UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Certification of New Interstate Natural Gas Facilities *Docket No. PL18-1-000*

SUPPLEMENTAL COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL

The Natural Resources Defense Council (NRDC) appreciates the supplemental comment opportunity (Supplemental NOI)[1] provided by the Federal Energy Regulatory Commission (Commission or FERC) to evaluate its 1999 Natural Gas Certificate Policy Statement (Policy Statement), which guides the Commission's reviews of interstate gas pipeline projects.[2]

NRDC is a signatory to a more comprehensive set of comments submitted by a coalition of public interest organizations (Coalition Comments). This separately submitted comment addresses specifically the "Climate Test" referenced in the Coalition Comments, which is an approach being developed by NRDC to quantifying the consistency of individual infrastructure projects with climate goals.

In these supplemental comments, we will discuss the Climate Test in responses to questions A10(a) and (c); C4(a)-(c) and C8; and E1 and E4 (sic) (E5) in the Supplemental NOI.[3] To help ensure clarity, we will explain the Climate Test generally in Section 1 below, and discuss it in response to the identified questions in Section 2. As will become clear in the

[1] *Certification of New Interstate Natural Gas Pipeline Facilities,* Notice of Inquiry, 174 FERC ¶ 61,125 (2021), Docket No. PL18-1-000 (hereinafter Supplemental NOI).

[2] *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227 (1999), *clarified*, 90 FERC ¶ 61,128 (2000), *further clarified*, 92 FERC ¶ 61,094 (2000) (hereinafter Policy Statement).

[3] The Supplemental NOI includes a typographical error that accidentally identified questions E4-E8 as "E3-E7." *See* Supplemental NOI at 21-22.

discussion, the Climate Test can be used alongside the Social Cost of Carbon (SCC) and the Social Cost of Methane (SCM). The Climate Test is designed to serve a different function from either of these two monetization approaches, and hence is not intended to supplant them.

NRDC has nearly completed development of the Climate Test and is preparing to submit it to a peer-reviewed scientific journal for publication. In the meantime, we are prepared to explain our work, both in this comment and in meetings with interested agencies; and have developed a user-friendly tool based on the Test that is available for immediate implementation, We hope to have the chance to speak with you further about the Climate Test tool, and discuss how to apply it in practice, after FERC staff has the opportunity to review these comments.

SECTION 1: OVERVIEW OF THE CLIMATE TEST

A. The Problem: Lack of a Tool to Determine Consistency of Individual Projects with Climate Goals

Much has been written in the scientific literature[4] (and in our Coalition Comments) about the need to hold warming to 1.5°C in order to avoid the most catastrophic impacts of climate change. Much has also been written about aggregate pathways to achieve that goal – *i.e.*, the overall extent to which emissions from fossil fuels need to be curtailed in order to hold warming to that limit.

However, as implicitly recognized by FERC's perceptive questions in the Supplemental NOI, there is currently no recognized means to determine whether any given fossil fuel infrastructure project is consistent with climate goals. It is clear that, generally speaking,

[4] 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., eds. (Geneva: IPCC, 2018), http://www.ipcc.ch/report/sr15/.

business as usual authorization of new fossil fuel infrastructure is not consistent with creating the kind of energy system that will limit warming to 1.5°C.[5] However, when FERC is presented with the option to authorize any given pipeline, LNG terminal, or other project, it currently lacks the means to quantitatively determine the significance of that project to the nation's climate goals. Certainly, it can and should apply the SCC and the SCM to monetize the cost of any greenhouse gas (GHG) emissions associated with such project. But those monetization tests are not designed to tell decisionmakers whether the GHG emissions and their monetized costs are significant, or inconsistent with a 1.5°C warming-limited world.

Existing approaches to evaluating the significance of GHG emissions in the context of individual projects are deeply deficient analytically, and do not get to the consistency question in any meaningful way. Generally speaking, existing approaches tend to assess GHG emissions by comparing an individual project's emissions to much larger annual emission rates (*e.g.*, global, national, or state, or sectoral), rather than addressing them in the context of our climate goals. This type of comparison provides little useful context for the important task of guiding our energy system transition toward achieving those goals; and also typically leads to the flawed conclusion that the project's climate impacts are not significant.

