, https://www.washingtonpost.com/business/2024/03/07/ai-data-centers-power/.
[112] Diana DiGangi, *Duke Energy Proposes New Gas Plant to Meet Load Growth, But Groups Question Projects*, Utility Dive, Feb. 6, 2024 (noting that Duke Energy is projecting "eight times the load growth we anticipated just two years ago."); Zack Bright, *Southeast Utilities Have a 'Very Big Ask': More Gas*, E&E News, Jan. 22, 2024, https://www.eenews.net/articles/southeast-utilities-have-a-very-big-ask-more-gas/; Caroline Eggers, *TVA Proposes 8th Gas Plant in 3 Years*, WPLN, Dec. 4, 2023, https://wpln.org/post/tva-new-gas-plant-mississippi/.
[113] John D. Wilson & Zach Zimmerman, Grid Strategies, *The Era of Flat Power Demand Is Over* (Dec. 2023), https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf.

environmental, and public health concerns, natural gas should not be one of them,[114] DOE must account for this potential growth in domestic demand before approving any new LNG exports.

To summarize, the increased export of LNG runs counter to the public interest by ignoring domestic needs and increasing domestic gas prices. New LNG export authorizations will not serve to meet Europe's current energy demand but will instead increase energy prices for U.S. consumers, threaten local economies, worsen the climate crisis, and make it increasingly more difficult to limit warming to 1.5°C.

7. Global Energy Transition: LNG Exports obstruct the urgent need to transition to renewable energy.

For the U.S. to establish itself as a true climate leader it should focus on supporting a just energy transition to clean, renewable energy which meets the nations' long-term energy security needs and decarbonization goals. Recent research shows fossil gas exports may compete with renewable energy rather than replacing fossil fuel production and coal in other countries.[115] Further, as echoed at the COP28 negotiations, Global South countries have repeatedly expressed their support for a global transition off fossil fuels and for climate finance from historically responsible countries—such as the United States—to help fund that transition. As we move towards a renewable energy future, DOE must consider this impending shift when determining the public interest and be wary of false solutions, like certified gas and carbon capture and storage ("CCS"), that perpetuate the continued use of fossil fuels.

A. Certified Gas Is Not "Clean" Energy

We urge DOE not to favorably consider so-called "certified gas" when determining whether the authorization of non-FTA LNG exports is in the public interest. If DOE's public interest test appropriately considers GHG emissions, environmental justice, public health impacts and other issues described herein, there is a strong likelihood that gas companies scrambling to squeeze the last bit of profit from consumers will push for the exception or favorable review of certified gas.

Certified gas is "the process where the certifying entity monitors a gas production site and measures the emissions over time to determine the level of emissions associated with the gas produced."[116] Operators claim to work with the third-party certifier to identify emissions sources and reduce or eliminate them.[117] Then, once production sites have operated for a specified number of time with emissions supposedly below a certain level, the gas from that site is "certified."[118] There are several problems with this process. To name a few, first, third-party

[114] Eric Gimon, Mike O'Boyle, & Michelle Solomon, *Energy Innovation, Meeting Electricity Demand Without Gas: A Brief for Utility Regulators* (2024), https://energyinnovation.org/wp-content/uploads/2024/03/MEETING-GROWING-ELECTRICITY-DEMAND-WITHOUT-GAS.pdf.
[115] Stephen Staphczynski, *Big Spending Cements LNG in Energy Mix for Decades to Come*, Bloomberg, Jan. 11, 2024, https://www.bloomberg.com/news/newsletters/2024-01-11/huge-wave-of-lng-investment-may-delay-global-energy-transition.
[116] Oil Change Int'l & Earthworks, *Certified Disaster: How Project Canary & Gas Certification Are Misleading Markets & Governments* (April 2023), at 10, https://earthworks.org/resources/certified-disaster/.
[117] Earthworks recorded 22 pollution events at monitored sites that third party certifiers', like Project Canary, continuous emission monitors failed to identify or record. *Id*. at 17.
[118] *Id.*

certifiers allow their clients to choose which part of the operations are inspected, potentially avoiding sites known to have higher emissions.[119] Second, because certifiers are hired by the producer, there is a financial incentive to provide these certifications to operators; their business model depends on it. Reviews that reflect high emissions at the production site provide no incentive for other producers to hire them. Third, there are no federal standards for gas certification so there is no way to rectify these pitfalls through government oversight.[120]

Through this flawed certification process, operators are charging higher prices to consumers for the "cleaner" or "responsibly sourced" gas while improving their reputation through claims of being better for people and the environment. [121] Certification of gas through a third-party incentivized to provide the certifications harms consumers and continues the gas companies' history of misinformation and green washing.[122] Thus, we urge DOE not to allow the use of certified gas to mitigate natural gas' climate impact in its analysis of the public interest.

