

# Greenhouse Gas Pollution Estimates of Proposed U.S. Fossil Fuel Infrastructure Projects

*Emissions would be larger than all current U.S. coal power plants combined, moving the United States away from Paris Agreement commitments*

## Summary

Oil Change International sought to quantify the potential lifecycle greenhouse gas (GHG) pollution of two dozen United States fossil fuel infrastructure projects President Joe Biden can prevent from entering into service or halt with executive action. If completed or allowed to continue operation, these projects would significantly increase U.S. GHG emissions. If the Biden Administration does not stop these fossil fuel infrastructure projects, it will be much more difficult to meet its U.S. and global climate goals and commitments, including under the Paris Agreement, and humanity will face increasingly worse domestic and global impacts.

Our research finds that **the 24 projects analyzed would release combined annual greenhouse gas pollution equivalent to approximately 20% of 2019 U.S. emissions.**

This total is equal to the average annual emissions from 404 U.S. coal-fired power plants,<sup>1</sup> larger than all 294 coal plants operating in the continental United States.<sup>2</sup> The vast majority of these potential emissions — equivalent to 17% of 2019 U.S. emissions, or 316 coal power plants — are associated with projects that have not received full federal approval, not started construction, or not finished construction.<sup>3</sup>

The Biden Administration, through its various agencies — including the Army Corps of Engineers, Department of Commerce, Department of Energy, Environmental Protection Agency,

Department of Transportation, and White House Office of Climate Policy — will make decisions on these and additional projects in the next three years. Stopping these fossil fuel infrastructure projects would prevent a drastic increase in GHG pollution at a time when it is imperative to decrease GHG emissions to adhere to domestic and international climate goals and commitments, including the Paris Agreement that President Biden rejoined.

## Methodology

This analysis focuses on pipelines and liquefied natural gas (LNG) export terminals, a scope chosen for several reasons. Oil Change International has completed GHG analyses of various recent proposed pipelines and has durable methodologies for estimating their emissions. In addition, sufficient data is available to develop a straightforward methodology for estimating GHG pollution from LNG export terminals. Finally, these are clear categories of projects for which the Biden Administration can deny permits or end their operations and rescind administrative decisions made by the Trump Administration.

This list of fossil fuel projects subject to executive decisions is not complete, and thus likely undercounts the GHG pollution that might be avoided by the Biden Administration's actions. Oil and coal export terminals are clear examples for which the Biden Administration will face pending

permit decisions, but for which we lack developed calculation methodologies.

For all pipelines, calculated lifecycle emissions include the production, processing, transport, and combustion of the products carried. We use a standard capacity utilization factor of 95%. For oil pipelines, lifecycle emissions were calculated using the emissions intensity of the type of oil the pipeline would carry, as estimated by the Carnegie Endowment's Oil-Climate Index.<sup>4</sup> Fossil gas pipeline sources and assumptions are described in greater detail in our Gas Pipeline Climate Methodology briefing.<sup>5</sup> For pipelines carrying natural gas liquids (NGLs), calculations use carbon dioxide emission factors dependent on the specific mix of molecules carried (propane, butane, etc.), and assume the NGLs carried by the pipeline are combusted.

For LNG export terminals, calculated lifecycle emissions include upstream extraction, processing, domestic pipeline transport, liquefaction, tanker transport, regasification, and combustion. Estimates are based on the full facility capacity. Calculations were derived based on lifecycle LNG export estimates from the National Energy Technology Laboratory,<sup>6</sup> using 20-year global warming potentials for methane, and conversion efficiency of gas-fired electricity generation from the U.S. Energy Information Administration.<sup>7</sup> We report the full emissions estimate for each terminal — an estimated 35% of these emissions would

occur in the United States, with the rest occurring during ocean transport or in export markets.<sup>8</sup>

Our estimates are based on projections that these projects would be additional, meaning we assume the volume of fossil fuels specified would not otherwise be extracted, transported, or combusted if these projects are not built. This assumption is based on several factors, including: 1) many of the fossil fuels analyzed lack other economically viable routes to market; 2) these projects reduce the exploitation cost of oil and gas extraction, incentivizing greater extraction; and 3) even as the market for these fossil fuels declines, the upfront capital cost to build the infrastructure remains greater than the cost to operate it, leading owners to continue to operate the projects to recover their investments while tariffs exceed operating costs. Additionally, we assume no gas from the Mountain Valley Pipeline would be exported through one of the terminals considered, an assumption based on the expected markets for this pipeline.