Current climate analyses of fossil fuel projects conducted by FERC and other agencies, which focus on these status quo comparisons, are plagued by at least three fundamental flaws:

1) **Unhelpful comparisons.** Instead of evaluating a project based on its relationship to climate goals, decisionmakers (where they have evaluated the GHG issue at all) have generally taken the approach of comparing project emissions to status quo emissions –

[5] SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP. "The Production Gap: The Discrepancy between Countries' Planned Fossil Fuel Production and Global Production Levels Consistent with Limiting Warming to 1.5°C or 2°C," 2019. http://productiongap.org/

i.e., comparing global or national annual GHG emissions to the project's annual GHG emissions, and leaving it at that. But comparing a project's annual emission rates to current global emission rates can make even the most behemoth project seem small, leading to the common misconception that the particular project being evaluated is a mere drop in the proverbial emissions bucket. But fossil fuel projects do not exist in isolation – neither in space nor time. Each new drop becomes part of an already raging stream from the tap. And the bucket it pours into is far from empty. All projects are part of a larger energy system, filled mostly will similarly polluting fossil-fueled infrastructure, whether for power generation, transportation, industry, or buildings. If decisionmakers only judge the individual droplets in isolation, they'll miss the message of the rising waterline: this bucket is about to overflow, and it is past time to stop cranking the tap.

2) **Incomplete accounting.** Current project-level analyses commonly neglect interconnectedness by considering only direct emissions from construction and operation of the project at hand rather than life cycle emissions from related upstream and/or downstream activities it enables. Fossil fuel projects are part of an interconnected supply chain, spanning from upstream production and processing, to midstream transport, and ultimately downstream combustion for use as energy. Each component influences the others, either directly through supplying or consuming products, or indirectly through effects on market pricing. Failure to recognize these systemic features can lead to flawed conclusions about a project's significance as a player in that system.
3) **Unsupported determinations.** Current project-level analyses—even the otherwise very useful SCC and SCM—do not use any relevant and objective basis when determining

climate emissions significance. Any comparison of project emissions to a larger pool of emissions, even one refined to address the sorts of pitfalls described above, is by nature insufficient to interpret the significance of any new additional drop in the bucket. A better approach, and one rooted in our climate goals, is to consider the purported need or benefit driving the proposed project. Why is this project being built, and what role does it play in a 1.5°C future? If the project is the last of its kind needed toward meeting our energy needs for years to come, then perhaps it is a worthwhile use of our remaining constrained carbon budget. However, if the project's energy contribution is itself a relatively small drop in the bucket of energy need, or easily substituted with cleaner energy alternatives, it would be reasonable to conclude instead that its emissions represent a significant deviation from our future energy system goals.

The lack of a tool specifically designed to overcome these flaws, and assess an individual project's consistency with climate goals, continually undercuts the usefulness of environmental review of fossil fuel projects. While the National Environmental Policy Act (NEPA) requires that agencies assess the significance of climate impacts from any new fossil fuel projects they have authority to authorize,[6] the Commission has repeatedly stated in legal orders that it lacks appropriate tools to make this kind of determination.[7]

B. The Climate Test: An Objective, Analytical Tool for Evaluating Climate Significance of Fossil Fuel Infrastructure Projects in terms of Alignment with Climate, Energy System, and Environmental Justice Goals

The Climate Test developed by NRDC is designed to address the analytical gap described above. The Test is a novel multi-criteria decision support tool designed to objectively evaluate

[6] See, e.g., 40 CFR § 1501.3.

[7] See, e.g., *Jordan Cove Energy Project, L.P., Pacific Connector Gas Pipeline, LP*, "Order on Rehearing and Stay," FERC Docket Nos. CP17-494-001, CP17-495-001, 171 FERC ¶ 61,136 (May 22, 2020).

the significance of individual fossil fuel projects with respect to achieving our goal to limit warming to 1.5°C. Instead of the currently prevalent practice of comparing a project's direct emissions to status quo state, national, or global greenhouse gas emissions, the Climate Test uses a set of quantitative metrics that assess whether, and to what degree, a project is consistent with the constraints and characteristics of an equitable decarbonizing world.

