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CLIMATE CHANGE, FERC, AND NATURAL GAS PIPELINES:

The Legal Basis for Considering Greenhouse
Gas Emissions Under Section 7 of the
Natural Gas Act

By Romany M. Webb

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ABSTRACT

As the federal agency charged with overseeing the interstate transportation of natural gas, the Federal Energy Regulatory Commission (“FERC”) has recently faced growing criticism over its approval of new pipelines. Critics have lambasted FERC for failing to adequately consider the climate change impacts of pipeline development, particularly the greenhouse gas emissions associated with “upstream” natural gas production and “downstream” use. The D.C. Circuit recently weighed in, holding that the National Environmental Policy Act (“NEPA”) requires consideration of downstream greenhouse gas emissions, at least in some circumstances. The precise scope of that requirement continues to be debated before FERC, in the courts, and among scholars. While recognizing the importance of that debate, this Article approaches the issue from a different perspective, exploring whether the Natural Gas Act (“NGA”) establishes an independent requirement for FERC to consider climate change impacts, including upstream and/or downstream greenhouse gas emissions.

Under section 7 of the NGA, before approving any interstate natural gas pipeline, FERC must find that it “is or will be required by the present or future public convenience and necessity.” FERC’s finding must be based on an evaluation of all factors bearing on the public interest which necessitates a broad-ranging assessment of the need for pipeline development, its benefits, and costs. This Article contends that, as part of its assessment, FERC must account for the full climate change and other environmental impacts of pipeline development. To support that contention, the Article offers an in-depth look at the history of section 7 of the NGA, and its interpretation by the courts. It also provides a comprehensive analysis of how environmental factors are dealt with by FERC, showing that the Commission historically viewed downstream environmental impacts as a key factor to be considered under section 7 of the NGA, but now largely ignores them.

The courts are yet to fully address whether section 7 of the NGA requires FERC to consider upstream and/or downstream environmental impacts when certifying pipeline projects. However, the existence of such a requirement is strongly supported by the language and history of section 7, as well as the case law and administrative materials interpreting it. Indeed, FERC cannot fulfill its statutory obligation under section 7 to ensure pipeline development is required by the public convenience and necessity, without considering upstream and downstream impacts. FERC must,

therefore, change its current approach to evaluating pipeline projects. That change could have significant implications for the approval of future projects since, after accounting for environmental impacts, FERC may be unable to conclude that a project is required by the public convenience and necessity.

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1. INTRODUCTION

The U.S. natural gas industry has undergone profound changes over the last two decades, with technological advances—most notably the combination of horizontal drilling and hydraulic fracturing—enabling the development of vast gas reserves, trapped in shale rock formations. Historically considered uneconomic to develop, in 2000 shale gas accounted for less than two-percent of U.S. natural gas production.¹ By 2017, the figure was over fifty-seven percent,² and forecast to continue rising.³ This so-called “shale revolution” has boosted total natural gas production, which grew by approximately thirty-eight percent from 2000 to 2017,⁴ driving prices down.⁵ As a result, natural gas has become more cost competitive as a fuel in electricity generation and other applications, contributing to its substitution for coal. Between 2000 and 2017, electricity generation using natural gas increased by over 115 percent, while coal-fired generation declined by nearly thirty-nine percent.⁶

This shift has had important public health and environmental benefits because, compared to electricity generation using coal, natural gas-fired generation results in fewer emissions of

¹ ZHONGMIN WANG ET AL., A RETROSPECTIVE REVIEW OF SHALE GAS DEVELOPMENT IN THE UNITED STATES: WHAT LED TO THE BOOM? 1 (2013), <https://perma.cc/87B3-GD8D>.

² Energy Information Administration (“EIA”), *Natural Gas Gross Withdrawals and Production*, NATURAL GAS, <https://perma.cc/3NKD-XCL2> (last updated April. 30, 2019).

³ EIA, ANNUAL ENERGY OUTLOOK 2019 WITH PROJECTIONS TO 2050 76 (2019), <https://perma.cc/HVN4-2RMA> (forecasting that tight and shale resources will account for nearly ninety-percent of total dry natural gas production in the U.S. by 2050).

⁴ EIA, *U.S. Natural Gas Gross Withdrawals*, NATURAL GAS, <https://perma.cc/X7L3-FXJ4> (last updated Apr. 30, 2019).

⁵ EIA, *Henry Hub Natural Gas Spot Price*, NATURAL GAS, <https://perma.cc/J7FE-FDC6> (last updated May 1, 2019) (indicating that prices reached a high of \$13.42 per million British thermal units (“Btu”) in October 2005, but subsequently declined to \$2.95 per million Btu in March 2019).

⁶ EIA, APRIL 2019 MONTHLY ENERGY REVIEW 125 (2019), <https://perma.cc/7P2B-5FAN> (indicating that, in 2000, 1,966,265 million kilowatt hours (“kWh”) of electricity was generating using coal and 601,038 million kWh using natural gas, whereas in 2017, 1,205,835 million kWh of electricity was generated using coal and 1,296,415 million Kwh using natural gas). Demand for natural gas, including for electricity generation, is forecast to plateau and possibly decline in coming decades. See e.g., International Energy Agency, *Outlook for Natural Gas: Excerpt from World Energy Outlook 2017* iii & 449 (2018), <https://perma.cc/98PD-FWQ4>; ExxonMobil, *2018 Outlook for Energy: A View to 2040* 49 (2018), <http://perma.cc/HCG4-GJ3C>.

mercury and other air toxins.⁷ It also emits approximately half as much climate-damaging carbon dioxide as coal-fired generation.⁸ Nevertheless, natural gas is far from “climate-friendly,” with its combustion emitting approximately 117 pounds of carbon dioxide per million British thermal units (“Btu”) of energy produced.⁹ Moreover, natural gas production and transportation are also major sources of methane,¹⁰ accounting for over one-quarter of total U.S. emissions in 2017.¹¹

Recognizing this and emphasizing the need to dramatically reduce greenhouse gas emissions, in its Mid-Century Strategy for Deep Decarbonization, the Obama administration argued that “a rapid phase-out of . . . natural gas is required” (at least unless carbon capture and sequestration technologies become widely available).¹² However, that view is not shared by the Trump administration which has sought to boost natural gas production and use, including by accelerating the permitting of new pipelines and other infrastructure, purportedly needed to “efficiently, reliably, and cost effectively transport” gas to domestic and international markets.¹³

⁷ RICHARD K. LATTANZIO ET AL., CONGRESSIONAL RESEARCH SERVICE, METHANE: AN INTRODUCTION TO EMISSION SOURCES AND REDUCTION STRATEGIES 2 (2016), <https://perma.cc/6NWV-AG4C>.

⁸ EIA, *How Much Carbon Dioxide Is Produced When Different Fuels Are Burned?* FREQUENTLY ASKED QUESTIONS <https://perma.cc/5GM2-CHV4> (indicating that the coal combustion emits 228.6 pounds of carbon dioxide per million Btu, while natural gas combustion emits just 117.0 pounds).

⁹ *Id.*

¹⁰ Methane is a highly potent greenhouse gas, estimated to trap at least eighty-four times more heat in the earth’s atmosphere than carbon over a twenty-year time horizon, on a pound-for-pound basis. See Rajendra K. Pachauri et al., *Climate Change 2014: Synthesis Report*, in FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 87 (Rajendra K. Pachauri et al. eds., IPCC 2014), <https://perma.cc/DK4M-FBRL>. Other studies have found the twenty-year global warming potential of methane to be even higher. See e.g., Robert W. Howarth et al., *Methane and the Greenhouse Gas Footprint of Natural Gas from Shale Formations*, 106 CLIMATE CHANGE 679, 683 (2011).

¹¹ ENVIRONMENTAL PROTECTION AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2017 ES-6 – ES-8 (2019), <https://perma.cc/96VK-WSHJ> (estimating total methane emissions in 2017 at 656.3 million metric tons of carbon dioxide equivalent, of which natural gas systems were responsible for 165.6 million metric tons). Other studies suggest that methane emissions from natural gas systems are even higher. See e.g., Ramón A. Alvarez et al., *Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain*, SCIENCE (June 21, 2018).

¹² WHITE HOUSE, UNITED STATES MID-CENTURY STRATEGY FOR DEEP DECARBONIZATION 33 (2016), <https://perma.cc/56U8-XZSE>.

¹³ WHITE HOUSE, FACT SHEET: PRESIDENT DONALD J. TRUMP IS PAVING THE WAY FOR ENERGY INFRASTRUCTURE DEVELOPMENT, <https://perma.cc/5B4H-AA3C> (Apr. 10, 2019).

The Federal Energy Regulatory Commission (“FERC” or “Commission”) has primary responsibility for approving pipelines used in the interstate transportation of natural gas (“interstate pipelines”).¹⁴ Under section 7 of the Natural Gas Act (“NGA”), any person wishing to construct or extend an interstate natural gas pipeline must apply to FERC for a certificate of public convenience and necessity which, as the name suggests, can only be issued where the Commission determines that the pipeline “is or will be required by the present or future public convenience and necessity.”¹⁵ To make that determination, FERC must “evaluate all factors bearing on the public interest”¹⁶ which necessitates a broad-ranging assessment of the need for pipeline development, its benefits, and costs.¹⁷ FERC has described the assessment as involving two separate reviews, one of which focuses on the economic consequences of pipeline development, and the other on its environmental impacts.¹⁸ FERC has indicated that it considers the findings of both reviews when assessing whether pipeline development is required by the public convenience and necessity under section 7 of the NGA.¹⁹

FERC’s approval of pipeline projects has come under increased scrutiny in recent years, primarily due to concerns that expanding transportation capacity will lead to greater production and use of natural gas, and associated greenhouse gas emissions.²⁰ Debate has raged both within and outside FERC over whether, and if so how, the Commission should consider the greenhouse gas emissions associated with “upstream” natural gas production and “downstream” use when

¹⁴ 15 U.S.C. § 717 (authorizing FERC to regulate, among other things, “the transportation of natural gas in interstate commerce”).

¹⁵ *Id.* § 717f.

¹⁶ *Atlantic Refining Co. v. Public Service Comm’n*, 360 U.S. 378, 391 (1959), *affirmed in Transcontinental*, 365 U.S. at 8.

¹⁷ Statement of Policy, Certification of New Interstate Natural Gas Pipelines, 88 FERC 61,227 (Sep. 15, 1999), *clarified* 90 FERC 61,128 (Feb. 9, 2000), *further clarified* 92 FERC 61,094 (Jul. 28, 2000) [hereinafter 1999 Policy Statement].

¹⁸ *Id.* at 61,747 (indicating that economic and environmental impacts will be considered “separately”). *See also* Order Clarifying Statement of Policy, Certification of New Interstate Natural Gas Pipelines, 90 FERC 61,128, 61,397 (Feb. 9, 2000) (stating that the “environmental and economic review of a proposed project will . . . proceed concurrently”).

¹⁹ Notice of Inquiry, Certification of New Interstate Natural Gas Facilities, 2018 FERC LEXIS 731, 10-11 & 78 (Apr. 19, 2018) [hereinafter “2018 Notice of Inquiry”].

²⁰ *See e.g.*, Earthjustice, *Stopping Dirty Energy Infrastructure Investments*, OIL AND GAS DRILLING, <https://perma.cc/CZ38-XTKQ> (last visited May 8, 2019).

approving new pipelines.²¹ In several recent approvals, FERC has refused to consider upstream and downstream emissions (except in limited circumstances),²² prompting court challenges from environmental groups and others who assert that such emissions must be considered under the National Environmental Policy Act (“NEPA”).²³ A number of scholars have also weighed in, debating the scope of FERC’s NEPA obligations.²⁴ Comparatively little attention has, however, been devoted to FERC’s obligations under the NGA.²⁵ That is the focus of this Article.

²¹ See e.g., *Dominion Transmission, Inc., Order Denying Rehearing*, 163 FERC 61,128 (May 18, 2018) [hereinafter May 2018 Order].

²² See e.g., *id.* at 61,699-61,701.

²³ See e.g., *Sierra Club v. FERC*, No. 16-1329 (D.C. Cir. filed Sep. 20, 2016); *Appalachian Voices v. FERC*, No. 17-1271 (D.C. Cir. filed Jan. 1, 2018); *Otsego 2000 v. FERC*, No. 18-1188 (D.C. Cir. filed July 16, 2018); *Birckhead v. FERC*, No. 18-1218 (D.C. Cir. filed Aug. 8, 2018); *Atlantic Coast Pipeline, LLC v. FERC*, No. 18-1224 (D.C. Cir. filed Aug. 20, 2018). Some recent court challenges have also alleged that FERC’s failure to consider upstream and downstream emissions violates section 7 of the NGA. See e.g., *Delaware Riverkeeper Network v. FERC*, No. 18-1128 (D.C. Cir. filed May. 9, 2018).

²⁴ See e.g., Aaron Flyer, *FERC Compliance Under NEPA: FERC’s Obligation to Fully Evaluate Upstream and Downstream Environmental Impacts Associated with Siting Natural Gas Pipelines and Liquefied Natural Gas Terminals*, 27 GEO. INT’L ENVTL. L. REV. 301 (2015); Michael Burger and Jessica Wentz, *Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review*, 41 HARV. ENVTL. L. REV. 109 (2017); James W. Coleman, *Beyond the Pipeline Wars: Reforming Environmental Assessment of Energy Transport Infrastructure*, UTAH L. REV. 119 (2018); Thien T. Chau, *Implications of the Trump Administration’s Withdrawal of the Final CEQ Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews*, 30 GEO. INT’L ENVTL. L. REV. 713 (2018).

²⁵ To the author’s knowledge, only three previous papers have discussed FERC’s consideration of upstream and downstream climate impacts under the NGA. See STEVEN WEISSMAN AND ROMANY WEBB, ADDRESSING CLIMATE CHANGE WITHOUT LEGISLATION: HOW THE FEDERAL ENERGY REGULATORY COMMISSION CAN USE ITS EXISTING LEGAL AUTHORITY TO REDUCE GREENHOUSE GAS EMISSIONS AND INCREASE CLEAN ENERGY USE 46-48 (2014), <https://perma.cc/LFV6-DZ3K> (concluding that “FERC may evaluate the greenhouse gas emissions resulting from production, transportation, and use of natural gas when determining whether a proposed pipeline is in the public interest” under section 7 of the NGA); JAYNI HEIN ET AL., PIPELINE APPROVALS AND GREENHOUSE GAS EMISSIONS 8-10 (2019), <https://perma.cc/ZF4X-P44L> (asserting that “FERC should more fully incorporate environmental considerations—and, in particular, the climate costs or benefits that results from new or expanded natural gas pipelines—into its process for evaluating, approving, or denying certificates for public convenience and necessity” under the NGA); Rich Glick & Matthew Christiansen, *FERC and Climate Change*, 40 ENERGY L. J. 1, 40 (2019) (stating that FERC “has authority to deny a section 7 certificate application on the basis of its harm to the environment” (internal citations omitted)).

The Article answers two key questions that have, to date, been largely overlooked in the debate surrounding FERC’s approval of interstate natural gas pipelines. First, how (if at all) are environmental factors, including upstream and downstream greenhouse gas emissions, currently considered by FERC when issuing certificates of public convenience and necessity? And, second, does FERC’s current approach meet the requirements of section 7 of the NGA?

With respect to the first question, the Article provides an in-depth analysis of FERC’s stated approach to evaluating certificate applications, as set out in its 1999 Statement of Policy on the Certification of New Interstate Natural Gas Pipelines (“1999 Policy Statement”). The Article then explores how the 1999 Policy Statement has been implemented in practice, based on a comprehensive survey of all major pipeline projects certified by FERC from 2014 to 2018.²⁶ For each project, the author analyzed FERC’s certification decision and supporting materials, including any environmental documents prepared under NEPA. The analysis shows that, despite FERC’s claims to consider both economic and environmental factors when certifying pipelines, it often justifies its certification decisions solely on economic grounds.²⁷ Moreover, even where environmental factors are considered, FERC typically fails to assess the full range of climate impacts associated with pipeline development, including upstream and downstream greenhouse gas emissions.²⁸

With respect to the second question, the Article argues that the climate and other environmental impacts of pipeline development must be considered under section 7 of the NGA. To support that argument, the Article explores the history behind section 7, showing that Congress intended it to confer broad authority on FERC to consider the social consequences of pipeline development. While the courts have recognized certain limits on the scope of FERC’s review, they have repeatedly affirmed the importance of considering environmental impacts, including downstream impacts. The courts—and FERC itself—have long viewed such impacts as central to the assessment of whether pipeline development is required by the public convenience and necessity. The case law and administrative materials, as well as the language and history of the NGA, thus suggest that FERC cannot fulfil its statutory obligation under section 7 without considering the full climate and other environmental impacts of pipeline development. The

²⁶ A full list of the projects reviewed is provided in Appendix A.

²⁷ See *infra* Part 4.

²⁸ *Id.*

requirement to consider those impacts under section 7 of the NGA is independent of, and not constrained by, NEPA.

These points are elaborated further in the remainder of the Article. Part 2 of the Article provides background on section 7 of the NGA, exploring the history behind it, and how it has been interpreted by the courts. Parts 3 and 4 then discuss FERC's implementation of section 7, reviewing its stated approach to pipeline certification, as set out in the 1999 Policy Statement and other recent orders, and assessing how environmental issues have been considered in recent certification decisions. The legality of that approach is explored in Part 5. Part 6 concludes.

2. THE LEGAL FRAMEWORK FOR CERTIFYING INTERSTATE NATURAL GAS PIPELINES

First enacted in 1938, the NGA declares “the business of transporting and selling natural gas” to be “affected with the public interest” and provides for federal regulation of interstate natural gas transport and sales, finding this to be “necessary in the public interest.”²⁹ Regulatory authority was initially conferred on the Federal Power Commission (“FPC”), which was established in the 1920 Federal Water Power Act³⁰ to regulate hydroelectric projects in U.S. navigable waters,³¹ and was subsequently charged with regulating certain other aspects of the electricity industry under the Federal Power Act of 1935.³² Three years later, with the passage of the NGA in 1938, the FPC's jurisdiction was further expanded to include natural gas.³³ Subsequently, in 1977, federal regulation of the natural gas and electricity industries was transferred to FERC.³⁴

²⁹ 15 U.S.C. § 717(a).

³⁰ Federal Water Power Act of 1920, Pub. L. No. 66-280, 41 Stat. 1063 (1920) (codified at 16 U.S.C. § 791 et seq.).

³¹ 16 U.S.C. § 792 (declaring that a “commission is created and established to be known as the Federal Power Commission”).

³² Public Utility Act of 1935, Title II, Pub. L. No. 74-333, 49 Stat. 803 (codified at 16 U.S.C. § 791a et seq.).

