June 5, 2024

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Deputy Secretary

U.S. Department of Energy

RE: Update to the environmental analysis of the export of liquified natural gas.

Earthjustice and the *Centro Mexicano de Derecho Ambiental* (CEMDA) respectfully submit the following letter urging the U.S. Department of Energy (DOE) to examine the distinct harms associated with exporting U.S. natural gas through Mexico in the forthcoming revision of its environmental analysis on the export of liquefied natural gas (LNG).[1]

On January 26, 2024, DOE announced that it will update the economic and environmental analyses used to review LNG export applications to non-free trade agreement (non-FTA) countries.[2] This announcement coincided with a statement from the Biden White House pausing the approval of LNG export permits through DOE for the same non-FTA countries.[3] DOE has asserted that its new report "must use the most complete, updated, and robust analysis possible on market, economic, national security, environmental considerations" and that this would incorporate an analysis of "greenhouse gas emissions including carbon dioxide and methane."[4]

In order to ensure a complete and robust analysis, DOE must consider how exporting gas through Mexico can cause different and sometimes greater harms to the environment and climate than exporting directly from the United States. Currently, there is 8.55 Bcf/d of planned export capacity through Mexico, with more likely in coming years. DOE must consider evidence that fugitive and accidental emission rates are higher in Mexico than in the United States due to differences in infrastructure, access to information, and enforcement capacity, meaning that the

[1] This letter is submitted by email and will be available publicly on https://earthjustice.org.
[2] U.S. Dep't of Energy, DOE to Update Public Interest Analysis to Enhance National Security, Achieve Clean Energy Goals and Continue Support for Global Allies (Jan. 26, 2024), https://www.energy.gov/articles/doe-update-public-interest-analysis-enhance-national-security-achieve-clean-energy-goals.
[3] 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/.
[4] U.S. Dep't of Energy, *supra* note 1.

climate change and localized air pollution contributions from these projects may be greater than the average project. DOE also should examine the localized impacts of LNG exports on fence line communities in Mexico as part of its environmental justice analysis.

We explain these concerns in further detail below and urge DOE to share our letter with the teams planning the current update.

I. There Is Significant LNG Export Capacity Already Planned for the Northwest and Gulf Coasts of Mexico.

The majority of the 8.55 Bcf/d of new LNG export capacity comes from six proposed LNG infrastructure projects that have already received DOE authorization to export U.S. natural gas to non-FTA and FTA countries.[5] These projects are concentrated on Mexico's northwest coast in the states of Baja California, Sonora, and Sinaloa, but also include projects planned for the Gulf of Mexico and other locations connected with existing pipeline infrastructure. We summarize the information on these projects and the relevant DOE dockets in Table 1 below.

These projects, if constructed, would result in about a 75% increase in current U.S. LNG export capacity.[6] This capacity is likely to continue increasing in the future, once DOE lifts its current pause on exports.

This additional capacity will come online at the same time that we must undertake urgent action to reach the goal of limiting global warming to 1.5°C. The Intergovernmental Panel on Climate Change (IPCC) warns that this will require "deep, rapid, and, in most cases, immediate GHG emissions reductions" in all sectors this decade.[7] To meet the 1.5°C target, experts have estimated that global gas supplies must decline by 84% from 2020 to 2050, assuming minimal

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[5] These projects cover a total of 6.69 Bcf/d of new capacity, which includes approvals for export to both FTA and non-FTA countries for AMIGO LNG (aka. Epcilon LNG), Costa Azul, Saguaro LNG (aka. Mexico Pacific Limited), and Vista Pacifico LNG. It also includes approvals for export to only FTA countries for Gato Permitium Uno and NFE Altamira FLNG. In the case of NFE Altamira FLNG, DOE approval for export to non-FTA countries is still pending. For Gato Permitium, the applicant filed after the current freeze on non-FTA approvals was announced, and only applied for export to FTA countries. In addition, there is also 1.86 Bcf/d of capacity that is pending approval before DOE, or for which project promotors have not yet applied. *See infra* Table 1.

[6] According to the U.S. Energy Information Administration (EIA), the total LNG export capacity in 2023 was 11.4 Bcf/d. U.S. Energy Info. Admin, LNG export capacity from North America is likely to more than double through 2027 (Nov. 13, 2023), https://www.eia.gov/todayinenergy/detail.php?id=60944.

[7] Intergovernmental Panel on Climate Change [IPCC], Summary for Policymakers, *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* at 20, (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf.

reliance on carbon dioxide removal.[8] Given the urgent need to reduce global consumption of gas, an accurate assessment of U.S. gas to be exported through Mexico is paramount.