The Climate Test uses known data, or where necessary representative assumptions, about the project's characteristics (*e.g.*, life cycle greenhouse gas emissions, fuel type, capital and operating costs, demand sectors, etc.); as well as information regarding current and future conditions that are projected from robust climate and energy systems modeling studies (*e.g.*, carbon budgets, committed emissions from existing sources, energy demand, and fuel prices, etc.). These data form the inputs for a suite of evaluation and decision metrics, organized into three modules: environmental, economic, and social (see Table 1). Each module has been designed to assess a different set of relevant constraints and characteristics of a warming-limited world over the lifetime of the project.

The environmental module tests whether the project's life cycle emissions are, both, consistent with a carbon budget for limiting warming to 1.5°C and in balance with its contribution within a shifting future energy demand. The economic module tests whether the project is consistent with evolving energy markets by assessing whether, and when, the project could be susceptible to becoming a "stranded asset" due to lack of need, profitability, or competitiveness. The social module tests whether the project is consistent with principles of climate and environmental justice by assessing who is predominantly affected, what their existing environmental burdens are, and how the project may add to those burdens. Each quantitative test metric is structured to yield a simple, and easily interpretable result: ≤ 1 for

projects that are consistent with the 1.5°C goal and >1 for projects that are not. Further, how far a metric's score is from the decision point of 1 communicates that project's degree of compatibility with the 1.5°C goal.

Table 1. Key elements of the Climate Test.

Module	Assessment	Scope	Example data sources
Environmental	**Are the project's life cycle emissions consistent with the 1.5°C carbon budget and in balance with its future contribution toward meeting 1.5°C energy demand?**	National	Documentation of project characteristics; IPCC for 1.5°C carbon budget/emissions reduction trajectory; Climate and energy systems modeling for projections of total energy demand (e.g. GCAM-USA); Peer-reviewed scientific studies for data on committed emissions from existing infrastructure, and life cycle greenhouse gas emissions factors; EIA for breakdown of fuel end uses
Economic	**Is the project at risk of becoming a stranded asset in a 1.5°C world?** Determined via the following factors: (i) whether the project is likely to be continually needed; (ii) whether the project is likely to be continually profitable and competitive with clean energy alternatives.	Fuel market-specific	Climate and energy systems modeling projections of energy supply and demand by fuel type (e.g. GCAM-USA); EIA for fuel price data; Peer reviewed scientific studies (e.g. Kaufman et al 2020)[8] for near-term to net-zero carbon price; Lazard reports for levelized cost of energy and storage
Social	**Is the project consistent with principles of climate and environmental justice?** Determined via the following factors: (i) whether the affected area is populated by historically marginalized or vulnerable communities; (ii) whether the affected area is already overburdened by environmental pollutants; (iii) whether the project will add significantly to pollution burdens (such as PM 2.5 levels) in the affected community.	Local (project footprint)	EPA EJSCREEN: environmental and demographic index data; EPA AERSCREEN modeling for PM2.5 concentration effects of project

[8] Kaufman, Noah, et al, *A Near-Term to Net Zero Alternative to the Social Cost of Carbon for Setting Carbon Prices*, 20 Nature Climate Change 1010 (Nov. 1, 2020) *available at* https://doi.org/10.1038/s41558-020-0880-3.

C. Application of the Climate Test

The Climate Test helps to reframe climate and energy policy discussions in objective and scientific terms, particularly for subsectors that have been analytically neglected (*i.e.*, extraction, transportation, and refining).[9] It is designed to inform and enable a more efficient transition away from fossil fuels, avoiding catastrophic climate impacts as well as overinvestment in incompatible fossil infrastructure and unfair burdens on already vulnerable communities.