³³ Natural Gas Act of 1938, Pub. L. No. 688; 52 Stat. 824 (1938) (codified at 15 U.S.C. § 717 et seq.).

³⁴ Department of Energy Organization Act, § 402; 42 U.S.C. § 7172.

2.1 Section 7 of the Natural Gas Act

Section 7 of the NGA, entitled “Construction, extension, or abandonment of facilities,” establishes the framework under which FERC regulates the development and use of natural gas pipelines.³⁵ Under section 1(b) of the NGA, FERC’s regulatory authority extends to all pipelines used for the “transportation of natural gas in interstate commerce,” which has been held to include pipeline crossing state boundaries, as well as those located within a single state that play a role in transporting gas between states (“interstate pipelines”).³⁶ FERC does not, however, have authority over pipelines used solely for local natural gas distribution.³⁷

Under section 7(c) of the NGA, before any interstate natural gas pipeline is constructed or extended, a certificate of public convenience and necessity must be obtained from FERC. The subsection provides, in relevant part:

(c) Certificate of public convenience and necessity.

(1) (A) No natural-gas company or person which will be a natural-gas company upon completion of any proposed construction or extension shall engage in the transportation or sale of natural gas, subject to the jurisdiction of the Commission, or undertake the construction or extension of any facilities therefor, or acquire or operate any such facilities or extensions thereof, unless there is in force with respect to such natural-gas company a certificate of public convenience and necessity issued by the Commission authorizing such acts or operations . . .

(B) [T]he Commission shall set the matter for hearing and shall give such reasonable notice of the hearing thereon to all interested persons as in its judgment may be necessary under rules and regulations to be prescribed by the Commission; and the application shall be decided in accordance with the procedure provided in subsection (e) of this section and such certificate shall be issued or denied accordingly: *Provided, however,* That

³⁵ 15 U.S.C. § 717f.

³⁶ *Id.* § 717(b). *See also id.* § 717a(7) (defining “interstate commerce” to mean “commerce between any point in a State and any point outside thereof, or between points within the same State but through any place outside thereof”).

³⁷ 15 U.S.C. § 717(b). *See also* Suede Kelly & Vera Callahan Neinast. *Getting Gas to the People: The Federal Energy Regulatory Commission’s Permitting Process for Pipeline Infrastructure in BEYOND THE FRACKING WARS: A GUIDE FOR LAWYERS, PUBLIC OFFICIALS, PLANNERS, AND CITIZENS* 80, 84-86 (Beth E. Kinne & Erica Levine Powers eds., 2013).

the Commission may issue a temporary certificate in cases of emergency, to assure maintenance of adequate service or to serve particular customers, without notice or hearing, pending the determination of an application for a certificate, and may by regulation exempt from the requirements of this section temporary acts or operations for which the issuance of a certificate will not be required in the public interest.

Section 7(d) of the NGA sets out the process by which persons may apply for certificates of public convenience and necessity, requiring applications to be made in writing and contain the information specified in regulations adopted by FERC.³⁸ As noted above, under section 7(c)(1)(B) of the NGA, FERC must convene a hearing on each certificate application (except in cases of emergency).³⁹ Following the hearing, FERC may grant an application if satisfied that it meets the conditions specified in section 7(e), which provides that a certificate can only be issued if:

- (1) the applicant is “able and willing” to construct and operate the pipeline in accordance with the requirements of the NGA and any rules or regulations adopted thereunder; and
- (2) construction and operation of the pipeline is “required by the present or future public convenience and necessity.”⁴⁰

The NGA does not define the term “public convenience and necessity” nor set out any factors to be considered by FERC in determining whether a pipeline meets that standard. However, informed by both the history of the NGA and other statutes applying the public convenience and necessity standard, FERC and the courts have identified a number of relevant considerations.

2.2 Legislative History of Section 7

Since its enactment in 1938, the NGA has always included provisions dealing with the certification of interstate natural gas pipelines, though the scope of those provisions has changed over time. As originally enacted, section 7(c) of the NGA only required a sub-set of interstate pipelines, intended to be used “for the transportation of natural gas to a market in which natural gas is already being served by another natural-gas company,” to be certified by the former FPC.⁴¹

³⁸ *Id.* § 717f(d).

³⁹ *Id.* § 717f(c)(1)(B).

⁴⁰ *Id.* § 717f(e).

⁴¹ Natural Gas Act of 1938, Pub. L. No. 75-688, § 7(c), 52 Stat. 821, 825 (1938) (prior to 1942 amendment). The FPC took a fairly broad view of its pipeline certification authority, concluding

Like its present-day counterpart, the original version of section 7(c) directed the FPC, when issuing certificates, to apply the public convenience and necessity standard. While that standard has never been defined in the NGA, the original version of section 7(c) did provide some guidance on its meaning, stating:

In passing on applications for certificates of public convenience and necessity, the [FPC] shall give due consideration to the applicant's ability to render and maintain adequate service at rates lower than those prevailing in the territory to be served, it being the intention of Congress that natural gas shall be sold in interstate commerce for resale for ultimate public consumption for domestic, commercial, industrial, or any other use at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.⁴²

The legislative history of the NGA indicates that section 7(c) was intended to confer broad authority on the FPC to consider the public interest when certifying pipelines. Both the House and Senate reports on the NGA described the section as “similar [to the] provisions requiring certificates of public convenience and necessity . . . in the Interstate Commerce Act” and other federal and state statutes⁴³ which had, at the time, been interpreted by the courts as requiring an assessment of whether certification would be “in the interest of the public.”⁴⁴ While the reports did not expressly endorse that interpretation, Congress’ decision to apply the same standard may be taken as tacit approval.⁴⁵

that the phrase “market in which natural gas is already being served” was not intended to refer “only [to] those communities in which there are presently existing facilities for the transportation or sale of natural gas,” but rather to any “territory within which a natural gas company can economically render adequate service by reasonable extensions of its facilities.” *See* *Re Kansas Pipe Line & Gas Company*, 30 P.U.R. (n.s. 321) (FPC, Oct. 24, 1939).

⁴² Natural Gas Act of 1938, Pub. L. No. 75-688, § 7(c), 52 Stat. 821, 825 (1938) (prior to 1942 amendment).

⁴³ H.R. Rep. No. 709 (1937); S. Rep. No. 1162 (1937).

H.R. Rep. No. 1290, 2 (1941)

⁴⁴ *Chesapeake & O.R. Co. v. U.S.*, 283 U.S. 35, 42 (1931) (holding that the ICC is authorized to certify projects “in the interests of the public”).

⁴⁵ The courts have consistently held that, where Congress elects to use words with a well-established meaning in a statute, it is taken to have intended the words to be given that meaning. *See e.g.*, *Case v. Los Angeles Lumber Products Co.*, 308 U.S. 106, 115 (1939) (holding that “where words are employed in an act which had at the time a well-known meaning in the law, they are used in that sense unless the context requires the contrary”). *See also* *Carolene Products Co. v.*

Consistent with this view, the FPC based its early decisions under section 7(c) on an assessment of “public need and benefit,” which it held required a review of “many and varied factors.”⁴⁶ The FPC did, however, acknowledge important limits on the scope of its review. Most importantly for the purposes of this Article, in its 1939 decision in *Re Kansas Pipe Line and Gas Company* (“*Kansas Pipe Line Decision*”), the FPC concluded that it lacked authority to consider certain downstream impacts of pipeline development.⁴⁷

Briefly, the *Kansas Pipe Line Decision* concerned two pipelines intended to transport natural gas from central North Dakota to western Minnesota, where it would be used in various industrial and other applications.⁴⁸ Providers of competing fuels (e.g., coal) and transportation services (e.g., railways) objected to pipeline development on the grounds that it would lead to a reduction in the use of their fuels / services and thus adversely affect their economic interests.⁴⁹ The FPC determined that it lacked authority to consider such downstream impacts when certifying the pipelines, reasoning that its jurisdiction under section 7(c) was limited to cases involving competition among natural gas companies, suggesting that “Congress did not intend [it] generally to weigh the broad social and economic effects of the use of various fuels.”⁵⁰

In its 1940 Annual Report to Congress the FPC expressed concern that, without considering downstream impacts, it could not ensure pipeline development is in the public interest and thus achieve the goals of the NGA.⁵¹ In response, Congress amended the NGA in 1942, enacting a

United States, 323 U.S. 18, 26 (1944) (holding that Congress’s “adoption of the wording of a statute from another legislative jurisdiction carries with it the previous judicial interpretations of the wording”).

⁴⁶ *Re Kansas Pipe Line & Gas Company*, 30 P.U.R. (n.s.) 321 (FPC, Oct. 24, 1939).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ Federal Power Commission, Twentieth Annual Report of the Federal Power Commission 10 (1940) (noting that the Commission lacks authority to consider “important questions” regarding the downstream impacts of pipeline development, including “whether the proposed use of natural gas would not result in displacing” other fuels). *See also id.* at 78 (stating that the limited scope of section 7(c) “has serious disadvantages in terms of the general purposes of the Natural Gas Act” and indicating that “[i]n order to make possible more effective protection of the public interest in connection with the transportation and sale of natural gas in interstate commerce . . . section 7(c) of

revised version of section 7(c), and new sections 7(d) through (g).⁵² Those sections have undergone only minor amendments since.⁵³

The 1942 amendment expanded the scope of section 7(c) of the NGA, requiring all new interstate natural gas pipelines to be certified by the FPC.⁵⁴ The amendment also removed the direction, previously found in section 7(c), that the FPC consider “the applicant’s ability to render and maintain adequate service at rates lower than those prevailing in the territory to be served” when certifying pipelines. In place of that directive, Congress enacted a new section 7(e), which set out a two-stage test for issuing certificates, requiring the FPC to consider (1) whether the applicant is able and willing to construct and operate the pipeline and (2) whether pipeline construction and operation is or will be required by the public convenience and necessity.⁵⁵ While that is the same standard as had appeared in the original version of section 7 of the NGA, it is clear from Congressional debate that the 1942 amendment was intended to expand the range of factors that could be considered by FERC in its certification decisions.

In its report on the 1942 amendment, the House Committee on Interstate and Foreign Commerce (“House Committee”) noted that the original version of section 7 had proved difficult to administer because the FPC’s jurisdiction was limited to a subset of pipelines, and that limitation prevented it from considering all relevant factors when issuing certificates of public convenience and necessity.⁵⁶ The House Committee indicated that amending section 7 would enable the FPC to consider a broader range of factors, including the upstream and downstream

the Act should be broadened to give the Commission control over all new interstate pipeline construction”).

⁵² Act of Feb. 7, 1942, ch. 49, Pub. L. 444, 56 Stat. 83.

⁵³ Section 7(c) of the Natural Gas Act underwent minor amendments in 1978. *See* Public Utility Regulatory Policies Act of 1978, Pub. L. 95-617, § 608, 92 Stat. 3117, 3173 (1978).

⁵⁴ 15 U.S.C. § 717f(c)(1)(A).

⁵⁵ *Id.* § 717f(e).

⁵⁶ H.R. Rep. No. 1290, 2 (1941) (noting that “[t]he difficulties encountered in the administration of the present statutory provision arise out of the limitation of the scope of the section to a market in which natural gas is already being served by another natural gas company . . . Administration of the present statute, therefore, involved tedious and time-consuming preliminary investigations and hearings in order to determine whether the Commission has jurisdiction to consider, on the merits, the granting or denying of the certificate. The limitation, moreover, . . . has been held by the Commission to have the effect of excluding from consideration the interests of producers of competing fuels and competitive methods of transportation”).

impacts of pipeline development, for example on “producers of competing fuels, and competitive transportation interests.”⁵⁷ Similarly, the Senate report also described the amendment as enabling a broader review by the FPC, indicating that “i[t] would . . . authorize the Commission to examine costs, finances, necessity, feasibility, and adequacy of proposed service.”⁵⁸

In the years following amendment of section 7 of the NGA, the list of factors to be considered when issuing certificates of public convenience and necessity has been gradually expanded, first by the FPC and then by FERC. The courts have also weighed in, assessing the validity of the FPC / FERC’s approach and offering more general guidance on the public convenience and necessity standard.

2.3 Judicial Precedent on Section 7

As discussed in Part 2.2 above, even before enactment of the NGA, the public convenience and necessity standard had been used in numerous other statutes. The standard first appeared in an 1882 Massachusetts statute, which empowered the state Board of Railroad Commissioners to authorize new rail-lines, after certifying that the “public convenience and necessity require construction of [the line] proposed.”⁵⁹ Other states soon enacted their own certification regimes, many of which applied to a range of so-called “public services,” including telecommunications, electricity, and natural gas.⁶⁰ The operation of those regimes has been the subject of much previous study.⁶¹ One study, based on a comprehensive review of early regulatory decisions applying the public convenience and necessity standard, found that state regulators universally interpreted the standard as requiring “an inquiry into whether there is a public need for, or whether it would be in the public interest to authorize, the new or expanded services proposed by the applicant” (internal

⁵⁷ *Id.* at 3.

⁵⁸ S. Rep. No. 985, 2 (1942).

⁵⁹ Act of May 26, 1882, ch. 265, 1882 Mass. Acts 208.

⁶⁰ William K. Jones, *Origins of the Certificate of Public Convenience and Necessity: Developments in the States 1870 – 1920*, 79 COLUM. L. REV. 426, 455 (1979) (noting that, by 1920, at least thirty-three states had statutes providing for the issuance of certificates of public convenience and necessity in one or more public service industries).

⁶¹ See e.g., *id.*; Ford P. Hall, *Certificates of Convenience and Necessity*, 28 MICH. L. REV. 276 (1930); FORD P. HALL, *THE CONCEPT OF A BUSINESS AFFECTED WITH A PUBLIC INTEREST* (The Principia Press, Inc., 1940); FORD P. HALL, *STATE CONTROL OF BUSINESS THROUGH CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY* (Indiana University, 1948).

citations omitted).⁶² This inquiry was intended to, among other things, ensure “protection of the community against social costs” and thus included consideration of any “environmental damage” likely to result from the provision of services.⁶³

Federal regulators charged with issuing certificates of public convenience and necessity have also interpreted that standard as requiring a broad-ranging public interest review. That interpretation has been consistently upheld by the courts. Many of the early court cases arose under the Interstate Commerce Act, which empowered the Interstate Commerce Commission (“ICC”) to grant certificates authorizing the construction or extension of interstate rail-lines and the provision of certain other transportation services, where required by the public convenience and necessity. The Interstate Commerce Act did not, however, specify any factors to be considered by the ICC when determining whether that requirement had been met.⁶⁴ Given this, the courts interpreted the Interstate Commerce Act as conferring broad discretion on the ICC to determine whether a particular project should be certified, based on its unique characteristics.⁶⁵ The ICC took a case-by-case approach, weighing each project’s costs and benefits⁶⁶ to determine whether it would deliver “material advantages to the public,”⁶⁷ or otherwise be “in the interest of the

⁶² Jones, *supra* note 60, at 427.

⁶³ *Id.* at 428 & 511.

⁶⁴ *Id.* See also *Chesapeake & O.R. Co. v. U.S.*, 283 U.S. 35, 42 (1931) (noting that “[t]here is no specification [in the Interstate Commerce Act] of the considerations by which the Commission is to be governed in determining whether the public convenience and necessity require the proposed construction”).

⁶⁵ *Colorado v. U.S.*, 271 U.S. 153, 166 (1926) (holding that “the making of this determination [i.e., whether a project should be certified] involves an exercise of judgment upon the facts of the particular case”). See also *U.S. v. Detroit & Cleveland Navigation Co.*, 326 U.S. 236, 241 (1945) (holding that the ICC “has been entrusted with a wide range of discretionary authority” to certify projects and must base its certification decisions on the facts of the particular case); *Interstate Commerce Commission v. Parker*, 326 U.S. 60, 64 (1945) (holds that the Interstate Commerce Act “gives administrative discretion to the Commission to draw its conclusion [as to whether a project is required by the public convenience and necessity] from the infinite variety of circumstances which may occur in specific instances”).

⁶⁶ *Colorado*, 271 U.S. at 169 (holding that the ICC’s determination “is made upon a balancing of the respective interests”).

⁶⁷ *Claiborne-Annapolis Ferry Co. v. U.S.*, 285 U.S. 382, 392 (1932) (holding that the ICC may grant of a certificate for a project where “material advantages to the public would result”).

public.”⁶⁸ The public interest was the touchstone for certification decisions under the Interstate Commerce Act, with the U.S. Supreme Court holding that the ICC acts as the ultimate “arbiter” of the public interest when issuing certificates of public convenience and necessity.⁶⁹

The courts have taken a similar view of FERC’s role in certifying interstate natural gas pipelines, holding that section 7 of the NGA requires it to act as the “guardian” of the public interest.⁷⁰ Like the ICC, FERC has been held to have “broad discretion” to decide whether certification is in the public interest, based on the specific facts of each case.⁷¹ According to the Supreme Court, FERC is required “not only to appraise the facts and to draw inferences from them but also to bring to bear upon the problem an expert judgement to determine from its analysis of the total situation on which side of the controversy the public interest lies.”⁷² This necessitates a broad-ranging review, with the Supreme Court holding that FERC must “evaluate all factors bearing on the public interest.”⁷³ The Court has, however, recognized certain limits on the scope of FERC’s public interest review.

In *National Association for the Advancement of Colored People v. FPC* (“NAACP”), the Supreme Court held that, in the context of the NGA, the public interest standard does not give the former

⁶⁸ *Chesapeake & O.R. Co. v. U.S.*, 283 U.S. 35, 42 (1931) (holding that the ICC is authorized to certify projects “in the interests of the public”).

⁶⁹ See e.g., *U.S. v. Pierce Auto Freight Lines, Inc.*, 327 U.S. 515, 535-536 (1946) (holding that, in issuing certificates, the ICC acts as “the arbiter[] of the paramount public interest); *Detroit & Cleveland Navigation Co.*, 326 U.S. at 241 (holding that the ICC “is the guardian of the public interest in determining whether certificates of convenience and necessity shall be granted”).

⁷⁰ *Transcontinental Gas Pipe Line Corp.*, 365 U.S. at 7 (holding that “[t]he Commission is the guardian of the public interest in determining whether certificates of convenience and necessity shall be granted”). See also *Panhandle Eastern Pipe Line Co. v. Fed. Power Comm’n*, 386 F.2d 607, 610 (3d, 1967) (holding that “the public interest is always involved” in certification decisions and indicating that “the Commission, as its guardian, must determine in every proceeding whether the certificate applied for is in the public interest or whether that interest calls for some other disposition”).

⁷¹ *Minisink Residents for Env’tl. Preservation & Safety v. Fed. Energy Regulatory Comm’n*, 762 F.3d 97, 111 (D.C. Cir., 2014).

⁷² *Transcontinental Gas Pipe Line Corp.*, 365 U.S. 1, 7 (1961).