DOE already has information regarding the majority of these proposed projects through the export permits approved or pending before DOE. These applications provide sufficient information to identify key aspects of these projects such as proposed locations, gas pipeline distance and infrastructure, and liquefaction technology. In addition, DOE can easily identify the locations of potential future projects because the network of pipelines connecting the United States to Mexico's coastlines is limited. Only four main routes connect the U.S. pipeline network to Mexico's northwest coast,[9] and according to the EIA there are only five major gas pipelines connecting multiple states with Mexico.[10]

Project Name	Location	DOE Docket	Approved export volume	Planned add'l volume
AMIGO LNG/Epcilon LNG	Puerto Guaymas, Sonora	20-31-LNG	1.083 Bcf/d[11]	
Costa Azul	La Ensenada, Baja California	18-145-LNG	2.8 Bcf/d[12]	
Gato Negro Permitium Uno	Manzanillo, Colima	24-43-LNG	0.556 Bcf/d[13]	
NFE Altamira FLNG	Altamira, Tamaulipas	22-110-LNG	0.4 Bcf/d[14]	

[8] Ploy Achakulwisut et al., *Global Fossil Fuel Reduction Pathways Under Different Climate Mitigation Strategies and Ambitions*, 14 NATURE COMMUNICATIONS 5425 (13 Sept. 2023), https://www.nature.com/articles/s41467-023-41105-z. Based on expert surveys, this study assumes that the cumulative availability of carbon dioxide removal from 2020-2100 will be limited to 196 $GtCO_2$ (Bioenergy with CCS), 224 $GtCO_2$ (afforestation), and 320 $GtCO_2$ (Direct Air Capture with Carbon Storage).

[9] According to Global Energy Monitor's database on gas infrastructure, these routes correspond to the Rosarito Gas Pipeline; the Sásabe-Guaymas Gas Pipeline; the Naco-Hermosillo Gas Pipeline; and the path formed by the Ojinaga-El Encino and El-Encino-Topolobampo Gas Pipelines. Global Energy Monitor, Global Gas Infrastructure Tracker, (Dec. 2023) https://globalenergymonitor.org/projects/global-gas-infrastructure-tracker/.

[10] U.S. Energy Info. Admin., U.S. State-to-State capacity (Feb. 7, 2024), https://www.eia.gov/naturalgas/data.cfm#pipelines.

[11] U.S. Dept. of Energy, FE Docket No, 20-31-LNG, DOE/FE Order No. 4629 at 55 (Dec. 8, 2020).

[12] U.S. Dept. of Energy, FE Docket No, 18-145-LNG, DOE/FE Order No. 4318 at 13 (Jan. 25, 2019) (authorizing export of 1.5 Bcf/d); DOE, FE Docket No, 18-145-LNG, DOE/FE Order No. 4365 at 52 (Mar. 29, 2019) (authorizing an additional 1.3 Bcf/d of LNG export).

[13] The Gato Nero project presently has only applied for export to FTA countries for the moment but would likely apply to non-FTA if the freeze on new approvals were lifted. Gato Negro Permitium Uno, Application of Gato Negro Permitium Uno, S.A.P de C.V. for expeditious long-term authorization to export natural gas to Mexico from the U.S. and upon liquefaction, re-export LNG from Mexico to other FTA countries, DOE Docket No. 24-43-LNG at 1 (May 10, 2024).

[14] NFE Altamira's approved amount of export only applies to FTA countries. DOE, FE Docket No, 22-110-LNG, DOE/FE Order No. 4960 at 3 (Mar. 3, 2023). The company's application for export to non-FTA countries for the same volume is currently pending.

Saguaro LNG/Mexico Pacific Limited	Puerto Libertad, Sonora	18-70-LNG 22-167-LNG	1.7 Bcf/d[15]	0.8 Bcf/d[16]
Vista Pacífico LNG	Topolobampo, Sinaloa	20-153-LNG	0.55 Bcf/d[17]	
Salina Cruz LNG	Puerto de Salina Cruz, Oaxaca	N/A		0.066 Bcf/d[18]
Coatzacoalcos LNG Terminal	Coatzacoalcos, Veracruz	N/A		0.59 Bcf/d[19]

Table 1. Proposed LNG liquefaction and export terminals in Mexico that have applied for export permits (both to FTA and non-FTA countries) or declared intent to source feed gas from the United States.

II. The Life Cycle Analysis of GHG Emissions Should Consider Greater Emissions Rates from Mexican Infrastructure and Reduced Capacity for Enforcement.