B. Carbon Capture and Storage Does Not Mitigate Air Quality Impacts

CCS is a dangerous delay tactic championed by the fossil fuel industry and other polluters to continue business as usual while taking resources away from the needed transition to clean, cheaper renewable energy. CCS is the process of capturing carbon dioxide produced from industrial processes, transporting it, and then storing it underground. While touted as a tool that will improve air quality, increase health equity and combat the climate crisis, CCS actually has the potential to increase emissions and prolong our dependence on fossil fuels like LNG.[123] CCS depends on the production of greenhouse gases from the attached fossil fuel facility and is frequently used to extract even more fossil fuels through a process called enhanced oil recovery ("EOR").[124] Contrary to efforts to phase out fossil fuel production, CCS seeks to reduce emissions while continuing the use of fossil fuels (e.g., through emissions control or carbon capture technology) and because of this it "will not have the same health benefits as policies that reduce the use of fossil fuels, and may have adverse health and health equity impacts."[125]

Furthermore, for CCS carbon sequestration to be considered permanent it must not leak into the atmosphere—but there is no safe, permanent, and verifiable way to store CO2. Even minor leakage could reduce the benefit of CCS by up to 35%.[126] There are also limited storage

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[119] *Id*.
[120] *Id*.
[121] *Id*. at 11.
[122] *See* Letter from Sen. Edward J. Markey et al., to the Hon. Lina M. Khan, Chair, Federal Trade Comm'n, Feb. 12, 2024, https://www.markey.senate.gov/imo/media/doc/certified_gas_letter_21224.pdf, at 1, 4 (referring to certified gas as a "greenwashing scheme" that relies on "opaque methodology, unreliable technology, and unacknowledged downstream climate effects").
[123] *See* Emily Grubert & Frances Sawyer, *U.S. Power Sector Carbon Capture and Storage Under the Inflation Reduction Act Could Be Costly with Limited or Negative Abatement Potential*, 3 Envt'l Res.: Infrastructure and Sustainability 1 (Mar. 10, 2023), https://iopscience.iop.org/article/10.1088/2634-4505/acbed9.
[124] Ctr. for Int'l Envtl. L., *Confronting the Myth of Carbon-Free Fossil Fuels: Why Carbon Capture Is Not a Climate Solution* (2021), at 8, https://www.ciel.org/wp-content/uploads/2021/07/Confronting-the-Myth-of-Carbon-Free-Fossil-Fuels.pdf [hereinafter "CIEL Report"]. *See also* Dep't of Energy, *9.2 Commercial Carbon Dioxide Uses: Carbon Dioxide Enhanced Oil Recovery*, Nat'l Energy Tech. Lab., https://netl.doe.gov/research/coal/energy-systems/gasification/gasifipedia/eor (last visited May 10, 2024).
[125] *Lancet Countdown, supra* note 36 at 10.
[126] Clark Butler, IEEFA, *Carbon Capture and Storage Is About Reputation, Not Economics*, 5 (2020), https://ieefa.org/wp-content/uploads/2020/07/CCS-Is-About-Reputation-Not-Economics_July-2020.pdf.

sites in both number and geography.[127] Thus, it is inevitable that old or abandoned oil and gas wells that are often improperly sealed, if at all, are utilized instead, which can worsen the possible resulting harms. Wells have weaknesses and gaps, and fracking causes long-term subterranean instability and seismic activity which can dislodge even the most carefully stored CO2.[128] Even worse, there is no required long-term oversight of storage sites, and CO2 leaks are extremely difficult to detect.

After billions of dollars of investment and decades of development, deployment of CCS has consistently proven to be ineffective.[129] For example, Venture Global claims that it will capture 500,000 tons of carbon dioxide per year at Calcasieu Pass 2,[130] but that amounts to less than 1% of the project's lifecycle emissions if successful. The Intergovernmental Panel on Climate Change ("IPCC") modeled pathway with the best chance of keeping warming below 1.5°C makes no use of fossil fuels with CCS or bioenergy with CCS, and employs limited to zero use of engineered carbon removal technologies.[131] Instead, the success of achieving that pathway requires a rapid phaseout of fossil fuels along with only limited CO_2 removal by natural carbon sequestration methods, such as reforestation and enhanced soil remediation.[132] The promotion and use of CCS technology, which has already been proven ineffective, is a clear case of greenwashing. Thus, like certified gas, we urge DOE not to allow the use of CCS to mitigate natural gas' climate impact in its analysis of the public interest.