⁷³ *Atlantic Refining Co. v. Public Service Comm’n*, 360 U.S. 378, 391 (1959), *affirmed in* *Transcontinental*, 365 U.S. at 8 (1961).

FPC (now FERC) “a broad license to promote the general welfare.”⁷⁴ Rather, it mandates that the FPC take steps to advance the goals of the NGA, chief among which is “encourag[ing] the orderly development of plentiful supplies of . . . natural gas at reasonable prices.”⁷⁵ The Supreme Court described this as the “principal purpose” of the NGA, but recognized that the Act also has several “subsidiary purposes” relating to “conservation, environmental, and antitrust” issues.⁷⁶ The court indicated—in *obiter dicta*—that the FPC “has authority to consider those [subsidiary] issues.”⁷⁷ However, the Court ruled that the FPC lacks authority to consider other issues, which do not have a clear nexus with its regulation under the NGA (e.g., employment discrimination).⁷⁸

Subsequent decisions have interpreted *NAACP* as requiring the FPC—and later FERC—to limit its review to factors bearing directly on its exercise of regulatory authority under the NGA.⁷⁹ However, this still leaves FERC with significant latitude to consider a wide variety of factors to

⁷⁴ *National Ass’n for the Advancement of Colored People v. Fed. Power Comm’n*, 425 U.S. 662, 669 (1976). While *NAACP* did not specifically discuss the public convenience and necessity standard, other decisions have confirmed that its reasoning applies to section 7 of the NGA. *See e.g.*, *Minisink Residents for Env’tl. Pres. & Safety*, 762 F.3d at 101 (D.C. Cir. 2014) and *Meyersville Citizens for a Rural Cmty v. FERC*, 783 F.3d 1301, 1307 (D.C. Cir. 2015). *See also* *Interstate Commerce Commission v. Parker*, 326 U.S. 60, 69 (1945) (holding that, as used in the Interstate Commerce Act, “[p]ublic convenience and necessity should be interpreted so as to secure for the Nation the broad aims of the . . . Act”).

⁷⁵ *Id.* at 669-670.

⁷⁶ *Id.* at 670 & Footnote 6.

⁷⁷ *Id.* *See also* *Myersville Citizens for a Rural Cmty Inc.*, 783 F.3d at 1307 (noting that “Congress enacted the Natural Gas Act . . . with the principal purpose of encouraging the orderly development of plentiful supplies of natural gas at reasonable prices . . . Subsidiary purposes include respective conservation, environmental, and antitrust limitations” (internal citations omitted)).

⁷⁸ *National Ass’n for the Advancement of Colored People*, 425 U.S. at 664. (holding that the FPC does not have authority to address employment discrimination, because there is insufficient “nexus” between the Commission’s “economic regulatory activities and the employment procedures of the utility systems” it regulates).

⁷⁹ *See generally* *Public Utilities Comm’n of State of Cal. v. FERC*, 900 F.2d 269, 281 (D.C. Cir. 1990) (holding that the former FPC (now FERC) must focus on factors relevant to the “main purposes of the Natural Gas Act,” in which the Commission “fairly may be said to have expertise”).

determine whether pipeline development would further the NGA's objectives of ensuring plentiful natural gas supplies, while also minimizing any adverse economic and/or environmental impacts.⁸⁰

3. FERC'S APPROACH TO NATURAL GAS PIPELINE CERTIFICATION

FERC has long interpreted the public convenience and necessity standard as requiring a case-by-case assessment to determine whether, on balance, pipeline development will serve the public interest.⁸¹ For the last two decades, FERC's assessment has been guided by the 1999 Policy Statement, which describes the goals of pipeline certification as being to "foster competitive markets, protective captive customers, and avoid unnecessary environmental and community impacts."⁸² To ensure achievement of those goals and consistent with the broad authority conferred by section 7 of the NGA, the 1999 Policy Statement requires certification decisions to be based on a wide-ranging assessment of the need for pipeline development, its benefits, and costs.⁸³ The 1999 Policy Statement envisages that FERC will conduct two separate reviews of each pipeline project—i.e., one focusing on the project's economic impacts (the "economic review") and the other on its environmental consequences (the "environmental review")⁸⁴—and consider the findings of both when determining whether the project should be certified.⁸⁵ In April 2018, FERC commenced

⁸⁰ See e.g., *South Coast Air Quality Mgmt. Dist. v. FERC*, 621 F.3d 1085, 1099 (9th Cir. 2010) (confirming that "FERC must consider all factors bearing on the public interest consistent with its mandate to fulfill the statutory purpose of the NGA").

⁸¹ 1999 Policy Statement, *supra* note 17, at 61,737.

⁸² *Id.* FERC has described the two reviews as "independent," but indicated that they will occur concurrently. See *id.* at 61,749 (stating that FERC will conduct "an independent environmental review of projects"). See also Order Clarifying Statement of Policy, *supra* note 18, at 61,397 (indicating that the "environmental and economic review of a proposed project will . . . proceed concurrently").

⁸³ 1999 Policy Statement, *supra* note 17, at 61,745.

⁸⁴ *Id.* at 61,746.

⁸⁵ *Id.* at 61,743 (indicating that "[i]n reaching a final determination on whether a project will be in the public convenience and necessity, the commission performs a flexible balancing process during which it weighs the factors presented in a particular application," including its "economic" and "environmental impact[s]").

an inquiry into whether, and if so how, it should revise its approach in light of recent changes in the natural gas industry.⁸⁶ That inquiry was ongoing at the time of writing.

3.1 FERC's Economic Review

Under the 1999 Policy Statement, where a pipeline project is to be developed by an existing pipeline operator, FERC's economic review must begin with an assessment of whether the project "can proceed without subsidies" from the developer's existing customers.⁸⁷ The developer must establish that the project can "stand on its own financially," which is typically done by pointing to the existence of pre-construction contracts, under which new customers have subscribed to the additional capacity made available by the project, thus demonstrating market need for it.⁸⁸

If satisfied that a pipeline project is financially viable, FERC must then assess its economic impacts.⁸⁹ FERC focuses on the potential for adverse impacts on the economic interests of three key groups as follows:

- (1) the developer's existing customers (if any), considering whether the project will lead to an increase in the rates they pay and/or result in a degradation of service;⁹⁰

⁸⁶ 2018 Notice of Inquiry, *supra* note 19.

⁸⁷ 1999 Policy Statement, *supra* note 17, at 61,745.

⁸⁸ *Id.* at 61,746. In the 1999 Policy Statement, FERC indicated that other evidence could also be relied upon to demonstrate a need for the project, including "demand projections" and "comparison[s] of projected demand with the amount of capacity currently serving the market." *See id.* at 61,747. In practice, however, FERC typically relies exclusively on pre-construction contracts to determine project need. This approach has been heavily criticized by environmental groups and others who argue that it may result in the certification of new pipelines that are not needed to meet future natural gas demand and thus not in the public interest. *See e.g.*, Letter from Montana Cole, Natural Resources Defense Council, et al., to FERC (Apr. 18, 2018), <https://perma.cc/Y6KT-EHS7>; Letter from Jessica Wentz & Romany Webb, Sabin Center for Climate Change Law, to FERC (Jun. 18, 2018), <https://perma.cc/634L-TSJY>; Comments of New Jersey Conservation Foundation, the Watershed Institute, and Sierra Club in FERC Docket No. PL18-1-000 (Jun. 25, 2018), <https://perma.cc/NKH2-XM5E>; Comments of the Attorneys General of Massachusetts, Illinois, Maryland, New Jersey, Rhode Island, Washington, and the District of Columbia in FERC Docket No. PL18-1-000 (Jun. 25, 2018), <https://perma.cc/7KKL-URHF> [hereinafter AG Comments].

⁸⁹ 1999 Policy Statement, *supra* note 17, at 61,745.

⁹⁰ *Id.* at 61,747.

- (2) competing pipelines and their existing customers, considering whether the project will lead to unsubscribed capacity on any existing pipeline, which must be paid for by its captive customers;⁹¹ and
- (3) landowners and surrounding communities, considering whether the project will affect their property rights, for example, by resulting in the taking of land under eminent domain⁹² (together the “affected groups”).

FERC expects developers to take steps to mitigate adverse impacts on the affected groups and evaluates the steps taken as part of its economic review.⁹³ If FERC determines that there will be residual adverse impacts (i.e., after mitigation), it weighs those impacts against the project’s benefits.⁹⁴ Only if the project’s benefits outweigh its residual adverse impacts can FERC find that it is in the public interest and issue a certificate of public convenience and necessity under section 7 of the NGA.⁹⁵

Consistent with FERC’s case-by-case approach to pipeline certification, the 1999 Policy Statement does not include an exhaustive list of benefits to be considered in all decisions,⁹⁶ and merely states:

The type of public benefits that might be shown are quite diverse but could include meeting unserved demand, eliminating bottlenecks, [providing] access to new supplies, lower[ing] costs to consumers, providing new interconnects that improve the interstate grid, providing competitive alternatives, increasing electric reliability, or advancing clean air objectives.⁹⁷

⁹¹ *Id.* at 61,748.

⁹² *Id.*

⁹³ *Id.* at 61,745.

⁹⁴ *Id.*

⁹⁵ *Id.* The 1999 Policy Statement indicates that, where a project will have significant adverse impacts, FERC will require a “greater . . . showing of public benefits” to balance those impacts. *Id.* at 61,749. In practice, however, FERC often approves projects that have significant adverse impacts without requiring a heightened showing of public benefit. This has, again, prompted criticism from environmental groups and others. See AG Comments, *supra* note 88, at 22.

⁹⁶ See generally, *id.* at 61,749 (“It is difficult to construct helpful bright line standards or tests . . . Bright light tests are unlikely to be flexible enough to resolve specific cases and to allow the Commission to take into account the different interests that must be considered”).

⁹⁷ *Id.* at 61,748.

Despite the broad range of factors listed, the 1999 Policy Statement describes the balancing process as “essentially an economic test” and states that other, non-economic impacts will be considered separately.⁹⁸ Thus, for example, FERC conducts an independent environmental review of each project under NEPA.⁹⁹ FERC has indicated that it considers the results of that environmental review, along with the economic assessment, when determining whether a project is required by the public convenience and necessity.¹⁰⁰

3.2 FERC’s Environmental Review

Signed into law in 1970, NEPA “makes environmental protection a part of the mandate of every federal agency,” including FERC.¹⁰¹ NEPA seeks to, among other things, ensure that FERC and other federal agencies consider the environmental impacts of their actions and inform the public of those impacts. Under section 102(2)(C) of NEPA, when proposing legislation or undertaking other “major federal actions^[102] significantly affecting the quality of the human

⁹⁸ *Id.* at 61,745 (stating that the “balancing . . . of public benefits to be achieved against the residual adverse effects . . . is essentially an economic test. Only when the benefits outweigh the adverse effects on economic interests will the Commission then proceed to complete the environmental analysis where other interests are considered”). *See also id.* at 61,747 (noting that that non-economic interests, including environmental interests, “may need to be separately considered in a certificate proceeding”). FERC later clarified that the economic and environmental reviews would occur concurrently. *See Order Clarifying Statement of Policy, supra* note 18, at 61,397 (indicating that FERC “will begin its environmental review at the time an application is filed with the Commission; environmental and economic review of a proposed project will continue to proceed concurrently”).

⁹⁹ The environmental review occurs currently with, but independently of, the economic review. *See Order Clarifying Statement of Policy, supra* note 18, at 61,397.

¹⁰⁰ 1999 Policy Statement, *supra* note 17, 61,743 (indicating that “[i]n reaching a final determination on whether a project will be in the public convenience and necessity, the commission performs a flexible balancing process during which it weighs the factors presented in a particular application,” including its “economic” and “environmental impact[s]”). *See also* 2018 Notice of Inquiry, *supra* note 19, at 10-11 & 78.

¹⁰¹ *Calvert Cliffs’ Coordinating Committee, Inc. v. United States Atomic Energy Commission*, 449 F.2d 1109

¹⁰² The term “federal action” includes any action that is undertaken, authorized, or funded by a federal agency. *See* 40 C.F.R. § 1508.18 (defining the term “[m]ajor federal action” to include “actions with effects that may be major and which are potentially subject to federal control and responsibility . . . Federal actions tend to fall within one of the following categories: (a) Adoption of official policy, such as rules, regulations, and interpretations . . . (b) Adoption of formal plans, such as official documents prepared or approved by federal agencies which guide or prescribe

environment,” federal agencies must publish a statement (“environmental impacts statement” or “EIS”) addressing:

- (i) the environmental impacts of the proposed action;
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented;
- (iii) alternatives to the proposed action;
- (iv) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity; and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.¹⁰³

The scope of this requirement has been discussed extensively by other authors and will not be examined in detail in this paper.¹⁰⁴ For the purposes of this paper, it is sufficient to note that FERC’s approval of pipeline projects constitutes a federal action under section 102(2)(C) of NEPA, meaning that an EIS must be prepared for any project that will significantly affect the environment. FERC regulations indicate that an EIS will “normally” be prepared for “major pipeline construction projects . . . using rights-of-way in which there is no existing natural gas pipeline.”¹⁰⁵ An EIS may also be prepared for other pipeline projects if FERC determines, based on an initial environmental assessment (“EA”), that the project will have significant environmental effects.¹⁰⁶

alternative uses of federal resources . . . (c) Adoption of programs, such as a group of concerted actions to implement a specific policy or plan . . . (d) Approval of specific projects, such as construction or management activities”).

¹⁰³ 42 U.S.C. § 4332(2)(C).

¹⁰⁴ For an overview of NEPA and its implementation, see Daniel R. Mandelker, *The National Environmental Policy Act: A Review of Its Experience and Problems*, 32 WASH. U. J. L. & POL’Y 293 (2010).

¹⁰⁵ 18 C.F.R. § 380.6(a)(3).

¹⁰⁶ *Id.* at 380.5(a) - (b)(1). The 1999 Policy Statement envisages that FERC will only prepare an EA or EIS for projects that its economic analysis shows are in the public interest. See 1999 Policy Statement, *supra* note **Error! Bookmark not defined.**, at 61,746 (indicating that “[o]nly when the benefits outweigh the adverse effects on economic interests will the Commission then proceed to complete the environmental analysis where other interests are considered”). See also *id.* at 61,744 (stating that, if FERC finds a project’s benefits to outweigh its adverse effects, it will then “proceed . . . to complete an environmental assessment (EA) or environmental impacts statement (EIS) (whichever is required in the case)”).

EISs must be prepared in accordance with regulations issued by the White House Council on Environmental Quality.¹⁰⁷ Under the regulations, EISs must discuss three types of environmental effects, namely:

1. direct effects, which are “caused by the action and occur at the same time and place;”¹⁰⁸
2. indirect effects, which are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable;”¹⁰⁹ and
3. cumulative effects, which “result[] from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”¹¹⁰

FERC views the greenhouse gas emissions associated with pipeline construction and operation as a direct effect of pipeline projects which must be considered under NEPA.¹¹¹ FERC has historically viewed upstream and downstream greenhouse gas emissions—i.e., resulting from the production and consumption of natural gas to be transported via pipeline projects—as falling beyond the scope of its NEPA analysis.¹¹² Recently however, the courts have held that downstream emissions are an indirect effect of pipeline projects and thus must be considered under NEPA, at least in some circumstances.¹¹³

The leading case on this issue is *Sierra Club v. FERC* (“*Sierra Club*”), which concerned the Commission’s approval of three interstate pipelines, intended to transport natural gas from Alabama to Florida (the “Southeast Market Pipelines Project”).¹¹⁴ Noting that the pipelines would be used to deliver natural gas to electric generating units, the D.C. Circuit Court of Appeals concluded that combustion of the gas is not only a reasonably foreseeable consequence of the

¹⁰⁷ 40 C.F.R. Parts 1500-1508.

¹⁰⁸ *Id.* § 1508.8(a).

¹⁰⁹ *Id.* § 1508.8(b). The regulations provide that “[i]ndirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” *See id.*

¹¹⁰ *Id.* § 1508.7.

¹¹¹ *See generally*, May 2018 Order, *supra* note 21, at 61,696.

¹¹² *See infra* Part 4.

¹¹³ *See e.g.*, *Sierra Club*, 867 F. 3d 1357 (D.C. Cir. 2017).

¹¹⁴ *Id.* at 1363-1364.

Southeast Market Pipelines Project, but is its “entire purpose.”¹¹⁵ Moreover, according to the court, it is reasonably foreseeable that natural gas combustion will emit greenhouse gases that contribute to climate change.¹¹⁶ The court viewed FERC’s approval of the Southeast Market Pipelines Project as a “legally relevant cause” of the emissions, reasoning that the Commission has authority to consider the environmental impacts of pipeline development as part of its certification decision, and “could deny a . . . certificate on the grounds that the pipeline would be too harmful to the environment.”¹¹⁷ Thus, the court held that downstream greenhouse gas emissions are an indirect effect of the Southeast Market Pipelines Project, which must be considered under NEPA.¹¹⁸ To meet the requirements of NEPA, FERC must either provide “a quantitative estimate” of the downstream emissions or “explain . . . in detail” why such an estimate cannot be provided.¹¹⁹

Following the ruling in *Sierra Club*, until May 2018, FERC’s policy was to estimate downstream greenhouse gas emissions in the EAs and EISs prepared for pipeline projects.¹²⁰ Where FERC lacked information about the intended use of the natural gas transported via a project, it provided an upper-bound estimate of downstream emissions, assuming full combustion of the transported gas.¹²¹ However, in a three to two decision handed down in May 2018 (the “May 2018 Order”), FERC determined that such estimates should no longer be provided because (in its view) they are “inherently speculative” and not required by NEPA.¹²² FERC interpreted the ruling in *Sierra Club* narrowly, holding that it only requires downstream emissions to be estimated where the Commission has detailed information regarding how the transported natural gas will be used

¹¹⁵ *Id.* at 1372.

¹¹⁶ *Id.*

¹¹⁷ *Id.* at 1373.

¹¹⁸ *Id.* at 1374.

¹¹⁹ *Id.* at 1374-1375. *See also* *Appalachian Voices v. Fed. Energy Regulatory Comm’n*, 2019 U.S. App. LEXIS 4803, at 19 (D.C. Cir. Feb 19, 2019) (holding that “all that is required for NEPA purposes” is that the EIS include an estimate of downstream greenhouse gas emissions).

¹²⁰ All but one of the EAs / EISs issued by FERC during this period included an estimate of downstream greenhouse gas emissions. The one exception was an EA that was finalized less than one month after the ruling in *Sierra Club*. *See infra* Part 4 and Appendix A.

¹²¹ *See generally*, May 2018 Order, *supra* note 21, at 61,705 (La Fleur, dissenting in part).