A. Methane Emissions from Transportation and Processing of Gas in Mexico are Greater than Those in the United States.

Several recent studies have shown that methane emissions from Mexico's hydrocarbon sector, and in particular its gas processing facilities and pipelines, are greater than those in the United States. A nation-wide, satellite-based study has shown methane emissions from the Mexican oil and gas industry are around 4.7%, in contrast to the U.S. loss rates of about 2.95%.[20]

Site-specific studies confirm this trend. One study using both satellite and aerial measurements at an onshore Mexican gas processing facility estimated that methane emissions were about 30 times higher than recent measurement-based studies have found at comparable U.S. processing plants, and about 200 times higher than the company was reporting.[21] The same

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[15] U.S. Dept. of Energy, FE Docket No, 18-70-LNG, DOE/FE Order No. 4312 at 48 (Dec. 14, 2018).
[16] Mexico Pacific Limited, Application of Mexico Pacific Limited LLC for additional long-term, multi-contract authorization to export natural gas to Mexico and to re-export liquified natural gas to free trade agreement and non-free trade agreement nations, DOE Docket No. 22-167-LNG at 3 (Dec. 28, 2022).
[17] U.S. Dept. of Energy, FE Docket No, 20-153-LNG, DOE/FE Order No. 4929 at 77 (Dec. 20, 2020).
[18] Salina Cruz LNG, *Salina Cruz LNG* at 9 (Aug. 2020), https://uploads-ssl.webflow.com/5f569d4fd9bb4d2a7a8d4563/5f7e53d6522e56fcbb757b70_PhaseII.pdf.
[19] Christopher E. Smith, *CFEnergia considering building 4.5-million tpy Gulf Coast LNG plant,* Oil & Gas Journal, Dec. 5, 2022, https://www.ogj.com/pipelines-transportation/lng/article/14286593/cfenergia-considering-building-45-million-tpy-gulf-coast-lng-plant.
[20] Lu Shen et al., *Unravelling a large methane emission discrepancy in Mexico using satellite observations*, 260 Remote Sensing of Environment 112461 (2021), https://linkinghub.elsevier.com/retrieve/pii/S0034425721001796; Evan D. Sherwin et al., *US oil and gas system emissions from nearly one million aerial site measurements*, 627 Nature 328,334 (2024), https://www.nature.com/articles/s41586-024-07117-5.
[21] The lower bound of methane emissions from the facility were around 5700 kg CH_4 h^{-1} (95% CI: 3500–7900 kg CH_4 h^{-1}), while the estimated average for comparable U.S. plants was 200 kg CH_4 h^{-1}. Daniel Zavala-Araiza et al., *A*

study found that flare combustion efficiencies at the facility averaged 94%, far lower than the 98% efficiencies assumed for flares at U.S. facilities.[22]

In addition, a satellite study of methane emissions from a Mexican pipeline that transports Permian Basin gas from Chihuahua to Durango showed recurrent large releases of methane from several block valve stations along the pipeline.[23] One of these was a three-hour incident releasing up to 550 t $CH_4\,h^{-1}$, and totalling between 1130 and 1380 t of methane—enough to power up to 4,400 Mexican households for a year.[24] The researchers found that this incident was not isolated: they detected plumes from three block valve stations along this pipeline on eleven separate days during the observation period (7 April 2019 to 24 May 2019), with emissions ranging between 140 and 340 t $CH_4\,h^{-1}$ for those events occurring during cloud-free periods.[25]

B. Lack of Public Transparency and Enforcement in Mexico Likely Exacerbate Fugitive Emissions and Accidental Releases of Methane.

The failure to control methane leakages and adhere to reporting guidelines is widespread in Mexico's oil and gas industry. A recent study has shown that actual methane emissions of Mexico's oil and gas sector are twice as high as those reported in the national inventory.[26] Much of this is likely due to underreporting by the hydrocarbon industry. Recent satellite data has shown that Mexico's national oil company, Pemex, has experienced several massive releases of methane gas and large accidental spills that it has failed to report, despite having a requirement to do so under Mexican law.[27] The gas industry has also been slow to comply with recent regulatory

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tale of two regions: methane emissions from oil and gas production in offshore/onshore Mexico, 16 Environ. Res. Lett. 024019 at 6 (2021), https://iopscience.iop.org/article/10.1088/1748-9326/abceeb/meta.

[22] *Id.*

[23] Marc Watine-Guiu et al., *Geostationary satellite observations of extreme and transient methane emissions from oil and gas infrastructure*, 120 Proceedings of the Nat'l Acad. of Sci. e2310797120 (2023), https://www.pnas.org/doi/10.1073/pnas.2310797120.

[24] *Id.*

[25] *Id.*

[26] Lu Shen et al., *supra* note 19.