8. Community Input and Meaningful Public Engagement

In addition to adequate consideration of the above-named issues in public interest determinations and the associated studies, DOE must involve (1) the public at every stage of the process from initial application to approval or denial, (2) promulgate an easier process for intervention, (3) develop a more effective notice and outreach process, and (4) seek community input on how to make the process easier for frontline and affected communities to engage, including potentially offering intervenor funding, funds for experts, greater disclosure of materials on safety and community preparedness, and other assistance.

When an application is submitted, DOE must publish the application materials for comment and conduct public meetings within the potential affected community to solicit comments on existing exports and the potential for increase. Additionally, upon receiving an application, the U.S. must honor the government-to-government relationship with local tribes (federally recognized or otherwise) and ask for the Free, Prior, and Informed Consent of all tribes that would be impacted by the proposed exports.

Meaningful public engagement includes community meetings on multiple days at varying times in consideration of individuals' working hours to allow those most impacted the

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[127] *See* U.S. Geological Survey ("USGS"), Frequently Asked Questions, https://www.usgs.gov/faqs/which-area-best-geologic-carbon-sequestration (last visited May 10, 2024).
[128] Butler, *supra* note 126 at 5-6.
[129] U.S. Government Accountability Office, *Carbon Capture and Storage: Actions Needed to Improve DOE Management of Demonstration Projects* (Dec. 20, 2021), https://www.gao.gov/products/gao-22-105111.
[130] Venture Global LNG, *Venture Global Launches Carbon Capture and Sequestration Project* (May 27, 2021), https://ventureglobalLNG.com/press/venture-global-launches-carbon-capture-and-sequestration-project/.
[131] IPCC, Global Warming of 1.5°C, *supra* note 32 at Section C.1.1., Figure SPM 3b (Pathway 1), https://www.ipcc.ch/sr15/. *See also* IPCC, Global Warming of 1.5°C, *supra* note 32 at Ch. 2.3.3 and Table 2.SM.12.
[132] CIEL Report, *supra* note 124, at 2-3.

opportunity to voice their concerns and weigh in on the process. No individual should be required to choose between a day of paid work and their health and safety. After community comments are accepted and careful review of the above-mentioned factors, the agency must publish their findings for public comment. True public engagement requires lengthy public comment periods with translation and interpretation for any language spoken by over 5% of the local community, mail-in processes for communities lacking internet access, and no ID requirements for participation. Comments submitted by community members should not only be included in the public record but fully and fairly considered and cited when making decisions. These comments should prompt additional review when necessary and information sharing when appropriate.

Furthermore, DOE should regularly schedule meetings in communities burdened by LNG exports and its associated infrastructure to better understand their concerns and inform their public interest determination process. DOE should also create an Advisory Board or Task Force of frontline community members and empower that body to work in collaboration with DOE to incorporate frontline experiences and knowledge into the public interest determination process. Advisory Board members should also be required, the same as DOE officials, to regularly visit communities impacted by their influence. Advisory Board members should interview a representative sample of the local community one on one, as well as active community groups in the area, as part of each public interest determination. Outreach to community groups should include outreach to local religious organizations, environmental and environmental justice organizations, unions, community health clinics, homeowner's associations, senior-citizens groups, student groups, and businesses. These meetings, comments, and discussions with frontline communities should have "real world" implications. To ensure these impacts, we request that DOE publish biennial reports of their findings and how they influence the review of non-FTA export licenses.

CONCLUSION

In sum, the continued approval of LNG exports will cause additional climate, economic, environmental justice, national security, and public health harms that society cannot afford. The scientific evidence is overwhelmingly clear that many facets of the public interest will be harmed by the approval of fossil fuel infrastructure projects and the years of greenhouse pollution they will produce. For these reasons, the careful weighing of the public interest is critical. In many, if not most cases, the catastrophic impacts of LNG exports on our environmental, cultural, social, and economic systems overwhelmingly will outweigh any purported benefits they might confer. DOE's public interest determinations should reflect this scientific, social, and economic reality.