¹²² *Id.* at 61,695. A lawsuit challenging the May 2018 Order was dismissed by the U.S. Court of Appeals for the D.C. Circuit on the grounds that the plaintiff lacked standing; the court did not reach the merits of the case. *See Otsego 2000, Inc. v. FERC*, 2019 U.S. App. LEXIS 14060 (D.C. Cir. May 9, 2019).

and knows with certainty that it will be combusted.¹²³ Thus, for example, FERC has refused to consider downstream emissions in situations where natural gas will be delivered to local distribution companies.¹²⁴ According to FERC, because those companies may sell natural gas to various residential and industrial consumers, it cannot know with certainty how the gas will be used, and whether use will result in additional downstream emissions.¹²⁵ In these circumstances, then, FERC takes the view that downstream emissions are not a reasonably foreseeable effect of pipeline development and thus fall outside the scope of its indirect effects analysis under NEPA.¹²⁶

FERC has taken a similar approach to upstream greenhouse gas emissions associated with natural gas production. In its May 2018 Order, FERC indicated that it would only consider upstream emissions as part of its indirect effects analysis where the natural gas transported via a pipeline project is shown to have originated from a specific source and reflects new production, which would not have occurred absent pipeline development (i.e., because there is no other way to transport the gas to market).¹²⁷ FERC concluded that, in all other cases, upstream emissions cannot be considered an indirect effect of pipeline development, including because such development does not cause new drilling or the associated emissions.¹²⁸ Moreover, according to FERC, upstream emissions are only reasonably foreseeable where the Commission knows the origin of the transported natural gas.¹²⁹

The above approach was considered by the U.S. Court of Appeals for the D.C. Circuit in *Birckhead v. FERC* (“*Birckhead*”).¹³⁰ The case concerned FERC’s refusal to assess upstream and downstream greenhouse gas emissions as part of its environmental review of a natural gas compression facility intended to increase the transportation capacity of existing gas pipelines in the southeast. While the case was ultimately dismissed on procedural grounds, the court indicated

¹²³ *Id.* at 61,700.

¹²⁴ *Id.*

¹²⁵ *Id.* See also, FERC, Final Environmental Impact Statement for Midship Pipeline Company, LLC – Midcontinent Supply Header Interstate Pipeline Project 4-191 (2018), <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14953305>.

¹²⁶ *Id.* See also *id.* at 61,695-61,696.

¹²⁷ May 2018 Order, *supra* note 21, at 61,699.

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ *Birckhead v. Fed. Energy Regulatory Comm’n*, 2019 U.S. App. LEXIS 16757 (D.C. Cir. 2017).

that it was “troubled” by FERC’s refusal to assess upstream and downstream emissions.¹³¹ The court noted that FERC justified its refusal by pointing to a lack of information about the source and destination of the transported natural gas, but had failed to request such information from the facility developer, and opined that NEPA “requires the Commission to at least *attempt* to obtain the information necessary to fulfill its statutory responsibilities.”¹³² Notably, the court also rejected FERC’s claims that downstream emissions need only be considered where the available information shows that the transported natural gas will be burned at a specific location, and will not replace existing gas supplies or other higher-emitting fuels.¹³³

The decision in *Birckhead* was welcomed by FERC Commissioners La Fleur and Glick,¹³⁴ both of whom dissented in part from the May 2018 Order.¹³⁵ In her dissenting opinion, Commissioner La Fleur argued that FERC should estimate upstream and downstream greenhouse gas emissions, even where it lacks information about the specific source and use of the transported natural gas.¹³⁶ Similarly, Commissioner Glick also advocated for estimation of upstream and downstream emissions, asserting that FERC “cannot determine whether a natural gas pipeline is in the public interest without considering the effect . . . [it] will have on climate change.”¹³⁷ However, as we will see below, FERC rarely considers climate change effects when deciding whether to approve pipeline projects under section 7 of the NGA.

¹³¹ *Id.* at 16.

¹³² *Id.* at 9 & 16-18.

¹³³ *Id.* at 13-14 (holding that FERC “is wrong to suggest that downstream emissions are not reasonably foreseeable simply because the gas transported by the project may displace existing natural gas suppliers or higher-emitting fuels” and to read *Sierra Club* as holding that “downstream emissions are an indirect effect of a project only when the project’s entire purpose is to transport gas to be burned at specifically-identified destinations”).

¹³⁴ See e.g., Maya Weber, *DC Circuit Upholds US FERC orders in GHG case, offers ‘misgivings’ on NEPA effort*, S&P GLOBAL, June 4, 2019, at <https://perma.cc/7Q37-TGTL>.

¹³⁵ May 2018 Order, *supra* note 21, at 61,705 – 61,710.

¹³⁶ *Id.* at 61,705 – 61,706.

¹³⁷ *Id.* at 61,709.

4. TREATMENT OF ENVIRONMENTAL ISSUES IN RECENT FERC CERTIFICATION DECISIONS

Pursuant to the broad authority conferred by section 7 of the NGA, and as described in the 1999 Policy Statement, FERC conducts both an economic and an environmental review of pipeline projects. FERC claims to consider the findings of both reviews when deciding whether a project is required by the public convenience and necessity and thus should be approved under section 7 of the NGA.¹³⁸ To test that claim, the author surveyed all major pipeline approvals issued by FERC from 2014 to 2018, reviewing both FERC's approval decision¹³⁹ and relevant supporting documents, including any EA or EIS prepared under NEPA.¹⁴⁰ The review indicates that FERC often bases its approval of pipeline projects primarily, if not exclusively, on an assessment of economic impacts and ignores environmental factors.¹⁴¹

A total of 125 major pipeline projects were approved by FERC during the five years from 2014 to 2018.¹⁴² Each approval decision followed a standard format, beginning with a description of the relevant project, and then proceeding to determine whether it is required by the public convenience and necessity. FERC bases that determination on an assessment of economic factors and rarely considers the environmental effects of pipeline development, unless they have

¹³⁸ 2018 Notice of Inquiry, *supra* note 19, at 10-11.

¹³⁹ The author reviewed the original approval order issued by FERC for each project. Subsequent FERC orders (e.g., on rehearing) were not reviewed.

¹⁴⁰ A full list of project approvals analyzed for this study provided in Appendix A. The study focused on projects involving ground-disturbing activities. Projects not involving ground disturbance were excluded from the study. The study also excluded projects that were not approved under section 7 of the NGA (e.g., because they were covered by the "blanket" certification regime established in FERC's regulations). Projects denied approval, either under section 7 or the blanket certification regime, were also excluded from the study.

¹⁴¹ FERC has faced significant criticism regarding its economic assessment, with environmentalists and others asserting that the Commission fails to adequately consider the need for pipeline development and its likely impact on the affected groups' economic interests, as required by the 1999 Policy Statement. *See supra* notes 95 & 98.

¹⁴² The 125 pipeline projects were approved in 114 decisions, with twelve of those decisions covering two or more projects. However, all of the multi-project decisions included separate sections outlining FERC's reasons for approving each project, and thus have been treated as separate decisions for the purposes of this analysis.

immediate economic consequences.¹⁴³ A broader range of environmental effects is discussed elsewhere in FERC's decisions, but that discussion invariably follows the economic assessment.¹⁴⁴ At the conclusion of the economic assessment, and before any review of environmental effects, FERC determines whether the public convenience and necessity require approval of the project. That is, FERC *first* concludes that the project should be approved, and *only then* discusses its environmental effects.

In justifying its approval of pipeline projects, FERC typically relies solely on the economic assessment and often makes no mention of the environmental review, suggesting it has no or little bearing on the Commission's decisions. As shown in Table 1 below, of the 125 decisions issued by FERC from 2014 to 2018, just ten (eight percent) expressly stated that project approval was "based on" both the economic assessment and the environmental review.¹⁴⁵ A further forty-six decisions (thirty-seven percent) stated that approval was "based on" the economic assessment and "subject to" the environmental review.¹⁴⁶ Notably however, only five of those decisions (eleven percent) discussed environmental issues in the section outlining FERC's reasons for approving the project (the "approval section") and, in each, the discussion was limited to one to two sentences describing measures taken by the project developer to mitigate adverse environmental impacts.¹⁴⁷ A similarly brief description of mitigation measures also appeared in the approval sections of nine other

¹⁴³ For example, in most recent certification decisions, FERC has considered the amount of land likely to be disturbed by pipeline development and whether / how such disturbance will affect local landowners' economic interests, including their property rights. *See e.g.*, Order Issuing Certificates and Granting Abandonment, Nexus Gas Transmission, LLC et al., 160 FERC 61,022, 61,121 – 61,122 (Aug. 25, 2017). FERC only discussed other (non-economic) environmental impacts as part of its "public interest" assessment in fourteen decisions. Generally, however, the discussion was extremely limited. *See e.g., id.* at 61,122. For a full list of the decisions, *see* Appendix A.

¹⁴⁴ Each certification decision issued from 2014 to 2018 included a section titled "Environmental Impact," discussing the findings of the environmental review conducted for the relevant project under NEPA. As discussed further below, key climate change and other environmental impacts are often omitted from the NEPA review, and thus also not addressed in the "Environmental Impact" section of FERC's certification decision. *See infra* Part 4.

¹⁴⁵ *See e.g.*, National Fuel Gas Supply Corp. & Empire Pipeline, Inc., Order Granting Abandonment and Issuing Certificates, 158 FERC 61,145, 61,920 (Feb. 3, 2017). For a full list of the decisions, *see* Appendix A.

¹⁴⁶ *See e.g.*, Spire STL Pipeline LLC, Order Issuing Certificates, 164 FERC 61,085, 61,496 (Aug. 3, 2018). For a full list of the decisions, *see* Appendix A.

¹⁴⁷ *See e.g., id.* at 61,495. For a full list of the decisions, *see* Appendix A.

decisions (representing seven percent of all decisions).¹⁴⁸ There was no substantive discussion of the findings of FERC’s environmental review in the approval section of any decision. In fact, in almost half of all decisions (forty-eight percent), the approval section did not even mention the environmental review. It appears, then, that FERC frequently ignores environmental issues when deciding whether a project is required by the public convenience and necessity and thus should be approved under section 7 of the NGA.

Table 1: Treatment of Environmental Issues in the Approval Section of FERC’s Certification Decisions (By Year)

		2014	2015	2016	2017	2018	TOTAL
Approvals “based on” both economic analysis and environmental review		0	0	6	4	0	10 (8.0%)
Approvals “based on” economic analysis only	“Subject to” environmental review	8	12	10	10	6	46 (26.8%)
	Otherwise discussing environmental review	2	2	1	3	1	9 (7.2%)
	No discussion of environmental review	9	10	14	12	15	60 (48.0%)
TOTAL		19	24	31	29	22	125

To the extent FERC does consider environmental impacts when approving pipeline projects, it focuses on impacts addressed in its NEPA analysis. FERC has taken a fairly narrow view of the analysis required under NEPA, refusing to consider key climate change impacts, including upstream and downstream greenhouse gas emissions, except in limited circumstances.¹⁴⁹ Table 2 below shows the treatment of greenhouse gas emissions in EAs and EISs issued with respect to pipeline projects approved by FERC between 2014 and 2018 (“recent pipeline EAs /

¹⁴⁸ None of the decisions expressly stated that FERC’s approval of the project was “based on,” or “subject to,” the environmental review.

¹⁴⁹ See *infra* Part 3.2.

EISs”).¹⁵⁰ Approximately eighty-four percent of the EAs / EISs fully quantified the direct greenhouse gas emissions resulting from both construction and operation of the project under review.¹⁵¹ A further twelve percent of the EAs / EISs included a partial quantification, while the remainder discussed emissions in qualitative terms. Notably, however, there was often no discussion—either qualitative or quantitative—of upstream and downstream emissions in the recent pipeline EAs / EISs.

As shown in Table 2 below, just thirty recent pipeline EAs / EISs (twenty-seven percent of the total) quantified downstream emissions, while none quantified upstream emissions. All but one of the EAs / EISs quantifying downstream emissions were finalized in late-2017 or early-2018, after the ruling in *Sierra Club* but before issuance of the May 2018 Order. Prior to this, from late-2016 to mid-2017, upstream and/or downstream emissions were quantified in several of FERC’s pipeline approval decisions.¹⁵² Nevertheless, FERC maintained that it was not required to consider such emissions and often emphasized the unreliability of its emissions estimates—a point reiterated in the May 2018 Order. Notably, but perhaps unsurprisingly, none of the pipeline approval decisions or associated EAs / EISs issued after the May 2018 Order (and reviewed for this study) quantified upstream and/or downstream emissions.¹⁵³ Most did not even discuss upstream

¹⁵⁰ While FERC approved 125 pipeline projects during that period, it issued just 111 EAs / EISs, twelve of which covered two or more projects.

¹⁵¹ One EIS only quantified emissions from certain aspects of project operation. See FERC, *Sierrita Pipeline Project: Final Environmental Impact Statement* 4-225 (2014), <https://perma.cc/BZU3-ZJE9> (quantifying emissions due to pipeline leaks, and noting that “minimal” emissions may also be “released by blowdown events under routine operations or upset conditions,” but failing to quantify those emissions).

¹⁵² Upstream and/or downstream emissions were quantified in ten decisions during this period. See e.g., *Rover Pipeline, LLC et al., Order Issuing Certificates*, 2017 FERC LEXIS 171, 226-227 (Feb. 2, 2017). For a full list of the decisions, see Appendix A. Upstream emissions were also quantified in two decisions issued after the ruling in *Sierra Club*. See *Millennium Pipeline Co., LLC, Order Issuing Certificate*, 161 FERC 61,229, 62,305-62,306 (Nov. 28, 2017); *NEXUS Gas Transmission, LLC et al., Order Issuing Certificates and Granting Abandonment*, 160 FERC 61,022, 61,145 (Aug. 25, 2017).

¹⁵³ Downstream emissions were quantified by Commissioner La Fleur in her concurring opinions in three of the approval decisions issued after the May 2018 Order. See *Transcontinental Gas Pipe Line Co., LLC, Order Issuing Certificate*, 2018 FERC LEXIS 1788, 50 (Dec. 12, 2018) (La Fleur, concurring); *RH energytrans, LLC, Order Issuing Certificates*, 2018 FERC LEXIS 1768, 146-147

Table 2: Treatment of Greenhouse Gas Emissions in Recent Pipeline EAs / EISs (By Year)¹⁵⁴

		2014	2015	2016	2017	2018	Total
<i>Direct Emissions</i>							
Quantified	All	11	19	21	23	20	94 (84.7%)
	Construction only	3	1	6	0	0	10 (9.0%)
	Operation only	1	1	1	0	0	3 (2.7%)
Not quantified		2	0	1	0	1	4 (3.6%)
<i>Indirect Emissions</i>							
Quantified	All	0	0	0	0	0	0 (0.0%)
	Upstream only	0	0	0	0	0	0 (0%)
	Downstream only	0	0	1	14	15	30 (27.0%)
Not quantified		17 ¹⁵⁵	21 ¹⁵⁶	28	9	6	81 (73.0%)
TOTAL		17	21	29	23	21	111

(Dec. 7, 2018) (La Fleur, concurring); Tex. Eastern Transmission, LP, Order Issuing Certificate and Approving Abandonment, 2018 FERC LEXIS 1612, 44-45 (Nov. 16, 2018) (La Fleur, concurring).

¹⁵⁴ The table only shows the number of EAs / EISs that quantified greenhouse gas emissions. As a result, the table does not reflect situations in which greenhouse gas emissions were quantified in FERC's certification decision, but not the associated EA / EIS.

¹⁵⁵ One EIS quantified the potential emissions reductions that could be achieved if natural gas transported via the project was substituted for oil in heating systems. See FERC, Rockaway Delivery Lateral & Northeast Connector Project: Environmental Impact Statement 4-169 (2014), <https://perma.cc/T3C6-KPN3>.

¹⁵⁶ One EA quantified the potential emissions reductions that could be achieved if natural gas transported via the project was substituted for coal in electricity generation. See FERC, Algonquin Gas Transmission, LLC Salem Lateral Project: Environmental Assessment 2-88 (2014), <https://perma.cc/LG2W-8223>.

and downstream emissions in quantitative terms. In fact, a quantitative discussion of such emissions was only included in twenty percent of all recent pipeline EAs / EISs.¹⁵⁷

FERC has repeatedly acknowledged that the greenhouse gas emissions associated with pipeline development “contribute incrementally to climate change.”¹⁵⁸ However, FERC has consistently refused to assess the significance of that contribution, arguing that there is “no standard methodology to determine how a [pipeline] project’s relatively small incremental contribution to [greenhouse gases] would translate into physical effects on the global environment.”¹⁵⁹ FERC has also refused to monetize the climate damages resulting from project-related emissions, for example, using the social cost of carbon (“SCC”).¹⁶⁰ The SCC reflects the cost, expressed in dollars per ton, of current and future damage caused by carbon dioxide emissions.¹⁶¹ It is widely considered the best available estimate of the costs imposed by climate damage,¹⁶² having been developed by an interagency working group, comprising experts from eleven federal

¹⁵⁷ In most cases, the discussion merely highlighted the benefits of switching from coal or oil to natural gas, with FERC emphasizing that this could reduce downstream greenhouse gas emissions. *See infra* Appendix A.

¹⁵⁸ *See e.g.*, FERC, RH energytrans, LLC Risberg Line Project: Environmental Assessment 115 (2018), <https://perma.cc/B2R2-QTZX>.

¹⁵⁹ *See e.g.*, FERC, Transcontinental Gas Pipe Line Company, L.L.C. Gateway Expansion Project: Environmental Assessment 55 (2018), <https://perma.cc/DRW7-C29C>. FERC only made a determination with respect to the significance of greenhouse gas emissions in six (five percent) of the EAs / EISs issued with respect to pipeline projects approved from 2014 to 2018. *See infra* Appendix A.

¹⁶⁰ *See e.g.*, FERC, Final Environmental Impact Statement for Midship Pipeline Company, LLC – Midcontinent Supply Header Interstate Pipeline Project, Volume I 4-192 (2018), <https://perma.cc/4CAQ-LXAG>.

¹⁶¹ EPA, FACT SHEET: SOCIAL COST OF CARBON 1 (2015), <http://bit.ly/2a9OhmW>. The SCC was developed by the Interagency Working Group on the Social Cost of Carbon (IWG, which was established by the Obama administration in 2009, and included representatives from eleven federal agencies. *See* Interagency Working Group on Social Cost of Carbon, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (May 2013, revised July 2015), <https://perma.cc/3NCG-6ZQT>. In 2017, the Trump administration disbanded the Interagency Working Group and withdrew its estimate of the SCC “as no longer representative of governmental policy.” *See* Exec. Order No. 13783, 82 Fed. Reg. 16093, 16095-16096 (Mar. 31, 2017).