[27] *See* Itziar Irakulis-Loitxate et al., *Satellites Detect a Methane Ultra-emission Event from an Offshore Platform in the Gulf of Mexico*, 9 Env't Sci. & Tech. Letters 520, 525 (2022), https://doi.org/10.1021/acs.estlett.2c00225; European Space Agency [ESA], Methane emissions detected over offshore platform in the Gulf of Mexico (June 9, 2022),https://www.esa.int/Applications/Observing_the_Earth/Methane_emissions_detected_over_offshore_platform_in_the_Gulf_of_Mexico. Later reporting revealed through a Freedom of Information Act request that "Pemex did not inform Mexico's environmental regulator of [this] methane leak" and that "the regulator had no record of the incident." Stefanie Eschenbacher, *Mexico's Pemex has no record of reporting methane leak from oilfield*, REUTERS, Oct. 6, 2022, https://www.reuters.com/markets/commodities/mexicos-pemex-has-no-record-reporting-methane-leak-oilfield-2022-10-06/.

reforms in Mexico intended to curb methane leakage and fugitive emissions.[28] A recent investigation by CEMDA and other organizations has found that out of 359 companies covered by the regulations, only 13 have submitted an annual report of methane emissions.[29]

Exacerbating this problem is a lack of access to public information that could facilitate the enforcement of methane rules and curb emissions. Federal authorities have denied CEMDA access to company plans for reducing methane emissions, which should be public under federal regulations,[30] citing concerns for national security and trade secrets. Information on proposed LNG projects is similarly difficult to access. The few publicly available databases require specific docket codes to access (which are often only available to the project promotor) and are often lacking technical details, which are either redacted or contained in multiple annexes that are not publicly accessible. CEMDA's attempts to access this information have been blocked and required extensive litigation. Since 2022, CEMDA has submitted 101 requests to Mexican authorities for information on the LNG industry, of which only 12 have been answered.

Because the lack of enforcement and transparency likely contributes to significant underreporting of emissions, it is essential that DOE conduct a comprehensive assessment of U.S. gas exports through Mexican territory using the best available evidence on actual emission rates.

III. DOE's Environmental Justice Analysis Should Consider Impacts to Mexican Communities Affected by the Export of U.S. Natural Gas.

The Biden administration has clearly instructed that "[a]gencies shall make achieving environmental justice part of their missions,"[31] and that they must "identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities, including those related to climate change and cumulative impacts of

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[28] Agencia Nacional de Seguridad Industrial y de Protección al Medio Ambiente del Sector Hidrocarburos [National Agency for Industrial Safety and Environmental Protection in the Hydrocarbon Sector], Disposiciones administrativas de carácter general que establecen los Lineamientos para la prevención y el control integral de las emisiones de metano del Sector Hidrocarburos [General administrative provisions that establish Guidelines for the prevention and integral control of methane emissions from the Hydrocarbon Sector] (Nov. 6, 2018) (**Methane DACG**). These regulations require gas infrastructure operators—including liquefaction plants and gas pipelines (art. 2.III)—to create plans to reduce methane emissions for each installation (arts. 22 & 23) and report actual emissions annually (arts. 93 & 94).

[29] Observatorio Mexicano de Emisiones de Metáno [Mexican Observatory of Methane Emissions], Cumplimiento de las DACGs de Metano [Compliance with the Methane DACGs] (Nov. 2023), https://www.obmem.mx/dacgs-metano.

[30] Methane DACG, *supra* note 27, art. 5.

[31] Exec. Order No. 14008, "Tackling the Climate Crisis at Home and Abroad," 86 Fed. Reg. 7619, 7629 at Sec. 219 (Jan 27, 2021).

environmental and other burdens on communities with environmental justice concerns."[32] In announcing the pause, the Biden administration also clearly recognized how frontline communities in the United States "disproportionately shoulder the burden of pollution from new export facilities,"[33] and the same is true of facilities in Mexico.