The Climate Test was developed for use by multiple actors involved in fossil fuel project decision-making. First, it provides a toolkit for regulators charged by law with evaluating the climate significance of proposed new projects, such as the Commission.[10] Second, the tool will provide climate policymakers with detailed guidance to inform new requirements that any fossil fuel projects not yet covered by environmental review requirements must face a climate test. Third, the tool can guide both investors and policymakers in determining whether proposed projects are economically viable in a 1.5°C world. Finally, the Climate Test can be a valuable public information tool, empowering environmental advocates and affected communities to identify problematic projects and take action to oppose them.

SECTION 2: RESPONSES TO SUPPLEMENTAL NOI QUESTIONS

This section addresses specific questions presented in the NOI to which NRDC believes the Climate Test is specifically relevant. For each question, we will provide brief detail about how the Climate Test provides answers and useful analysis on the subject; and, as appropriate,

[9] Georgia Piggot, Cleo Verkuijl, Harro van Asselt & Michael Lazarus (2020) Curbing fossil fuel supply to achieve climate goals, Climate Policy, 20:8, 881-887, *available at* https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

[10] The Climate Test will be accompanied by an Excel spreadsheet based "plug and play" tool that will allow such regulators to readily apply the test by inputting data concerning the project and affected area.

how the Commission can use the tool to address the questions posed. A copy of this tool and description of its methodology can be made available to FERC staff upon request.

A. Potential Adjustments to the Commission's Determination of Need

Question A10(a): Should the Commission consider adjusting its assessment of need to examine if existing infrastructure can accommodate a proposed project (beyond the system alternatives analysis examined in the Commission's environmental review)? If so, how?

Yes, for the reasons expressed in our Coalition Comments, considering whether existing infrastructure could meet demand for the proposed project is both relevant to FERC's mission and required under the National Gas Act's charge to deny projects that are not (or will not) be "required by the present and future public convenience and necessity."[11] The Climate Test tool includes analysis that accounts for existing infrastructure in two places: the environmental module and the economic module.

In the environmental module, the project's emissions significance is determined by comparing the share of remaining carbon budget it consumes—after accounting for existing infrastructure emissions—to the share of future energy demand it supplies, after existing sources of supply are factored in. In this way, need for energy is defined as only the gap that remains after existing infrastructure is ruled out.

Additionally, the economic module was designed to screen for projects that may not be needed or economically viable in a 1.5°C world. It contains a specific evaluation metric on energy product need, where existing sources of potential gas supply to the project's target market are compared to future demand for gas in a 1.5°C energy system to identify if and when potential

[11] 15 U.S.C. § 717f(e).

shortfalls would emerge. In this way, need for gas is defined as only the gap that remains after existing infrastructure is ruled out.

> *Question A10(c): Should the Commission consider adjusting its assessment of need to examine if reliance on other energy sources to meet future demand for electricity generation would impact gas projects designed to supply gas-fired generators? If so, how?*

Yes, to ensure that the development of gas supplies is "orderly," as charged under the National Gas Act, the Commissions should consider the potential for other sources of energy to meet future demand in its assessment of need. As stated in the Coalition Comments, consideration of applicable climate targets and associated energy demand projections, including the role of natural gas, would help to evaluate determination of need more robustly, and the Climate Test tool embeds this kind of consideration in its analysis through the economic module.

As described in our answer to Question A10(a), *supra*, the Climate Test tool will include an evaluation metric on energy product need after existing sources of supply are ruled out. Additionally, the economic module will include a metric that explores economic viability for a proposed project in terms of its ability to remain profitable and competitive in a 1.5°C energy system, where non-fossil energy sources will compete to meet future electricity demand. Together, this information can help determine whether there is likely to be enduring need for the proposed project, even in an evolving energy market with constrained carbon budget, which will reduce the likelihood of becoming an uneconomic, stranded asset.