¹⁶² *See e.g.*, Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 375 SCI. 6352 (2017); Michael Greenstone et al., *Developing a Social Cost of Carbon for U.S. Regulatory Analysis: A Methodology and Interpretation*, 7 REV. ENTL. ECON. & POL’Y 23 (2013).

bodies, based on the latest scientific and economic modeling.¹⁶³ Despite this, however, FERC has refused to use the SCC because (in its view) the “tool has methodological limitations” that undermine its usefulness.¹⁶⁴

Notwithstanding its refusal to assess significance, in several recent pipeline EAs / EISs, FERC has baldly dismissed pipeline projects’ climate impacts. Many of the EAs / EISs emphasized that the direct greenhouse gas emissions associated with pipeline development represent a trivial proportion of the national or global greenhouse gas inventory.¹⁶⁵ When discussing indirect emissions, FERC often claims that such emissions would occur regardless of pipeline development because natural gas will continue to be produced and used, but transported in other ways.¹⁶⁶ FERC also frequently claims that pipeline development will lead to the substitution of natural gas for coal and thus reduce total emissions.¹⁶⁷ Little evidence is, however, provided to support those claims. Indeed, none of the recent pipeline EAs / EISs issued by FERC included a detailed assessment of likely changes in the use of natural gas, coal, and/or other energy sources.

FERC also often fails to consider pipelines projects’ vulnerability to the effects of climate change. Just half (fifty-one percent) of recent pipeline EAs / EISs discussed the likely effects of climate change on the project area and, of those, only seven (six percent of the total) analyzed how those effects would impact the project and/or identified measures to mitigate any adverse impacts (see Table 3 below).

¹⁶³ See generally, INTERAGENCY WORKING GROUP ON SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (2013, revised 2015), <https://perma.cc/3NCG-6ZQT>.

¹⁶⁴ FERC, *supra* note 160, at 4-192.

¹⁶⁵ See e.g., FERC, Tennessee Gas Pipeline Company, L.L.C. Connecticut Expansion Project: Environmental Assessment 119 (2015), <https://perma.cc/YEH8-7489> (asserting that greenhouse gas “emissions from the construction and operation of the proposed Project would be negligible compared to the global [greenhouse gas] emission inventory”).

¹⁶⁶ See e.g., May 2018 Order, *supra* note 21, at 61,695 (claiming that upstream and downstream greenhouse gas emissions “will likely occur regardless of the Commission’s approval of the . . . Project”).

¹⁶⁷ See e.g., FERC, *supra* note 165, at 119 (stating that “burning natural gas results in less [carbon dioxide-equivalent] compared to other fuel sources (e.g., fuel oil or coal)”).

Table 3: Treatment of Climate Change Impacts in Recent Pipeline EAs / EISs (By Year)

		2014	2015	2016	2017	2018	TOTAL
Climate change discussed	Impacts in project area	7	8	17	15	10	57 (51.4%)
	Project's vulnerability to impacts	1	0	0	5	0	6 (5.4%)
	Mitigation measures	0	0	0	4	0	4 (3.6%)
Climate change not discussed		10	13	12	8	11	54 (48.6%)
TOTAL¹⁶⁸		17	21	29	23	21	111

5. INTEGRATING ENVIRONMENTAL CONSIDERATIONS INTO FERC'S CERTIFICATION PROCESS

As the foregoing discussion shows, while FERC claims to consider both economic and environmental impacts when certifying interstate natural gas pipelines, it frequently justifies its certification decisions solely on economic grounds. It appears, then, that environmental factors are often given little or no weight in FERC's certification decisions. Even where they are taken into account in decision-making, FERC typically ignores key climate change impacts associated with pipeline development, including upstream and downstream greenhouse gas emissions. This has prompted criticism from some scholars (including this author), who assert that FERC should evaluate upstream and downstream emissions as part of its certification process because doing so would provide valuable information about the climate impacts of pipeline development, leading to improved decision-making.¹⁶⁹ This Article goes further, arguing that consideration of upstream

¹⁶⁸ The totals listed reflect the number of EAs / EISs issued in each year. The totals may not equal the sum of each column because some EAs / EISs fall into more than one category.

¹⁶⁹ See e.g., Weissman & Webb, *supra* note 25, at 46 (asserting that consideration of upstream and downstream emissions would "increase[e] awareness of natural gas' potential climate impacts" and thus "encourage more climate-sensitive decision-making"); Hein et al., *supra* note 25, at 5 (asserting that, by considering upstream and downstream emissions, FERC can "limit legal risk . . .

and downstream emissions is not only good policy, but a legal requirement under section 7 of the NGA. The existence of that requirement is supported by the language and history of section 7, the case law interpreting it, and FERC's 1999 Policy Statement and other orders applying it.

Under section 7 of the NGA, before certifying any pipeline project, FERC must find that it "is or will be required by the public convenience and necessity." The courts have repeatedly held that, when making its finding, FERC *may* consider the environmental impacts of pipeline development, including upstream and downstream impacts. There is, however, limited case law addressing whether FERC *must* do so.¹⁷⁰ The case law that does exist indicates that such impacts are central to FERC's determination of whether pipeline development is required by the public convenience and necessity. That view is supported by the language and history of section 7 of the NGA and FERC's own orders interpreting and applying the section. Thus, FERC arguably cannot fulfill its statutory obligation under section 7 of the NGA unless it considers the full climate change and other environmental impacts of pipeline development, including upstream and downstream impacts.

5.1 Requirement to Assess Environmental Impacts

For over a century the public convenience and necessity standard has been used in various federal and state statutes governing the certification of public services.¹⁷¹ The courts have consistently interpreted those statutes as requiring certifying agencies to determine whether provision of the relevant service is in the public interest based on a comprehensive assessment of

while better informing policymakers and the public about the environmental effects of proposed projects").

¹⁷⁰ See generally *Pub. Utilities Comm'n of State of Cal. v. FERC*, 900 F.2d 269, 281 (D.C. Cir. 1990) (indicating that it is "entirely plausible" that Congress intended the former FPC (now FERC) to consider "environmental and conservation factors" but failing to rule on whether such consideration is required); *Minisink Residents for Env'tl. Pres. & Safety*, 762 F.3d at 101 (observing that FERC's 1999 Policy Statement indicates that it "will" consider environmental impacts); *Meyersville Citizens for a Rural Cmty*, 783 F.3d at 1309 (noting that FERC's 1999 Policy Statement listed "advancing clean air objectives" as a potential benefit of pipeline development that FERC may consider when approving projects); *Sierra Club*, 867 F. 3d at 1373 (indicating that FERC "could deny a . . . certificate on the grounds that the pipeline would be too harmful to the environment"). Cf. *Hein et al*, *supra* note 25, at 9.

¹⁷¹ See *supra* Part 2.3.

its benefits and costs.¹⁷² Thus, in the context of the NGA, the Supreme Court has directed FERC to “evaluate all factors bearing on the public interest” when making certification decisions.¹⁷³ Of course, in *NAACP*, the Supreme Court emphasized that FERC’s decision cannot take into account every factor affecting the general public welfare.¹⁷⁴ However, it must be based on a review of all factors relevant to achieving the purposes of the NGA, which the Supreme Court described as “encourag[ing] the orderly development of plentiful supplies of natural gas at reasonable prices,” while avoiding “conservation, environmental, and antitrust” issues.¹⁷⁵

The courts have consistently identified the environmental impacts of pipeline development, including upstream and downstream impacts, as relevant to FERC’s determination of public convenience and necessity under section 7 of the NGA. Perhaps most notable is the Supreme Court’s 1961 decision in *FPC v. Transcontinental Gas Pipe Line Corp* (“*Transcontinental*”), which concerned the then-FPC’s refusal to certify a pipeline intended to transport natural gas from Texas to New York, where it would be used to fuel industrial boilers that were previously fueled by coal.¹⁷⁶ Supporters argued that the pipeline was required by the public convenience and necessity because, among other things, switching from coal to natural gas would reduce sulfur dioxide emissions and thus improve local air quality.¹⁷⁷ The FPC acknowledged this potential benefit, but ultimately decided that it was outweighed by the negative impacts of pipeline development, and thus refused to issue a certificate.¹⁷⁸ While upholding that decision, the Supreme Court emphasized that the potential for improved air quality was a relevant consideration under the public convenience and necessity standard, and “was entitled to [be given] great weight” by the FPC.¹⁷⁹

¹⁷² *Id.*

¹⁷³ *Atlantic Refining Co.*, 360 U.S. at 391.

¹⁷⁴ *NAACP*, 425 U.S. at 669.

¹⁷⁵ *Id.* at 670 & Footnote 6 (listing holding that the former FPC, now FERC, “has authority to consider conservation, environmental, and antitrust questions”).

¹⁷⁶ *Transcontinental Gas Pipe Line Corp.*, 365 U.S. at 8.

¹⁷⁷ *Id.* at 4-5.

¹⁷⁸ *Transcontinental Gas Pipe Line Corp.*, Order Denying Certificate of Public Convenience and Necessity, 21 F.P.C. 138, 142 (Jan. 30, 1959) (holding that “[a]lthough . . . the idea of ameliorating a smoke condition found unpleasant and annoying . . . is an attractive one, more weighty considerations compel denial of the grant” of a certificate for the pipeline).

¹⁷⁹ *Transcontinental Gas Pipe Line Corp.*, 365 U.S. at 29.

Subsequent cases have reaffirmed FERC’s authority to consider environmental impacts—both positive and negative—when certifying interstate natural gas pipelines.¹⁸⁰ For example, in *Sierra Club*, the U.S. Court of Appeals for the D.C. Circuit emphasized that “FERC could deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment.”¹⁸¹ As discussed in Part 3.2 above, the court held that FERC violated NEPA by failing to adequately consider the environmental impacts of the Southeast Market Pipelines Project, including downstream greenhouse gas emissions.¹⁸² The court’s decision rested on a finding that, under the NGA, FERC had “statutory authority to act” on information regarding downstream emissions when deciding whether to certify the project. That finding was affirmed in *Birckhead*, with the D.C. Circuit again holding that FERC’s certification decision may take into account environmental factors, including downstream emissions.¹⁸³

While the above decisions clearly establish that FERC is *authorized* to consider environmental impacts in its certification decisions, they do not address whether it is *required* to do so. The case law does, however, establish such a requirement with respect to the other subsidiary issues identified in *NAACP*. In *Pittsburgh v. FPC*, the U.S. Court of Appeals for the D.C. Circuit held that the former FPC (now FERC) must consider any potential anti-competitive effects of pipeline development when issuing certificates under section 7 of the NGA.¹⁸⁴ The D.C. Circuit reasoned that federal antitrust laws evince a national policy in favor of competition which can be advanced through FPC regulation under the NGA.¹⁸⁵ Indeed, as was recognized in *NAACP*, avoiding anticompetitive outcomes is a subsidiary purpose of the NGA.¹⁸⁶ Thus, the D.C. Circuit

¹⁸⁰ See e.g., *South Coast Air Quality Mgmt. Dist.*, 621 F.3d at 1098-1099; *Minisink Residents for Env’tl. Pres. & Safety*, 762 F.3d at 101-102; *Meyersville Citizens for a Rural Cmty.*, 783 F.3d 1307-1309; *Sierra Club*, 867 F.3d at 1373.

¹⁸¹ *Id.*

¹⁸² *Id.* at 1374-1375.

¹⁸³ *Birckhead*, 2019 U.S. App. LEXIS 16757, at 15-16.

¹⁸⁴ *Pittsburgh v. Fed. Power Comm’n*, 237 F.2d 741, 754 (D.C. Cir. 1956).

¹⁸⁵ *Id.* See also *Pub. Util. Comm’n of Cal. v. Fed. Energy Reg. Comm’n*, 900 F.2d 269, 281 (D.C. Cir. 1990).

¹⁸⁶ *NAACP*, 425 U.S. at 670 & Footnote 6.

held that anticompetitive issues are directly related to the FPC's exercise of regulatory authority under the NGA, and must be taken into account in its decisions.¹⁸⁷

Environmental issues have a similarly direct bearing on regulation under the NGA. The courts have recognized that other federal statutes—most notably NEPA—establish a clear federal policy in favor of protecting the environment which FERC plays a role in effectuating through its exercise of regulatory authority under the NGA.¹⁸⁸ In this regard, the courts have emphasized that FERC regulates activities, including pipeline development, which “necessarily and typically have dramatic natural resource impacts.”¹⁸⁹ Again, under the NGA, a key purpose of regulation is to avoid adverse environmental outcomes.¹⁹⁰ Given this, and applying the reasoning in *Pittsburgh v. FPC*, there is a strong argument that FERC is legally required to consider environmental impacts when determining whether to issue a certificate of public convenience and necessity under section 7 of the NGA.

5.2 Scope of the Required Environmental Assessment

Seemingly accepting the requirement to consider environmental issues, in its 1999 Policy Statement, FERC described its role under section 7 of the NGA as being to “balance demonstrated market need against potential adverse environmental impacts.”¹⁹¹ In recent certification decisions (i.e., issued between 2014 and 2018), FERC has focused on direct environmental impacts that have immediate economic consequences, such as land disturbance.¹⁹² For example, one recent decision noted that pipeline construction would disturb agricultural land, preventing its use for one growing season and thus imposing financial losses on the landowner.¹⁹³ However, the decision did

¹⁸⁷ *Pittsburgh*, 237 F.2d at 754. See also *Pub. Util. Comm'n of Cal.*, 900 F.2d at 281.

¹⁸⁸ *Pub. Util. Comm'n of Cal.*, 900 F.2d at 281.

¹⁸⁹ *Id.*

¹⁹⁰ *NAACP*, 425 U.S. at 670 & Footnote 6. See also *Myersville Citizens for a Rural Cmty Inc.*, 783 F.3d at 1307.

¹⁹¹ 1999 Policy Statement, *supra* note **Error! Bookmark not defined.**, at 61,737. See also *id.* at 61,743 (indicating that “[i]n reaching a final determination on whether a project will be in the public convenience and necessity, the Commission performs a flexible balancing process during which it weighs the factors presented in a particular application,” including “the proposal’s . . . environmental impact”).

¹⁹² See *supra* Part 4 and Appendix A.

¹⁹³ *Spire STL Pipeline LLC*, Order Issuing Certificates, 164 FERC 61,085, 61,495 (Aug. 3, 2018).

not explore the economic consequences of other direct environmental impacts, such as construction-related greenhouse gas emissions. Those consequences have been entirely ignored by FERC in recent certification decisions.¹⁹⁴

Research shows that greenhouse gas emissions and associated climate change impose significant economic costs, including on the agricultural sector, with rising temperatures causing a significant decline in crop yields.¹⁹⁵ There is no rational basis for distinguishing between those impacts and others routinely considered by FERC. While the impacts of greenhouse gas emissions may be felt over longer periods, that does not prevent their consideration under section 7, which expressly requires assessment of the “future” public convenience and necessity.¹⁹⁶ The courts have emphasized the need to assess the convenience and necessity of the public as a whole, so the fact that emissions impacts may be widespread does not excuse FERC from considering them.¹⁹⁷ Nor does the fact that precise impacts may be somewhat speculative,¹⁹⁸ since the courts have long recognized that the public convenience and necessity assessment will often involve a degree of “prophecy,” but that “uncertainties need [not] paralyze the Commission into inaction.”¹⁹⁹ FERC is also not prevented from acting merely because other agencies (e.g., the Environmental Protection Agency) exercise regulatory control over emissions. In this regard, the courts have recognized that FERC’s assessment will often encompass issues for which “other agencies are more directly

¹⁹⁴ See *supra* Part 4 and Appendix A.

¹⁹⁵ See e.g., Frances C. Moore, *New Science of Climate Change Impacts on Agriculture Implies Higher Social Cost of Carbon*, 8 NATURE COMMUNICATIONS 1607 (2017).

¹⁹⁶ 15 U.S.C. §717f. See also *Pittsburgh*, 237 F.2d at 752 (describing FERC’s role as being “to examine the relevant past and present and then to exercise a rational judgment upon that data to ascertain the public convenience and necessity in the *reasonable foreseeable future*” (emphasis added)).

¹⁹⁷ See e.g., *R.R. Com. of Tex. v. Shupee*, 57 S.W.2d 295 (Tex. App. 1933) (holding that the public convenience and necessity standard requires consideration of impacts on “the public as distinguished from that of an individual or any number of individuals”).

¹⁹⁸ Various tools can be used to predict the likely impact – both locally and globally – of greenhouse gas emissions. For a description of available tools, see JESSICA WENTZ, *ASSESSING THE IMPACTS OF CLIMATE CHANGE ON THE BUILT ENVIRONMENT UNDER NEPA AND STATE EIA LAWS: A SURVEY OF CURRENT PRACTICES AND RECOMMENDATIONS FOR MODEL PROTOCOLS* 15-26 (2015), <https://perma.cc/M6MQ-S2UB>.

¹⁹⁹ *Detroit & Cleveland Navigation Co.*, 326 U.S. at 241.

responsible and more competent,” but that does not prevent their consideration by the Commission.²⁰⁰

Given the above, and to ensure a balanced assessment of pipeline projects, FERC must consider the economic impacts of project-related greenhouse gas emissions. However, as explained in Part 5.1, FERC cannot base its assessment solely on economic impacts. Thus, FERC must do more than merely consider direct, economically-significant environmental effects. As we shall see below, FERC historically considered a much broader range of environmental effects as part of the section 7 assessment, but has recently sought to constrain the scope of its review. Specifically, in the May 2018 Order, FERC indicated that it would only consider those environmental impacts required to be analyzed under NEPA.²⁰¹ FERC has therefore refused to consider upstream and downstream greenhouse gas emissions, which it views as falling beyond the scope of its NEPA analysis (except in limited circumstances).²⁰² This is not only inconsistent with FERC’s treatment of other upstream and downstream impacts in NGA decisions, but also contrary to decades of case law interpreting the public convenience and necessity standard.

Both the history of the public convenience and necessity standard, as well as the case law interpreting it, suggest that section 7 of the NGA imposes an independent obligation to consider environmental impacts, which is not constrained by NEPA. As discussed in Part 2.3 above, pre-NGA statutes incorporating the public convenience and necessity standard were universally interpreted as requiring a broad-ranging public interest assessment, taking into account environmental and other social costs.²⁰³ That interpretation was known to, and implicitly approved

²⁰⁰ Pittsburgh, 237 F.2d at 754-755 (holding that FERC may consider issues relating to national defense, despite the fact that they fall within the competence of other agencies, and stating that “[t]he Commission would . . . do well to respect the views of such other agencies as to those” issues). See also Glick & Christiansen, *supra* note 25, at 43 (arguing that “[a]gencies throughout the federal government regulatory consider climate change in their decision-making process . . . even though those agencies cannot establish a federal climate policy”).