Many of the proposed liquefaction plants that will transform U.S. gas into LNG for export will directly impact low-income and marginalized communities in Mexico that are already burdened with industrial pollution. For example, the Commission for Environmental Cooperation has identified fuel oil-burning power plants in Puerto Libertad, Sonora, and Altamira, Tamaulipas—both future sites of LNG plants already with export approvals—as being among Mexico's top ten dirtiest power plants for SO_2, Mercury, $PM_{2.5}$, PM_{10}, and CO_2 emissions.[34]

Many of these projects have also sparked local conflict after failing to obtain a social license from local communities or to consult with Indigenous Peoples. Such is the case regarding a heavy concentration of petrochemical and other industrial plants planned near Indigenous and low-income communities in Topolobambo, Sinaloa (Vista Pacífico LNG),[35] and the construction of the Guaymas-El Oro Pipeline which crossed Indigenous Yaquí territory (the main source of feed gas for Vista Pacífico LNG).[36]

The potential increase in conflict is particularly concerning given the growing trend of attacks against environmental defenders in Mexico. According to CEMDA's records, the past two years have been the deadliest for environmental defenders in Mexico, with 197 documented

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[32] Exec. Order No. 14096, "Revitalizing Our Nation's Commitment to Environmental Justice for All," 88 Fed. Reg. 25251, 25254 at Sec. 3(a)(i) (April 21, 2023).
[33] White House, *supra* note 2.
[34] Comm'n for Env't Coop., North American Power Plant Air Emissions Tables 2.8, 2.14, 2.18, 2.19, and 2.24 (2011), http://www.cec.org/publications/north-american-power-plant-air-emissions-2/.
[35] In Topolobampo, plans for constructing new petrochemical plants have aroused complaints by local Indigenous leaders and community groups and sparked a call for an investigation by the National Senate. *See*, Senate of the Republic, Mexico, 65th Legislature, "Dictamen de la Comisión de Medio Ambiente, Recursos Naturales y Cambio Climático a la Proposición con Punto de Acuerdo por la que el Senado de la República Solicita a Diversas Dependencias de la Administración Pública Federal, Envíen Información sobre el Estado que Guardan las Denuncias, Quejas o Litigios Relacionados con la Planta de Fertilizantes en Topolobampo, Sinaloa," [Opinion of the Committee on the Environment, Natural Resources and Climate Change on the Proposal with Point of Agreement by which the Senate of the Republic Requests Various Agencies of the Federal Public Administration to Send Information on the Status of the Complaints, Complaints or Litigation Related to the Fertilizer Plant in Topolobampo, Sinaloa] (Sept. 22, 2022) https://infosen.senado.gob.mx/sgsp/gaceta/65/2/2022-10-18-1/assets/documentos/Dict_Com_Medio_Ambiente_Fertilizantes_Sinaloa.pdf; EFEverde, "Poblado en noroeste de México lucha contra instalación de planta de amoniaco" [Town in northwestern Mexico fights against ammonia plant development] (Nov. 23, 2022) https://efeverde.com/poblado-mexico-instalacion-planta-amoniaco/.
[36] Comisión Federal de Electricidad, Subdirección de Investigación [Federal Electricity Commission, Research Subdivision], "Conflictos económicos, ambientales sociales y culutrales relacionados al Gasoducto Guaymas-El Oro" [Economic, environmental, social and cultural conflicts related to the Guaymas-El Oro gas pipeline] (May 19, 2022) https://www.cfenergia.com/wp-content/uploads/2023/04/Conflictos-económicos-ambientales-sociales-y-culturales-relacionados-al-Gasoducto-Guaymas-El-Oro.pdf.

attacks in 2022 and 123 in 2023, with at least twenty environmental defenders losing their lives in 2023 alone.[37] Many of the regions targeted for LNG development, such as the states of Sinaloa (Vista Pacífico LNG) and Sonora (Saguaro LNG, AMIGO LNG), have notoriously high security risk due to narcotrafficking groups,[38] which are frequently implicated in attacks against environmental defenders. These significant security risks further exacerbate the disproportionate impacts on fence line communities in Mexico by limiting their ability to participate and raise concerns regarding projects.

The risks LNG export facilities pose to Mexican environmental justice communities is real and made possible only because of DOE's approvals of exports through Mexico, and therefore should form part of DOE's revised analysis.

IV. Conclusions

We urge DOE to incorporate a separate analysis on the contribution of LNG exports through Mexican territory both to climate change and to environmental justice for Mexican communities. This additional analysis is warranted by the significant impact these exports entail and will help DOE meet this administration's climate and environmental justice goals.

Sincerely,

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[37] CEMDA, "Informe sobre la situación de las personas y comunidades defensoras de los derechos humanos ambientales en México, 2023" [Report on the situation of environmental human rights defenders and communities in Mexico, 2023] at 14 https://cemdadefensores.org.mx/wp-content/uploads/2024/04/CEMDA_INFORME2023_DIGITAL.pdf.

[38] The current U.S. State Department travel advisory on Mexico recommends not traveling to Sinoloa and reconsidering travel to Sonora due to violent crime and kidnappings. U.S. State Dep't., Mexico Travel Advisory (Aug. 22, 2023), https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories/mexico-travel-advisory.html.