B. The Commission's Consideration of Environmental Impacts

> *Question C4(a): In conducting an analysis of the impact of a project's GHG emissions, how could the Commission determine the significance of these emissions' contribution to climate change?*

As described in Section 1, the Commission can use the Climate Test tool to determine the significance of GHG emissions' contribution to climate change through the environmental module. The Climate Test tool proposes evaluating significance of a project based on carbon budgets for stated climate targets of limiting warming to 1.5°C and energy demand, accounting for existing sources of emissions and energy each. The environmental metric is designed to specifically assess emissions significance of a project by measuring its balance of GHG emissions "cost" within this limiting warming context against its energy "benefit" provided to the evolving energy system. The equation generates an easy-to-interpret score: if the solution is greater than 1, then the project is significant because building it is inconsistent with the balance of emissions and energy necessary to meet our climate goals.

> *Question C4(b): Should significance criteria be based on a specific fraction of existing carbon budgets in international agreements; state or regional targets; a specific fraction of natural carbon sinks; or other metrics? If so, how and why would that basis be appropriate*? *Alternatively, should the Commission focus its analysis on GHG emission impacts on global climate metrics (e.g., CO2 levels, ocean acidification, sea level rise) or regional impacts (e.g., snowpack, storm events, local temperature changes)? If so, how and why would that basis be appropriate*?

In Section 1A, we explained why determining significance of GHG emissions for an individual project should be rooted in comparisons that are objective and tied to climate goals rather than status quo performance. The carbon budget is a clear and rational basis for this analysis, because a project's future GHG emissions can be directly compared to it as a measure of future emissions; and because there is such strong scientific evidence of a direct

(approximately linear) relationship between cumulative carbon emissions over time and global temperatures driving climate change.[12]

Accordingly, the Commission should use carbon budgets as part of establishing its significance criteria. However, comparison of project emissions to climate budgets cannot be done in a vacuum. Carbon budgets need to be considered in conjunction with other metrics that are also objective and tied to climate goals – since it is not meaningful, as explained in Section 1A, to merely determined a project's fixed fraction of a climate budget, and then deem that fraction to be large or small for other unconnected reasons. The Climate Test tool proposes an integrated methodology for considering climate budgets.

Specifically, the Climate Test tool proposes evaluating significance of a project on the basis of carbon budgets for stated climate targets of limiting warming to 1.5°C. Integrated assessment models used by climate and energy systems scientists outline the carbon emissions trajectory associated with such a temperature target. For a warming limit of 1.5°C by the end of the century, results have shown the central trajectory as a decline to net-zero emissions by 2050.[13] This trajectory can be applied at the national level to offer a national carbon budget for net-zero by 2050.

The Climate Test then uses a two-step process to determine significance of a project's emissions. First, the Climate Test tool compares the project's full lifetime, life cycle emissions to the remaining carbon budget trajectory, accounting for committed present and future emissions from existing infrastructure over the course of the project's lifetime. Next, the Test establishes

[12] Rogelj, Joeri, Piers M. Forster, Elmar Kriegler, Christopher J. Smith, and Roland Séférian. "Estimating and Tracking the Remaining Carbon Budget for Stringent Climate Targets." *Nature* 571, no. 7765 (July 2019): 335–42. https://doi.org/10.1038/s41586-019-1368-z.

[13] See footnote 4.

the significance of this share of remaining carbon budget consumed by the project by comparing that share to the share of remaining energy demand the project will meet (rather than simply comparing the project's carbon budget share to a fixed value). In this way, the Test measures significance as an integrated check of consistency with both the carbon emissions constraints of the carbon budget for climate goals, and the evolving need for energy in a system associated with meeting those goals.

Question C4(c): What would be an appropriate GHG climate model for use on a project-level basis?

The Climate Test tool does not propose to directly evaluate a single project through adding it to an existing climate model. Rather, the tool would use the constraints and characteristics of existing climate model run scenarios, with carbon budgets linked to the desired warming target and reasonable expectations about future energy system technology, to evaluate a proposed project's alignment. If the project will contribute more emissions per unit of energy it provides than is consistent with what these models suggest is capable of creating a 1.5°C energy system, then it is not compatible with that climate target; and its impacts are hence significant.

Question C8: Are there alternatives to the SCC tool that the Commission should consider using? If so, how could the Commission use those tools?