²⁰¹ May 2018 Order, *supra* note 22, at 61,695 (stating that FERC is “not aware of any basis that indicates the Commission is required to consider environmental effects that are outside of our NEPA analysis . . . in our determination of whether a project is in the public convenience and necessity under section 7”).

²⁰² *Id.* at 61,699-61,701.

²⁰³ See generally, Jones, *supra* note 60, at 427-428.

by, Congress when it enacted section 7 of the NGA.²⁰⁴ In its early decisions under section 7, FERC's predecessor—the FPC—recognized the need to consider various “public interest factors not specifically mentioned” in the NGA, including the “effect of pipeline location on areas traversed.”²⁰⁵ In this regard, the FPC emphasized that “[t]he construction of natural gas [pipeline] facilities can affect scenic, historic, and recreational values, which are factors to be considered . . . by the Commission in determining whether facilities proposed to be constructed are required by the public convenience and necessity.”²⁰⁶

The FPC did not limit its review to the localized environmental impacts of pipeline development, but also considered upstream and downstream effects, which it viewed as directly relevant to its public convenience and necessity assessment.²⁰⁷ Congress clearly agreed as evidenced by the fact that, in 1942, it amended section 7 of the NGA to enable greater consideration of downstream effects.²⁰⁸ The Supreme Court weighed in on the amendment in 1944 in *FPC v. Hope Natural Gas Co.*, wherein Justice Jackson opined that the NGA “require[s the FPC] to take account of the ultimate use of the [natural] gas.”²⁰⁹ Consistent with this view, in subsequent decisions, the FPC—and later FERC—emphasized the need to consider downstream environmental impacts associated with natural gas use.²¹⁰

FPC decisions issued in the 1950s and 1960s routinely discussed how natural gas transported via a proposed pipeline project would be used and assessed the air quality impacts of

²⁰⁴ See *supra* Part 2.2.

²⁰⁵ Statement of General Policy and Amendments to Section 157.14(a) of the Regulations Under the Natural Gas Act, 44 FPC 47 (July 10, 1970) [hereinafter 1970 Policy Statement].

²⁰⁶ Proposed Rule Making: Rights-of-Way Routes and Aboveground Facilities of Natural Gas Companies, 34 FED. REG. 9348 (June 14, 1969).

²⁰⁷ See *supra* Part 2.2.

²⁰⁸ *Id.*

²⁰⁹ *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 639 (1944) (Jackson, J., dissenting).

²¹⁰ See *e.g.*, Order Clarifying Statement of Policy, *supra* note 18, at 61,398 (stating that “[i]n considering the potential adverse environmental impact of a project, the Commission will continue to take into account as a factor for its consideration the overall benefits to the environment of natural gas consumption”).

that use.²¹¹ In a key decision in 1966, the FPC refused to certify a pipeline intended to deliver natural to electric generators in Los Angeles, in part because there was insufficient evidence that switching from oil- to gas-fired generation would improve local air quality.²¹² The FPC held that the air quality impact of natural gas use is “one of the most important factors” to be considered under section 7 of the NGA.²¹³ The FPC expressly rejected claims that environmental statutes enacted after the NGA make other entities solely responsible for addressing air pollution or “deprive [it] of its statutory authority and responsibility [under the NGA] to make an independent determination” as to whether increased natural gas use would help “to combat air pollution.”²¹⁴

There is nothing to suggest that the FPC viewed the effect of NEPA as somehow different from that of other environmental statutes. On the contrary, following the enactment of NEPA, the FPC continued to consider downstream air quality impacts when assessing the public convenience and necessity under section 7 of the NGA.²¹⁵ The FPC focused on conventional air pollutants that have localized impacts, such as sulfur dioxide and nitrogen dioxide, but greenhouse gases are equally relevant to the section 7 assessment. Like sulfur dioxide and nitrogen dioxide, greenhouse gases have been classified as “air pollutants” under the federal Clean Air Act, with the Environmental Protection Agency finding that they “endanger public health and welfare.”²¹⁶ Again, while the impacts of greenhouse gas emissions may be less localized and immediate, that does not prevent their consideration under section 7. Nor does the fact that precise impacts are difficult to predict with certainty.

²¹¹ See e.g., *Transcontinental Gas Pipe Line Corp., Order Denying Certificate of Public Convenience and Necessity*, 21 FPC 138 (Jan. 30, 1959); *Transwestern Pipeline Co., Order Granting and Denying Certificates*, 36 FPC 176 (July 26, 1966).

²¹² *Transwestern Pipeline Co.*, 36 FPC at 190 (holding “we cannot conclude on the present record that additional amounts of natural gas should be certificated because of the effects of such certification upon the air pollution situation”).

²¹³ *Id.* at 213.

²¹⁴ *Id.* at 185.

²¹⁵ See generally, 1970 Policy Statement, *supra* note 145, at 48 (listing “air pollution” as an issue to be considered by the FPC in its certification decisions). FERC has also recognized that air pollution is a relevant factor to be taken into account. See 1999 Policy Statement, *supra* note 17, at 61,748 (indicating that “advancing clean air objectives” is a potential benefit of pipeline development that should be considered by FERC).

²¹⁶ *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

6. CONCLUSION

Under section 7 of the NGA, when approving the construction or expansion of interstate natural gas pipelines, FERC must ensure that pipeline development “is or will be required by the present or future public convenience and necessity.”²¹⁷ This has been held to require a broad-ranging review, in which FERC must “evaluate all factors bearing on the public interest” to determine whether pipeline development would further the NGA’s objectives of ensuring plentiful natural gas supplies, while avoiding conservation, environmental, and antitrust issues.²¹⁸ To make that determination, FERC considers the need for pipeline development, its benefits, and costs. FERC undertakes two separate reviews, one of which focuses on the economic impacts of development, and the other on its environmental consequences. However, FERC’s environmental review often ignores key climate change impacts associated with pipeline development, including the potential for upstream and downstream greenhouse gas emissions.²¹⁹ Even where those impacts are reviewed, they appear to have little bearing on FERC’s decision to approve pipeline development, which is typically justified solely on economic grounds.²²⁰

Debate is currently raging—both among scholars and in the courts—over the extent to which the climate impacts of pipeline development must be considered under NEPA. The D.C. Circuit recently weighed in, ruling in *Sierra Club* that NEPA requires consideration of downstream greenhouse gas emissions, at least in some circumstances.²²¹ The courts have not addressed whether the NGA imposes a separate requirement to consider upstream and/or downstream emissions. However, the language and history of the NGA, the case law interpreting it, and FERC’s own statements regarding its implementation, support the existence of such a requirement. Indeed, FERC cannot fulfil its statutory obligation under the NGA to ensure pipeline development is required by the public convenience and necessity, without considering upstream and downstream emissions. FERC must, therefore, change its approach to evaluating pipeline projects. Going

²¹⁷ 15 U.S.C. § 717f(e).

²¹⁸ *Atlantic Refining Co.*, 360 U.S. at 391. *See also supra* Part 2.3.

²¹⁹ *See supra* Part 4.

²²⁰ *Id.*

²²¹ *Sierra Club*, 867 F.3d 1357, 1374.

forward, before approving any project, FERC must be satisfied that its economic benefits outweigh its potential climate change and other environmental impacts.

APPENDIX A: FERC PIPELINE APPROVALS (2014 – 2018)

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
2018					
Transcontinental Gas Pipe Line Company	Gateway Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	FERC notes that the applicant has taken steps to minimize the environmental impacts of construction by, for example, "limiting idling of construction vehicles to reduce exposure to diesel exhaust.	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions would make a "small incremental contribution" to climate change, but asserts that there is "no standard methodology" for assessing how that contribution "would translate into physical effects on the global environment." ²²³	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
RH energytrans, LLC	Risberg Line Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC asserts that because "[b]urning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)" the project could lead to a	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be

²²² This column only shows references to the environmental impacts of pipeline development that were included in the approvals section of FERC's certification decisions. See *infra* Part 4.

²²³ While indirect emissions were not quantified in the EA, downstream emissions were estimated by Commissioner La Fleur in her concurring opinion to FERC's decision. Commissioner La Fleur compared downstream emissions to state- and nation-wide totals. See *Transcontinental Gas Pipe Line Co., LLC, Order Issuing Certificate, 2018 FERC LEXIS 1788, 50 (Dec. 12, 2018) (La Fleur, concurring)*.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				reduction in regional emissions, but does not attempt to quantify that reduction. ²²⁴ FERC notes that project-related emissions would "contribute incrementally to climate change," but asserts that there is no way to determine "whether the project's contribution to climate change would be significant."	taken to mitigate adverse effects.
Texas Eastern Transmission, LP	Lambertville East Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. ²²⁵ FERC does not discuss the significance of emissions.	N/A
Sierrita Gas Pipeline LLC	Sierrita Gas Pipeline Compressor Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC notes that because "[b]urning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project

²²⁴ While indirect emissions were not quantified in the EA, downstream emissions were estimated by Commissioner La Fleur in her concurring opinion to FERC's decision. Commissioner La Fleur compared downstream emissions to state- and nation-wide totals. *See* RH energytrans, LLC, Order Issuing Certificates, 2018 FERC LEXIS 1768, 146-147 (Dec. 7, 2018) (La Fleur, concurring).

²²⁵ While indirect emissions were not quantified in the EA, downstream emissions were estimated by Commissioner La Fleur in her concurring opinion to FERC's decision. Commissioner La Fleur compared downstream emissions to state- and nation-wide totals. *See* Tex. Eastern Transmission, LP, Order Issuing Certificate and Approving Abandonment, 2018 FERC LEXIS 1612, 44-45 (Nov. 16, 2018) (La Fleur, concurring).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		project.		oil or coal)" the project could lead to a reduction in regional emissions, but does not attempt to quantify that reduction. FERC notes that project-related emissions would "contribute incrementally to climate change," but asserts that there is no way to "attribute discrete environmental effects to [specific] greenhouse gas emissions."	or steps that can be taken to mitigate adverse effects.
Cheniere Midstream Holdings, Inc. & Midship Pipeline Company, LLC	Midcontinent Supply Header Interstate Pipeline Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC notes that project-related emissions would "contribute incrementally to climate change," but asserts that there is no way to determine whether that contribution "would be discretely or cumulatively significant."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Company	Rivervale South to Market Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC compares total project-related emissions to state- and nation-wide totals. FERC notes that project-related emissions would "contribute incrementally to climate change," but	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				asserts that there is no way to determine how that contribution "would translate into physical effects on the global environment."	
Spire STL Pipeline LLC	Spire STL Pipeline	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity require approval of" the project.	FERC notes that construction of the project would prevent the use of agricultural land for one growing season. The applicant will "compensate landowners for crop production losses."	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC does not discuss the significance of emissions.	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Columbia Gas Transmission, LLC	Eastern Panhandle Expansion Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals. FERC notes that the project would make an "incremental contribution to [greenhouse gas] emissions," but asserts that there is "no standard methodology to determine whether, and to what extent," that contribution "would result in physical effects on the environment."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Texas Eastern Transmission, LLC	TX-LA Markets Project	Based on the economic analysis, FERC finds that "the public convenience and	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		necessity require approval of" the project.		<p>downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p> <p>FERC notes that the project would make an "incremental contribution to [greenhouse gas] emissions," but asserts that it "has not identified a suitable method to determine" how that contribution "would translate into physical effects on the environment."</p>	
Florida Southeast Connection, LLC	Okeechobee Lateral	Based on the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC does not quantify direct emissions from project construction and operation, but describes them as "very small."</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p> <p>FERC asserts that "[t]here is no widely accepted standard to ascribe significance to a given rate or volume of [greenhouse gas] emissions."</p>	N/A
Gulf South Pipeline Company, LP	Westlake Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p>	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				FERC notes that the project would make an "incremental contribution to [greenhouse gas] emissions," but asserts that it "[n]o standard methodology exists to determine" how that contribution "would translate into physical effects on the environment."	
Paiute Pipeline Company	Paiute 2018 Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p> <p>FERC notes that the project would make an "incremental contribution to [greenhouse gas] emissions," but asserts that it "[n]o standard methodology exists to determine" how that contribution "would translate into physical effects on the environment."</p>	N/A
Brazoria Interconnector Gas Pipeline LLC & Texas Eastern Transmission, LP	Stratton Ridge Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
Florida Gas	East-West	"Based on" the	N/A	FERC quantifies direct emissions from project	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Transmission Company, LLC	Project	economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.		<p>construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals.</p> <p>FERC notes that the project would make an "incremental contribution to [greenhouse gas] emissions," but asserts that they would not have a "discernible impact on regional climate change."</p>	
DTE Midstream Appalachia, LLC	Birdsboro Pipeline Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state- and nation-wide totals. FERC also notes that "burning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)."</p> <p>FERC asserts that "there is currently no scientifically-accepted methodology available to correlate specific amounts of [greenhouse gas] emissions to discrete changes in average temperature rise, annual precipitation fluctuations, surface water temperature changes, or other physical effects."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Texas Eastern Transmission,	South Texas Expansion	"Based on" the economic analysis,	N/A	FERC quantifies direct emissions from project construction and operation only.	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
LP		FERC finds that "the public convenience and necessity require approval of" the project.		FERC does not discuss the significance of emissions.	
Pomelo Connector, LLC	Pomelo Connector Pipeline	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A		
WBI Energy Transmission, Inc.	Valley Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides a "conservative estimate" of downstream emissions (assuming full combustion). FERC does not discuss the significance of emissions.	N/A
Southern Natural Gas Company, LLC	Fairburn Expansion Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides a "conservative estimate" of downstream emissions (assuming full combustion). FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace coal or oil and gas combustion results in fewer greenhouse gas emissions.	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				FERC notes that the project would make an "incremental" contribution to greenhouse gas emissions, but asserts that it is not possible to "determine the [p]roject's incremental physical impacts on the environment caused by [those] emissions."	
Dominion Energy Cove Point LNG, LP	Eastern Market Access	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC estimates downstream emissions (assuming full combustion). FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels.</p> <p>FERC notes that project-related emissions would "increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that there is no method by which to "determine the Project's incremental physical impacts on the environment caused by climate change," or assess "whether the Project's contribution to cumulative impacts on climate change would be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
PennEast Pipeline Company, LLC	Penn East Pipeline	Based on the economic analysis, and "subject to" the environmental review, FERC finds that	FERC notes that the project "will result in some adverse environmental impacts,"	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of</p>	FERC discusses impacts of climate change on project area. No discussion of how

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		"the public convenience and necessity require approval of" the project.	but asserts that applicant will take steps to mitigate those impacts, including by varying its proposed route to avoid "sensitive resources" (among other things).	downstream emissions (assuming full combustion). FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels. FERC notes that project-related emissions would "increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that "determine the projects' incremental physical impacts on the environment caused by climate change," and thus assess "whether the projects' contribution to cumulative impacts on climate change would be significant."	climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Company, LLC	St James Supply Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity require approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC describes emissions as "de minimis," but otherwise does not discuss significance.	N/A
2017					
Columbia Gas Transmission, LLC & Columbia Gulf Transmission, LLC	Mountaineer / Gulf Xpress	Based on the economic analysis, FERC finds that "the public convenience and necessity require approval of" the	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC asserts that actual downstream emissions are	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		project.		<p>likely to be lower than estimated because natural gas transported via the project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels.</p> <p>FERC does not quantify emissions from upstream natural gas production, but notes that "[c]ontinued gas development could have cumulative operational air impacts . . . While FERC does not regulate gas production, nor do we issue the air permits for compressor stations or oil and gas well operations, new gas development would need to comply with federal, state, and local air regulations."</p> <p>FERC notes that project-related emissions would "increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that there is no way to "determine the projects' incremental physical impacts on the environment caused by climate change," and thus assess "whether the projects' contribution to cumulative impacts on climate change would be significant."</p>	or steps that can be taken to mitigate adverse effects.
Tennessee Gas Pipeline Company, L.L.C.	Lone Star Project	Based on the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	FERC notes that the applicant has sought to minimize the environmental impacts of project construction, including by developing a "visual screening	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
			plan" and undertaking noise surveys."		
Millennium Pipeline Company, LLC	Eastern System Upgrade	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion)²²⁶ and compares those emissions to regional and nation-wide totals.</p> <p>FERC asserts that there is no way to "attribute discrete environmental effects to [greenhouse gas] emissions" or "determine localized or regional impacts from [greenhouse gas] emissions."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipeline Line Company, LLC	Gulf Connector Expansion	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion) and compares those emissions to state-wide totals.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
Kinder Morgan Louisiana Pipeline LLC	Sabine Pass Expansion	"Based on" the economic analysis, FERC finds that "the	N/A	FERC quantifies direct emissions from project construction and operation only.	N/A

²²⁶ While upstream emissions were not quantified in the EIS, FERC's decision approving the project did include an estimate thereof. FERC did not explain how the estimate was produced, but indicated that it reflects an "upper bound" and "involves a significant amount of uncertainty." See Millennium Pipeline Co., LLC, Order Issuing Certificate, 161 FERC 61,229, 62,305-62,306 (Nov. 28, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		public convenience and necessity requires approval of" the project.		FERC does not discuss the significance of emissions.	
Columbia Gas Transmission, LLC	WB Xpress	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC asserts that downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace higher-emitting fuels such as coal or oil.</p> <p>FERC notes that project-related emissions would "increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that there is no way to "determine the projects' incremental physical impacts on the environment caused by climate change," and thus assess "whether the projects' contribution to cumulative impacts on climate change would be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Natural Gas Pipeline Company of America LLC	Gulf Coast Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an estimate of downstream emissions (assuming full combustion).</p> <p>FERC notes that project-related greenhouse gas</p>	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				emissions "would increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that there is no way to "determine the project's incremental physical impacts on the environment caused by climate change," and thus assess "whether the project's contribution to cumulative impacts on climate change would be significant."	
ANR Pipeline Company	Wisconsin South Expansion	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an estimate of downstream emissions (assuming full combustion).</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
Atlantic Coast Pipeline, LLC	Atlantic Coast Pipeline Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC provides an estimate of downstream emissions (assuming full combustion). FERC compares emissions to regional and national totals.</p> <p>FERC asserts that there is way to "correlate specific amounts of [greenhouse gas] emissions to discrete changes" or determine "the project's incremental physical impacts on the environment" and thus assess the significance of emissions.</p>	FERC discusses impacts of climate change on project area. FERC also discusses the likely effect of climate impacts on the project and steps taken to mitigate adverse effects.
Atlantic Coast Pipeline, LLC	Atlantic Coast Supply Header Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public	N/A		