## **U.S. Greenhouse Gas Pollution**

We utilized an estimated 2019 pollution figure for the United States of 7.315 billion metric tons of carbon dioxide-equivalent (20-year global warming potentials, IPCC AR5), calculated using emissions inventory data from Climate Deck<sup>9</sup> and global warming potentials from the Intergovernmental Panel on Climate Change's *Fifth Assessment Report*.<sup>10</sup>

## Projects Evaluated

Project (fossil fuels carried)	Approximate Location/Route	Estimated GHG Pollution (million metric tons annual CO <sub>2</sub> e, 20-year global warming potentials IPCC AR5)
<i>Pipelines</i>		
Dakota Access / DAPL (oil)	North Dakota to Illinois	101
Line 3 Expansion (tar sands oil)	Alberta to Wisconsin	175
Line 5 (oil, natural gas liquids)	Wisconsin to Ontario	71
Mariner East 2 (natural gas liquids)	Ohio to Pennsylvania	22
Mountain Valley Mainline (fracked gas)	West Virginia to Virginia	89
<b>Subtotal</b>		<b>458</b>
<i>Liquefied Natural Gas (LNG) Export Terminals</i>		
Alaska	Nikiski, AK	105
Cameron Train 4	Hackberry, LA	31
Commonwealth	Cameron Parish, LA	47
Corpus Christi Phase 3	Corpus Christi, TX	51
Delfin	Gulf of Mexico	67
Driftwood	Calcasieu Parish, LA	143
Eagle	Jacksonville, FL	6
Fourchon	LaFourche Parish, LA	26
Freeport Train 4	Freeport, TX	28
G2	Cameron Parish, LA	72
Gulf	Pascagoula, MS	57
Lake Charles	Lake Charles, LA	78
Magnolia	Lake Charles, LA	41
Plaquemines	Plaquemines Parish, LA	104
Pointe	Plaquemines Parish, LA	31



Port Arthur	Port Arthur, TX	70
Gibbstown Logistics Center	Greenwich Township, NJ	26
Rio Grande	Brownsville, TX	140
Texas	Brownsville, TX	21
Subtotal		1144
<b>GRAND TOTAL</b>		<b>1602</b>

## Endnotes

<sup>1</sup> "[Greenhouse Gas Equivalencies Calculator](#)," U.S. Environmental Protection Agency, March 2021. All coal plant estimates come from this calculator.

<sup>2</sup> "[Biggest Coal Plant CO2 Emissions](#)," BTU Analytics, April 2021

<sup>3</sup> Only the Line 3 Expansion, Line 5, and Dakota Access pipelines are in operation.

<sup>4</sup> "[Oil-Climate Index](#)," Carnegie Endowment for International Peace

<sup>5</sup> "[Gas Pipeline Climate Methodology: Calculating Greenhouse Gas Emissions for Natural Gas Infrastructure](#)," Oil Change International, February 2017

<sup>6</sup> "[Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States](#)," National Energy Technology Laboratory, September 2019

<sup>7</sup> "[Natural gas-fired electricity conversion efficiency grows as coal remains stable](#)," U.S. Energy Information Administration, August 2017

<sup>8</sup> "[Sailing to Nowhere: Liquefied Natural Gas Is Not an Effective Climate Strategy](#)," Natural Resources Defense Council, December 2020

<sup>9</sup> "[Climate Deck](#)," Rhodium Group

<sup>10</sup> "[Anthropogenic and Natural Radiative Forcing](#)," *Fifth Assessment Report*, Working Group I, Intergovernmental Panel on Climate Change, September 2013

*[Oil Change International](#) is a research organization focused on exposing the true costs of fossil fuels and facilitating the ongoing transition towards clean energy.*

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