Yes. NRDC developed the Climate Test to serve a distinct and complementary purpose to the SCC and social cost of GHGs more generally. Thus, the Test is not so much an alternative to the SCC as a supplement to it, designed to answer questions that the SCC is not.

SCC and the SCM are valuable because they enable FERC to monetize the cost of GHG emissions authorized by any of its decisions in economic terms. This ability is particularly essential in situations where proponents of a decision that will result in increased gas use are

touting the purported economic benefits of facilitating such gas use – whether in terms of employment gains, increased tax revenue, or general economic betterment.

The social cost of GHG metrics are not, however, designed to provide a benchmark for the significance of GHG emissions or determine their consistency with climate goals. They assign a dollar figure to climate impacts, but are not set up to provide context as to whether that dollar figure is significant from a decision-making perspective; and the dollar figure standing alone cannot tell us whether the emissions and their associated costs are consistent with a 1.5°C warming world.

Both the social cost of GHGs and the Climate Test assess the impacts of gas use in economic terms, as the Climate Test contains an economic module in addition to the emissions module. However, the two approaches ask entirely different economic questions. The social cost of GHGs methodology assesses the monetized cost of the externalities associated with fossil fuel use, whereas the Climate Test's economic module asks whether a decision is economically viable in a 1.5°C consistent energy system, so as not to risk creating a stranded asset. Accordingly, both the social cost of GHGs and the climate test should be applied in FERC decisions moving forward, including as appropriate in NEPA review and determinations of public interest and necessity.

C. The Commission's Considerations of Effects on Environmental Justice

Question E1: Should the Commission change how it identifies potentially affected environmental justice communities? Why and if so, how? Specifically, what criteria should the Commission consider?

The Commission can use the results of the social module of the Climate Test to provide one more set of information to factor into its identification of potentially affected environmental justice communities. Application of this Climate Test module must never be used to substitute or

undermine other directives for community engagement, pursuant to NEPA or otherwise. Rather, the opposite effect is intended—the resulting information should only be used to expand protective efforts and stakeholder engagement, not restrict it.

In this vein, and like all other aspects of the test, these social module metrics represent a minimum default, rather than an upper bound, to what can and should be assessed in environmental reviews. To the extent better information is or becomes available to measure any aspect of environmental justice addressed in the test, that information should be used (*e.g.*, improved versions of EJSCREEN, more comprehensive State-level screening tools, additional community-driven tools). But in the absence of more stringent or community-preferred metrics, the Climate Test tool is available to guide decision-making by providing a straightforward method for interpretation based on nationally-available, quantitative data.

> *Question E4 (sic) (E5):When evaluating disproportionately high and adverse effects on environmental justice communities, should the Commission change how it considers population-specific factors that can amplify the experienced effect, such as ecological, visual, historical, cultural, economic, social, or health factors? If so, how? Should the Commission change how it considers multiple or cumulative adverse exposures and historical patterns of exposure to pollution or other environmental hazards? If so, how? How can the Commission obtain high-quality information about cumulative impacts (e.g., data on cancer clusters and asthma rates)?*

The social module of the Climate Test addresses this question in part by treating demographic vulnerability factors, such as the disproportionate presence of historically marginalized populations, as an independent criterion for rejecting siting of polluting fossil fuel infrastructure, regardless of the outcome of the other two social metrics (existing pollution burden and pollution additivity). An underlying principle applied in developing the social module is that these historically marginalized populations should not be subject to additional pollution burdens.

With regard to cumulative adverse exposures, and the need for high-quality information about them, the Climate Test makes use of available data that are useful for this purpose, such as EPA's EJSCREEN, which provides 17 different datapoints on demographic and environmental pollution indicators for each census block group in the country. The Climate Test reports decision metrics based on the combined effects of the demographic indicators and the combined effects of the environmental pollution indicators for each census block group along the proposed footprint of the project. Data are also provided comparing the affected census block group's characteristics to the state as a whole.

Conclusion

We appreciate the opportunity to offer supplemental comment regarding the Commission's review of proposed gas pipeline projects and look forward to continuing to work with the Commission on these important issues. We are happy to provide further information concerning the Climate Test upon request.

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