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		convenience and necessity requires approval of" the project.			
Mountain Valley Pipeline LLC	Mountain Valley Pipeline Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	The applicant has agreed to route variations, among other things, "avoid sensitive environmental resources, such as archeological sites and wetlands."	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels. FERC compares project-related emissions to regional and national totals.	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Equitrans, L.P.	Equitrans Expansion Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC notes that project-related emissions "would increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that there is no way "determine the projects' incremental physical impacts on the environment caused by climate change," or "whether the projects' contribution to cumulative impacts on climate change would be significant."	
Gulf South Pipeline Company, LP	St Charles Parish Expansion Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an estimate of downstream emissions (assuming full combustion).	N/A

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²⁷	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		approval of" the project.		FERC does not discuss the significance of emissions.	
Eastern Shore Natural Gas Company	2017 Expansion Project.	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an estimate of downstream emissions (assuming full combustion). FERC does not discuss the significance of emissions.	N/A
Columbia Gas Transmission, LLC	Central Virginia Connector Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an estimate of downstream emissions (assuming full combustion). FERC does not discuss the significance of emissions.	N/A
NEXUS Gas Transmission, LLC	Nexus Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	FERC notes that the project will have "adverse environmental . . . impacts," but emphasizes that the applicant has taken steps to minimize those impacts, including by	FERC quantifies direct emissions from project construction and operation. FERC provides an "upper bound estimate" of downstream emissions (assuming full combustion). ²²⁷ FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the	FERC discusses impacts of climate change on project area. FERC also discusses the likely effect of climate impacts on the project and steps taken to mitigate adverse

²²⁷ While upstream emissions were not quantified in the EIS, FERC's decision approving the project did include an estimate thereof. FERC described the estimate as "conservative" and indicated that it was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. *See* NEXUS Gas Transmission, LLC et al., Order Issuing Certificates and Granting Abandonment, 160 FERC 61,022, 61,145 (Aug. 25, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
			varying its route to "avoid[] sensitive resources."	project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels. FERC compares project-related emissions to regional and national totals.	effects.
Texas Eastern Transmission, LLC	TEAL Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	FERC notes that the project will have "adverse environmental . . . impacts," but emphasizes that the applicant has taken steps to minimize those impacts, including by "construct[ing] approximately 94 percent of the proposed facilities on existing rights-of-way and on previously disturbed property."	FERC asserts that there is currently no method by which "to correlate specific amounts of [greenhouse gas] emissions to discrete changes" in climatic conditions. As a result, the significance of project-related emissions cannot be assessed.	
Texas Eastern Transmission, LP	Bayway Lateral Project	Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation. FERC provides an estimate of downstream emissions (assuming full combustion). FERC notes that project-related emissions would "contribut[e] to [greenhouse gas] emissions globally," but asserts that there is no way "to correlate specific amounts of [greenhouse gas] emissions to discrete changes in average temperature rise, annual precipitation fluctuations,	FERC discusses impacts of climate change on project area. FERC also discusses the likely effect of climate impacts on the project and steps taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				surface water temperature changes, or other physical effects on the environment." Nevertheless, FERC concludes that "the Project would not significantly contribute to [greenhouse gas] cumulative impacts or climate change."	
National Fuel Gas Supply Corp. and Empire Pipeline, Inc.	Northern Access 2016 Project	"Based on" both the economic analysis and environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state- and nation-wide totals.</p> <p>With respect to indirect emissions, FERC asserts that because "[n]atural gas is a lower carbon dioxide] emitting fuel when compared to other fuel sources (e.g., fuel oil and coal)," the project could lead to a reduction in regional emissions, but does not attempt to quantify that reduction.²²⁸</p> <p>FERC notes that the project would contribute incrementally to total greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" project-related emissions would</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

²²⁸ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of upstream and downstream emissions. FERC emphasized that the estimates reflect an "upper bound" and "involve[] a significant amount of uncertainty. This is especially true for downstream end-use combustion because some of the gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions. This estimate also assumes the maximum capacity is transported 365 days per year, which is rarely the case because many projects are designed for peak use. Therefore, it is unlikely that this total amount of [greenhouse gas] emissions would occur; and emissions are likely to be significantly lower than the above estimate." See National Fuel Gas Supply Corp. & Empire Pipeline, Inc., Order Granting Abandonment and Issuing Certificates, 158 FERC 61,145, 61,947 (Feb. 3, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				"translate into physical effects on the global environment."	
Transcontinental Gas Pipe Line Co., LLC	Atlantic Sunrise Project	"Based on" the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation.</p> <p>FERC also provides a "conservative" of downstream emissions (assuming full combustion).²²⁹ FERC asserts that actual downstream emissions are likely to be lower than estimated because natural gas transported via the project may displace coal or oil and "burning natural gas emits less" greenhouse gases than those fuels.</p> <p>FERC notes that the project "would contribute to climate change-inducing [greenhouse gas] emissions," but does not assess the significance of those emissions.</p>	FERC discusses impacts of climate change on project area. FERC also discusses the likely effect of climate impacts on the project. No discussion of steps that can be taken to mitigate adverse effects.
Tennessee Gas Pipeline	Orion Project	"Based on" the economic analysis,	N/A	FERC quantifies direct emissions from project construction and operation only. ²³⁰	FERC discusses impacts of climate

²²⁹ While upstream emissions were not quantified in the EIS, FERC's decision approving the project did include an estimate thereof. FERC indicated that the estimate was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. FERC emphasized that the calculation produced "an upper-bound estimate that involves a significant amount of uncertainty." See Transcontinental Gas Pipe Line Co., LLC, Order Issuing Certificate, 158 FERC 61,125, 61,769 (Feb. 3, 2017).

²³⁰ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of upstream and downstream emissions. With respect to upstream emissions, FERC indicated that the estimate was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. FERC emphasized that the calculation produced "an

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Company, L.L.C.		FERC finds that "the public convenience and necessity requires approval of" the project.		FERC notes that the project would make a "small incremental contribution" to global greenhouse gas emissions, but asserted that there is no "standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Rover Pipeline LLC	Rover Pipeline Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public	N/A	FERC quantifies direct emissions from project construction and operation only. ²³¹ FERC compares emissions to state-wide totals. FERC notes that the project would make a	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts

upper-bound estimate that involves a significant amount of uncertainty." Similarly, with respect to downstream emissions, FERC indicated that its estimate assumed full combustion of the gas transported via the project and thus likely over-estimated the true extent of emissions. FERC noted that "some of the [transported] gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions. This estimate also assumes the maximum capacity is transported 365 days per year, which is rarely the case because many projects are designed for peak use." *See Tennessee Gas Pipeline Co., L.L.C., Order Issuing Certificate, 2017 FERC LEXIS 170, 90-92 (Feb. 2, 2017).*

²³¹ While indirect emissions were not quantified in the EIS, FERC's decision approving the project did include an estimate of upstream and downstream emissions. With respect to upstream emissions, FERC indicated that the estimate was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. FERC emphasized that the calculation produced "an upper-bound estimate that involves a significant amount of uncertainty." Similarly, with respect to downstream emissions, FERC indicated that its estimate assumed full combustion of the gas transported via the project and thus likely over-estimated the true extent of emissions. FERC noted that "some of the [transported] gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions. This estimate also assumes the maximum capacity is transported 365 days per year, which is rarely the case because many projects are designed for peak use." *See Rover Pipeline, LLC et al., Order Issuing Certificates, 2017 FERC LEXIS 171, 226-227 (Feb. 2, 2017).*

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		convenience and necessity requires approval of" the project.		"relatively small incremental contribution" to global greenhouse gas emissions, but asserts that there is "no standard methodology to determine" how that contribution "would translate into physical effects of the global environment."	would affect the project or steps that can be taken to mitigate adverse effects.
Panhandle Eastern Pipe Line Company, LP	Panhandle Backhaul Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A		
Trunkline Gas Company, LLC	Trunkline Backhaul Project	Based on the economic analysis, and "subject to" the environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A		
Dominion Carolina Gas Transmission, LLC	Transco to Charleston Project	"Based on" both the economic analysis and environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals. With respect to indirect emissions, FERC asserts that because "[b]urning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)" the project could lead to a	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				reduction in emissions, but does not attempt to quantify that reduction. ²³² FERC notes that project-related emissions "would increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that "there is no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	adverse effects.
Northern Natural Gas Company	Northern Lights 2017 Expansion Project	"Based on" both the economic analysis and environmental review, FERC finds that "the public convenience and necessity requires	N/A	FERC quantifies direct emissions from project construction and operation only. ²³³ FERC notes that the project would make a "relatively small" contribution to greenhouse gas emissions, but asserts that there is "no standard	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project

²³² While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of downstream emissions, assuming full combustion of the natural gas transported via the project. FERC emphasized that its estimate likely overstates the true extent of emissions because "some of the [transported] gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions." *See* Dominion Carolina Gas Transmission, LLC, Order Issuing Certificate, 158 FERC 61,126, 61,799 (Feb. 2, 2017).

²³³ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of downstream emissions, assuming full combustion of the natural gas transported via the project. FERC emphasized that its estimate likely overstates the true extent of emissions because it "assumes the maximum capacity of gas is transported 356 days per year, which is rarely the case because projects are designed for shippers' peak day use. In addition, some of the gas may displace other fuels, which could lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions." *See* Northern Natural Gas Co., Order Issuing Certificate, 2017 FERC LEXIS 98, 27-28 (Jan. 30, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		approval of" the project.		methodology to determine how" that contribution "would translate into physical effects on the global environment."	or steps that can be taken to mitigate adverse effects.
Algonquin Gas Transmission, LLC & Maritimes & Northeast Pipeline, LLC	Atlantic Bridge Project	"Based on" both the economic analysis and environmental review, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC asserts that because "natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)" the project could lead to a reduction in emissions, but does not attempt to quantify that reduction.²³⁴</p> <p>FERC notes the project would contribute to global greenhouse gas emissions, but asserts that "there is no standard methodology to determine how . . . [that] contribution . . . would translate into physical</p>	FERC discusses impacts of climate change on project area and steps taken by the applicant to minimize adverse effects thereof on the project.

²³⁴ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of upstream and downstream emissions. With respect to upstream emissions, FERC indicated that the estimate was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. FERC emphasized that the calculation produced "an upper-bound estimate that involves a significant amount of uncertainty." Similarly, with respect to downstream emissions, FERC indicated that its estimate assumed full combustion of the gas transported via the project and thus likely over-estimated the true extent of emissions. FERC noted that "some of the [transported] gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions. This estimate also assumes the maximum capacity is transported 365 days per year, which is rarely the case because many projects are designed for peak use." See *Algonquin Gas Transmission, LLC & Maritimes & Northeast Pipeline, LLC*, Order Issuing Certificates, 158 FERC 61,061, 61,401-61,402 (Jan. 25, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				effects on the global environment.”	
Columbia Gas Transmission, LLC	Leach Xpress Project	Based on the economic analysis, and “subject to” the environmental review, FERC finds that the public convenience and necessity requires approval of” the project.	The applicant “incorporated a total of 31 route variations” for various reasons, including to “avoid[] sensitive resources.”	FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals. With respect to indirect emissions, FERC asserts that because “[b]urning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)” the project could lead to a reduction in emissions, but does not attempt to quantify that reduction. ²³⁵	FERC discusses impacts of climate change on project area and the project’s vulnerability to those impacts. No discussion of steps that can be taken to mitigate adverse effects.
Columbia Gas Transmission, LLC	Rayne Xpress Project	Based on the economic analysis, and “subject to” the environmental review, FERC finds that the public convenience and necessity requires approval of” the project.	N/A	FERC notes the project would contribute to global greenhouse gas emissions, but asserts that “there is no standard methodology to determine how . . . [that] contribution . . . would translate into physical effects on the global environment.”	

²³⁵ While indirect emissions were not quantified in the EIS, FERC’s decision approving the project did include an estimate of upstream and downstream emissions. With respect to upstream emissions, FERC indicated that the estimate was calculated based on average emissions rates associated with natural gas extraction, processing, and transport. FERC emphasized that the calculation produced “an upper-bound estimate that involves a significant amount of uncertainty.” Similarly, with respect to downstream emissions, FERC indicated that its estimate assumed full combustion of the gas transported via the project and thus likely over-estimated the true extent of emissions. FERC noted that “some of the [transported] gas may displace other fuels, which could actually lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions. This estimate also assumes the maximum capacity is transported 365 days per year, which is rarely the case because many projects are designed for peak use.” See *Columbia Gas Transmission, LLC and Columbia Gulf Transmission, LLC, Order Issuing Certificates and Approving Abandonment*, 158 FERC 61,046, 61,263-61,264 (Jan. 19, 2017).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
2016					
Tennessee Gas Pipeline Company, L.L.C.	Triad Expansion Project	"Based on" both the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. ²³⁶ FERC does not discuss the significance of emissions.	N/A
Golden Pass Pipeline LLC	Pipeline Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC noted that project-related emissions "would increase the atmospheric concentration of [greenhouse gases] . . . and contribute incrementally to climate change," but asserts that "there is no standard methodology to determine" how that contribution "would translate into physical effects on the global environment" and thus "would be significant."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Texas Eastern Transmission,	Access South, Adair	"Based on" the economic analysis,	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify	N/A

²³⁶ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of downstream emissions from an electricity generating facility, which would use the natural gas transported via the project. *See* Tennessee Gas Pipeline Co., L.L.C., Order Issuing Certificate, 157 FERC 61,254, 61,924-61,925 (Dec. 30, 2016).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
LP	Southwest, and Lebanon Extension Project	FERC finds that the public convenience and necessity requires approval of" the project.		emissions from project operation, but asserts that there would be "no significant increase" therein. ²³⁷ FERC notes that project-related emissions "would incrementally contribute to climate change," but asserts that "there is no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	
Tennessee Gas Pipeline Company, L.L.C	Southwest Louisiana Supply Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that "the Project is expected to increase [greenhouse gas] emissions," but asserts that it "would not have any discernible influence on regional climate change."	N/A
Millennium Pipeline Company, L.L.C	Valley Lateral Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the project would contribute to global greenhouse gas emissions, but asserts that "there is no standard methodology to determine how" that contribution "would translate into	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be

²³⁷ While indirect emissions were not quantified in the EA, FERC's decision approving the project did include an estimate of downstream emissions, assuming full combustion of the natural gas transported via the project. FERC emphasized that its estimate likely overstates the true extent of emissions because it "assumes the maximum capacity of gas is transported 356 days per year, which is rarely the case because projects are designed for shippers' peak day use. In addition, some of the gas may displace other fuels, which could lower total . . . emissions. It may also displace gas that otherwise would be transported via different means, resulting in no change in . . . emissions." See *Tex. Eastern Transmission, LP, Order Issuing Certificate and Approving Abandonment*, 157 FERC 61,223, 61,776 (Dec. 21, 2016).

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		approval of" the project.		physical effects on the global environment."	taken to mitigate adverse effects.
Paulsboro Natural Gas Company, LLC	Delaware River Pipeline Relocation Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC notes that project "would contribute [greenhouse gas] emissions during construction," but does not quantify those or other project-related emissions. FERC does not discuss the significance of emissions.	N/A
Tennessee Gas Company L.L.C.	Susquehanna West Project	"Based on" both the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	N/A
Tennessee Gas Pipeline Company, L.L.C.	Broad Run Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify emissions from project operation. FERC notes that project-related emissions would add to the greenhouse gas emissions in the atmosphere, but asserts that there is "no standard methodology . . . to determine what global, physical environmental impacts would result from" the emissions.	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Dominion Transmission, Inc	Leidy South Project	"Based on" the economic analysis, FERC finds that the	N/A	FERC quantifies direct emissions from project construction and operation.	FERC discusses impacts of climate change on project area.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		public convenience and necessity requires approval of" the project.		<p>FERC quantifies indirect emissions from downstream natural gas use (assuming full combustion). FERC notes that while "natural gas may have higher upstream [greenhouse gas] emissions than coal, the total lifecycle [greenhouse gas] emissions from electricity production using natural gas is lower than that of electricity from coal."</p> <p>FERC notes that the project would make a "small incremental contribution" to total greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."</p>	No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Co., LLC	Dalton Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC notes that the project would make an "incremental contribution to" greenhouse gases, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects of the global environment." Nevertheless, FERC concludes that "the Project would not significantly contribute to [greenhouse gas] cumulative impacts."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Eastern Shore Natural Gas Company	White Oak Mainline Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC notes that the project would contribute to</p>	FERC discusses impacts of climate change on project area. No discussion of how

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		necessity requires approval of" the project.		total greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Company, LLC	Virginia Southside Expansion Project II	"Based on" both the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the project "is expected to slightly increase [greenhouse gas] emissions," but asserted that it "would not have a discernible influence on regional climate change."	N/A
Transcontinental Gas Pipe Line Company, LLC	NY Bay Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the project would make a "relatively small" contribution to total greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment." Nevertheless, FERC concludes that the project "would not contribute significantly to . . . climate change."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Gulf South Pipeline Company, LP	Coastal Bend Header Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the	N/A	FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals. FERC notes that project-related emissions "would incrementally increase the atmospheric	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		project.		concentrations of" greenhouse gases, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	or steps that can be taken to mitigate adverse effects.
Dominion Carolina Gas Transmission, LLC	Columbia to Eastover Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction only. FERC does not quantify emissions from project operation, but asserts that they are "insignificant."</p> <p>With respect to indirect emissions, FERC asserts that because "[b]urning natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)," increasing natural gas use would have "a beneficial effect on regional air quality," but does not attempt to quantify that benefit.</p> <p>FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and thus "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment." Nevertheless, FERC concludes that, "[b]ecause the Project's contribution to [greenhouse gas] emissions would only be through construction equipment and minor fugitive emissions, the contribution to [greenhouse gas] emissions would not be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Elba Express Company, L.L.C.	Elba Express Modification Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC notes that Project-related emissions "would incrementally increase the atmospheric concentrations of" greenhouse gases, but asserts that ""there is no standard methodology to determine" whether and how that contribution "would result in physical effects on the environment," and thus "determine whether or not the Project's contribution to cumulative impacts on climate change would be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Southern Natural Gas Company, L.L.C.	Zone 3 Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
UGI Sunbury, LLC	Sunbury Pipeline Projects	"Based on" both the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	The applicant "considered . . . environmental conditions in locating its proposed pipeline."	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC notes that natural gas transported via the project would be used at a power plant, which "would need an alternative gas supply" if the project is not constructed.</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				FERC notes that project-related emissions "would result in minimal incremental increases to the atmospheric concentrations of" greenhouse gases, but asserts that it "cannot determine the [p]roject's incremental physical impacts due to climate change on the environment." Nevertheless, FERC concludes that "the [p]roject's contribution to cumulative impacts on climate change would not be significant."	
Dominion Transmission, Inc.	New Market Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would collectively increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment"	N/A
Kinder Morgan Louisiana Pipeline LLC	Lake Charles Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC notes that the project is intended to transport natural gas to a liquefied natural gas export termination, which could lead to "a reduction of [greenhouse gases] if natural gas exported replaces the burning of coal in power plants in Asia," but does not attempt to quantify that reduction.	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				FERC notes that project-related emissions would "contribute to the overall amount of atmospheric" greenhouse gases, but asserts that there is "no current methodology or policy guidance to determine how" that contribution "would translate into physical effects on the global environment."	
Northwest Pipeline LLC	Kalama Lateral Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would contribute to the overall amount of atmospheric" greenhouse gases, but "there is no standard methodology to determine how" that contribution "would result in physical effects on the environment either locally or globally."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Company, LLC	Garden State Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions would make a "small incremental contribution to" greenhouse gases, but asserts that "there is no standard methodology to determine how" that contribution "would translate into physical effects on the global environment." Nevertheless, FERC concludes that the project "would not contribute significantly to . . . climate change."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Florida Gas Transmission Company, LLC	Jacksonville Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review,	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify emissions from project operation.	N/A

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		FERC finds that the public convenience and necessity requires approval of" the project.		FERC does not discuss the significance of emissions.	
Texas Gas Transmission, LLC	Northern Supply Access Project	"Based on" both " the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the "[p]roject would contribute [greenhouse gas] emissions," but does not assess significance.	N/A
Natural Gas Pipeline Company of America, LLC	Chicago Market Expansion Project.	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project operation only. FERC does not quantify emissions from project construction. FERC does not discuss the significance of emissions.	N/A
Tennessee Gas Pipeline Company, L.L.C.	Connecticut Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction only. FERC describes emissions as "negligible compared to the global [greenhouse gas] emission inventory." FERC does not quantify operational emissions, but describes them as "minor." With respect to indirect emissions, FERC	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				<p>emphasizes that “burning natural gas results in less [greenhouse gas emissions] compared to other fuel sources (e.g., fuel oil or coal),” but does not attempt to quantify the potential reduction in downstream emissions associated with the project.</p> <p>FERC notes that project-related emissions “would increase the atmospheric concentration of” greenhouse gases and “incrementally contribute to climate change,” but asserts that there is “no standard methodology to determine how” that contribution “would translate into physical effects on the global environment.” Nevertheless, FERC concludes that “because the [p]roject’s contribution to [greenhouse gas] emissions would only be through construction equipment, the contribution to [greenhouse gas] emissions would not be significant.”</p>	adverse effects.
Rockies Express Pipeline LLC	REX Zone 3 Capacity Enhancement Project	“Based on” the economic analysis, FERC finds that the public convenience and necessity requires approval of” the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals.</p> <p>FERC notes that the project would “represent an incremental increase in [greenhouse gas] emissions,” but asserts that there is “no standard methodology to determine how” that contribution “would translate into physical effects on the global environment.” Nevertheless, FERC concludes that project-related emissions would not “contribute significantly to climate change.”</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Florida Southeast Connection, LLC	Florida Southeast Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC notes that a portion of the natural gas transported via the projects would be used at electric generating facilities and emphasizes that "[b]ecause natural gas emits less [carbon dioxide] compared to other fuel sources (e.g., fuel oil or coal)," its use "would reduce current [greenhouse gas] emissions," but does not attempt to quantify that reduction. ²³⁸	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Co., LLC	Hillabee Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC notes that the project would make an "incremental contribution to" total greenhouse gas emissions, but asserts that there is no "standard methodology to determine how that contribution "would translate into physical effects on the global environment." "	
Sabal Trail Transmission LLC	Sabal Trail Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires	N/A		

²³⁸ Downstream emissions were quantified in a "supplemental" EIS issued by FERC in February 2018 (i.e., following litigation regarding its approval of the project). See FERC, Southeast Market Pipelines Project: Final Supplemental Environmental Impact Statement (2018), <https://perma.cc/5XR8-QHQT>.

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		approval of" the project.			
Texas Gas Transmission, LLC	Western Kentucky Lateral Project	"Based on" both the economic analysis and the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify operational emissions, but indicates that they would be "insignificant," because "the project would not add or modify any compressor units. FERC does not discuss the significance of emissions.	N/A
2015					
Equitrans, L.P	Ohio Valley Connector Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and "incrementally contribute to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	N/A
Dominion Transmission, Inc.	Monroe to Cornwall Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	N/A

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Columbia Gas Transmission, LLC	Utica Access Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A		
Trunkline Gas Company, LLC	Pipeline Modification Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC notes that "greenhouse gases are . . . emitted from the combustion of natural gas by end users," but does not attempt to quantify the extent of those emissions.</p> <p>FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is no "methodology or policy guidance to determine how" that contribution "would translate into physical effects on the global environment" and thus determine whether the project's "contribution to cumulative impacts on climate change would be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
American Midstream	Natchez Pipeline	"Based on" the economic analysis,	"To limit environmental impacts, [the applicant]	FERC quantifies direct emissions from project construction and operation only.	N/A

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
(Midla), LLC	Project	FERC finds that the public convenience and necessity requires approval of" the project.	proposes to construct the . . . Pipeline on or adjacent to [an existing] right-of-way for 79 percent of its proposed route."	FERC does not discuss the significance of emissions.	
Texas Eastern Transmission, LP	Gulf Marks Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the project would "increase" greenhouse gas emissions, but concludes that the increase "is relatively small on the scale of" total emissions, and "would not have a discernible influence on regional climate change."	N/A
Dominion Transmission, Inc.	Lebanon West II Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	N/A
Transcontinental Gas Pipe Line Company, LLC	Gulf Trace Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				contribution "would translate into physical effects on the global environment" and thus determine whether the project "would result in significant impacts related to climate change."	adverse effects.
Dominion Cove Point LNG, LP	Keys Energy Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC notes that the natural gas transported via the project would be used at electric generating facilities, which "would contribute long-term operating air emissions to the region."	N/A
Dominion Cove Point LNG, LP	St Charles Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC does not discuss the significance of emissions.	
Columbia Gulf Transmission, LLC	Cameron Access Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that	N/A

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				contribution "would translate into physical effects on the global environment."	
Texas Gas Transmission, LLC	Ohio-Louisiana Access Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that the project "is expected to increase [greenhouse gas] emissions," but asserts that project-related emissions are "relatively small" compared to global totals, and "would not have a discernible influence on regional climate change."	N/A
Dominion Transmission, LLC	Clarington Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	N/A
Algonquin Gas Transmission, LLC	Salem Lateral Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. With respect to indirect emissions, FERC notes that natural gas transported via the project will be used in electricity generation, potentially displacing coal-fired generation. FERC estimates that, because "[n]atural gas is a lower [carbon dioxide] emitting fuel," the generating facility "would reduce regional [carbon dioxide] emissions by an average of 457,626 tons annually – a decrease of 1.3 percent in New	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				<p>England's regional [carbon dioxide] emissions from electricity generation" during the period 2016-2025.</p> <p>FERC notes that the project would make an "incremental contribution" to greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" that contribution "would impact climate change or translate into physical effects on the global environment."</p>	
Paiute Pipeline Company	Elko Area Expansion Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction only. FERC does not quantify operational emissions.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
Cheniere Creole Trail Pipeline, L.P.	Creole Trail Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC notes that project-related emissions will "increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is currently "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment" and thus "determine whether the Project would result in significant impacts related to climate change."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line	Rock Springs Expansion	"Based on" the economic analysis, and	N/A	FERC quantifies direct emissions from project construction and operation only.	FERC discusses impacts of climate

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Co., LLC	Project	"subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.		<p>With respect to indirect emissions, FERC notes that natural gas transported via the project will be used in electricity generation, potentially displacing coal- and oil-fired generation, and resulting in lower emissions because coal and oil "emit greater amounts of [greenhouse gases] than natural gas." FERC does not attempt to quantify the decline in emissions.</p> <p>FERC notes that the project would "increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would impact climate change or translate into physical effects on the global environment" and thus assess "whether or not whether or not the Project's contribution to . . . climate change would be significant." Nevertheless, FERC concludes that, "[b]ecause [greenhouse gas] emissions from the Project would be short-term and limited to the duration of construction, they should result in no significant impacts on climate change."</p>	change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Empire Pipeline, Inc. & National Fuel Gas Supply Corporation	Tuscarora Lateral Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC notes that "the Project could contribute to cumulative improvements in regional air quality if a portion of the natural gas associated with the Project displaced</p>	N/A

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
		approval of" the project.		the use of other more polluting fossil fuels," but does not attempt to quantify the reduction in downstream emissions. FERC does not discuss the significance of emissions.	
Algonquin Gas Transmission, LLC	Algonquin Incremental Market (AIM) Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to regional and nation-wide totals. With respect to indirect emissions, FERC notes that the project could lead to the substitution of natural gas for fuel oil (which is currently "widely used" in the project area) and thus "regionally offset[] some greenhouse gas emissions," but does not does not attempt to quantify the extent of the emissions reduction. FERC notes that the project would make a "small incremental contribution" to greenhouse gases, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
National Fuel Gas Supply Corporation	West Side Expansion and Modernization Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	N/A
Tennessee Gas	Niagara	"Based on" the	FERC notes that the	FERC quantifies direct emissions from project	FERC discusses

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Pipeline Company, LLC	Expansion Project	economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	applicant has taken steps to "limit[] new disturbances to the environment," including by locating the pipeline within or parallel to existing rights-of-way.	construction and operation only. FERC compares emissions to regional and nation-wide totals. FERC notes that project-related emissions "would contribute to the overall amount of atmospheric" greenhouse gases, but asserts that "it is impossible to quantify the impacts that [project] emissions . . . would have on climate change."	impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
National Fuel Gas Supply Corporation	Northern Access 2015 Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A		
Rockies Express Pipeline LLC	Zone 3 East-to-West Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project operation only. Direct emissions from project construction not quantified. FERC does not discuss the significance of emissions.	N/A
Carolina Gas Transmission Corporation	Edgemoor Compressor Station Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC does not discuss the significance of emissions.	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
2014					
Cheniere Corpus Christi Pipeline, LP	Cheniere Pipeline Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	FERC notes that the applicant has taken to steps to "minimize impacts on landowners and the environment," including by locating the pipeline within existing rights-of-way.	<p>FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals.</p> <p>FERC notes that project-related emissions "would incrementally increase the atmospheric concentrations of" greenhouse gases, but asserts that there is no way to "determine the [p]roject's incremental physical impacts due to climate change on the environment" and thus assess "whether or not the [p]roject's contribution to cumulative impacts on climate change would be significant."</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Transcontinental Gas Pipe Line Co., LLC	Leidy Southeast Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals.</p> <p>With respect to indirect emissions, FERC notes that upstream natural gas production "would result in increased long-term emissions" of greenhouse gases, but does not attempt to quantify the extent of those emissions. FERC also emphasizes that "natural gas is a lower . . . emitting fuel as compared to other fuel sources" and, "[b]ecause fuel oil is widely used as an alternative to natural gas in the" project area, "it is anticipated that the [p]roject would result in the displacement of some fuel oil use, thereby regionally offsetting some" emissions. Again, however, FERC does not attempt to quantify the extent of the emissions reduction.</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
				<p>FERC notes that the project would make a “small incremental contribution” to greenhouse gases, but asserts that there is “standard methodology to determine how” that contribution “would translate into physical effects on the global environment.” Nevertheless, FERC concludes that it would not “contribute significantly to climate change.”</p>	
Texas Eastern Transmission, LP	Uniontown to Gas City Project	“Based on” the economic analysis, FERC finds that the public convenience and necessity requires approval of” the project.	N/A	<p>FERC does not quantify project-related emissions (direct or indirect), but discusses greenhouse gases and their impacts in quantitative terms.</p> <p>FERC does not discuss the significance of emissions.</p>	N/A
Columbia Gas Transmission, LLC	East Side Expansion Project	“Based on” the economic analysis, FERC finds that the public convenience and necessity requires approval of” the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC notes that upstream natural gas production “would result in increased long-term emissions” of greenhouse gases, but emphasized that production “would occur with or without the [p]roject” and thus does not does not attempt to quantify the extent of emissions.</p> <p>FERC notes that the project would make a “small incremental contribution” to total greenhouse gas emissions, but asserts that there is “no standard methodology to determine how” that contribution</p>	<p>FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.</p>

Applicant	Project	Basis for FERC's Decision	Discussion of Environmental Impacts in FERC's Decision ²²²	Discussion of Environmental Impacts in EA / EIS	
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				"would translate into physical effects on the global environment" and thus determine whether the project's contribute to climate change will be significant.	
Constitution Pipeline Company, LLC	Constitution Pipeline Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only. Emissions compared to global and nation-wide totals.</p> <p>With respect to indirect emissions, FERC notes that upstream natural gas production "would result in increased long-term emissions of" greenhouse gases, but does not attempt to quantify those emissions.</p>	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Iroquois Gas Transmission System, LP	Wright Interconnection Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC notes that the project would make a "small contribution" to total greenhouse gas emissions, but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."	
ANR Pipeline Company	Sulphur Springs Compressor Station	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project operation only. FERC does not quantify emissions from project construction, but describes them as "negligible."</p> <p>With respect to indirect emissions, FERC asserts that "without the proposed project the energy needs [of the region] may be met by alternative energy sources," such as coal and oil, and emphasizes that "natural gas is a cleaner-burning fuel. However,</p>	N/A

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				<p>FERC does not attempt to quantify the emissions reductions associated with using natural gas.</p> <p>FERC notes that project-related emissions "would cumulatively add to the U.S. and global [greenhouse gas] emission inventories," but claims that the "additions would be negligible." FERC further asserts that "there is no standard methodology to determine how the project's incremental contribution to [greenhouse gases] would translate into physical effects on the global environment."</p>	
Texas Eastern Transmission, LP	Ohio Pipeline Energy Network Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>FERC notes that project-related emissions would "increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment."</p>	N/A
Florida Gas Transmission Company, LLC	Pompano Compressor Station 21.5 Project	"Based on" the economic analysis, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC notes that the project would result in greenhouse gases emissions, but does not attempt to quantify emissions (direct or indirect).	N/A
City of	Texas Gas	"Based on" the	N/A	FERC quantifies direct emissions from project	N/A

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Clarksville, Tennessee	Interconnection	economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.		construction only. FERC asserts that there would be no emissions associated with project operation. FERC does not discuss the significance of emissions.	
Questar Overthrust Pipeline Company	Jurisdictional Tap Line (JTL) Project	Based on the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify operational emissions, but describes them as "minor." FERC does not discuss the significance of emissions.	N/A
Dominion Cove Point LNG, LP	Virginia Pipeline	Based on the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	FERC notes that the applicant has taken steps to "minimize impacts on . . . the environment," including by locating facilities within existing rights-of-way."	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions "would incrementally increase the atmospheric concentrations of" greenhouse gases, but asserts that there is "no standard methodology to determine whether and how that increase "would result in physical effects on the environment, either locally or globally" and thus assess" whether or not the Project's contribution to cumulative impacts on climate change would be significant."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Southeast Supply Header, LLC	SESH Expansion Project	"Based on" the economic analysis, and "subject to" the	N/A	FERC quantifies direct emissions from project construction and operation only.	N/A

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		environmental review, FERC finds that the public convenience and necessity requires approval of" the project.		FERC notes that project-related emissions "would cumulatively add to the U.S. and global [greenhouse gas] emission inventories," but claims that the "additions would be negligible." FERC further asserts that there is "no standard methodology to determine how the project's incremental contribution to [greenhouse gases] would translate into physical effects on the global environment."	
Transcontinental Gas Pipe Line Company, LLC	Woodbridge Delivery Lateral	Based on the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction only. FERC does not quantify operational emissions. FERC does not discuss the significance of emissions.	N/A
Cameron Interstate Pipeline, LLC	Cameron Interstate Pipeline Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	FERC quantifies direct emissions from project construction and operation only. FERC notes that project-related emissions would "increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment" and thus assess "whether or not the Project's contribution to cumulative impacts on climate change would be significant."	FERC discusses impacts of climate change on project area. No discussion of how climate change impacts would affect the project or steps that can be taken to mitigate adverse effects.
Sierrita Gas	Sierrita	"Based on" the	The applicant has	FERC quantifies direct emissions from project	FERC discusses

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Pipeline LLC	Pipeline Project	economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	developed a reclamation plan, implementation of which will minimize the visual impacts of the project.	<p>construction and some aspects of project operation only.</p> <p>With respect to indirect emissions, FERC notes that it "cannot estimate exactly where the natural gas volumes [transported via the project] would come from," and thus concludes that "it is impossible and speculative to calculate any [greenhouse gas] emissions or impacts associated with production of the natural gas."</p> <p>FERC notes that project-related emissions "would increase the atmospheric concentration of" greenhouse gases and "contribute incrementally to climate change," but asserts that there is "no standard methodology to determine how" that contribution "would translate into physical effects on the global environment." Nevertheless, FERC indicates that it does "not expect the relatively minor amount of [greenhouse gases] produced by the [p]roject to result in significant cumulative impacts related to climate change."</p>	impacts of climate change on project area. FERC concludes that "[o]peration of the buried pipeline would not be affected by the climate change impacts identified above."
Transcontinental Gas Pipe Line Company, LLC	Northeast Connector Project	Based on the economic analysis, FERC finds that "the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only. FERC compares emissions to state-wide totals.</p> <p>With respect to indirect emissions, FERC notes that natural gas transported via the projects would be used in heating systems that currently use oil, leading to a decline in emissions. FERC estimates that daily emissions would fall by 11,357 metric tons</p>	N/A
Transcontinental	Rockaway	Based on the economic	N/A		

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				Project-Related Greenhouse Gas Emissions	Other Climate Change Impacts
Gas Pipe Line Company, LLC	Delivery Lateral Project	analysis, FERC finds that "the public convenience and necessity requires approval of" the project.		<p>of carbon-dioxide equivalent.</p> <p>FERC notes that the project-related emissions would make a "small incremental contribution[]" to atmosphere greenhouse gas levels, but claims that this contribution "would be negligible compared to the global [greenhouse gas] emission inventory." FERC further asserts that there is "no standard methodology to determine how" project-related emissions "would translate into physical effects on the global environment."</p>	
Transcontinental Gas Pipe Line Company, LLC	Mobile Bay South III Expansion Project	"Based on" the economic analysis, and "subject to" the environmental review, FERC finds that the public convenience and necessity requires approval of" the project.	N/A	<p>FERC quantifies direct emissions from project construction and operation only.</p> <p>With respect to indirect emissions, FERC asserts that "natural gas made available by the [p]roject could . . . replace the use of coal or oil, thereby offsetting some [greenhouse gas] emissions in the region," but does not attempt to quantify the emissions reduction.</p> <p>FERC notes that project-related emissions "would cumulatively add to the U.S. and global [greenhouse gas] emission inventories," but claims that the additions would be "negligible." FERC further asserts that there is currently "no standard methodology to determine how" project-related emissions "would translate into physical effects on the global environment, including climate change."</p>	N/A