

# Regional Planning for Just and Reasonable Rates: Reforming Gas Pipeline Review

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*Natural gas—a fuel used for electricity generation, heating, and transportation—plays an outsized role in the U.S. economy. Under the Natural Gas Act, the Federal Energy Regulatory Commission (FERC or the Commission) is responsible for overseeing the orderly development of interstate natural gas pipelines, which facilitate the transmission of natural gas throughout the country. Before a developer can construct or expand an interstate pipeline, it must apply to FERC for authorization; FERC can approve the pipeline only if it finds that it is required by the “public convenience and necessity.” Although FERC should consider a range of factors to determine whether a pipeline will serve the public interest, in practice, it looks primarily to the existence of precedent agreements, i.e., contracts between a developer and its customers for the purchase of pipeline capacity. If a developer can demonstrate that there is a party willing to pay to use its pipeline, FERC rarely asks questions and almost always finds “public” need. In this way, the natural gas transmission network has developed through a system of ad hoc decisionmaking organized around the needs of private companies that earn a hefty return on their capital investments.*

*This pipeline-by-pipeline approach to natural gas transmission build-out leads to the construction of unnecessary, underused pipelines, which in turn increases ratepayer costs and decreases consumer welfare. Climate change further increases the risk that pipelines will become obsolete as cities and states move toward electrification. Furthermore, the gas transmission planning process—or lack thereof—stands in stark contrast to electric transmission planning, an activity that FERC also regulates but that is conducted by centralized entities*

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on a regional scale. This contrast is especially confounding considering that electric transmission is regulated under the Federal Power Act, a sister law to the Natural Gas Act with similar statutory requirements.

*Relying on economic theory, legal history, and policy analysis, we make the case for FERC's adoption of regional gas transmission planning. We begin by describing the status quo and articulating why FERC's current process is economically inefficient. In doing so, we draw parallels between gas and electric transmission planning and describe how FERC treats the two activities inconsistently. We then explain why, under two provisions of the Natural Gas Act, FERC possesses both the legal authority and obligation to require regional planning. Finally, we envision how FERC might conduct gas transmission planning going forward, encouraging FERC to account for increasing electrification efforts and to plan for gas and electric transmission in tandem.*

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## I. INTRODUCTION

Natural gas—a fuel used for electricity generation, heating, transportation, and various industrial processes—plays an outsized role in the U.S. economy. For over ten years, the United States has led the world in gas production and consumption.<sup>2</sup> Natural gas drives around 40% of U.S. utility-scale electricity generation<sup>3</sup> and is used to heat 51% of U.S. homes.<sup>4</sup> Since the early 2000s, U.S. gas production has generally continued to rise year-over-year; today, the country's yearly production is almost double that of what it was at the start of the century.<sup>5</sup> Simultaneously, the political salience of gas infrastructure has risen; projects like the Mountain Valley Pipeline are now the source of protracted legal and organizing battles.<sup>6</sup>

While natural gas was once touted for its relative environmental cleanliness compared to coal, policymakers and advocates now recognize that to meet U.S. climate goals, the country will need to wean itself off natural gas.<sup>7</sup> Today, combustion of natural gas accounts for 34% of U.S. energy-related carbon dioxide emissions.<sup>8</sup> This percentage does not include the significant amount of methane emissions

2. Robert Rapier, *The U.S. Maintains Its Natural Gas Dominance*, FORBES (Aug. 8, 2021, 2:41 PM), <https://www.forbes.com/sites/rrapier/2021/08/08/the-us-maintains-its-natural-gas-dominance/?sh=6ef0c0bc19b3> [<https://perma.cc/UA3K-V5MA?type=standard>].

3. *Natural Gas Explained: Use of Natural Gas*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/natural-gas/use-of-natural-gas.php> [<https://perma.cc/5EVK-GFZ5>] (last updated Apr. 28, 2023).

4. *Residential Energy Consumption Survey*, U.S. ENERGY INFO. ADMIN., tbl.HC6.1 (Mar. 2023) <https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%206.1.pdf> [<https://perma.cc/D6A8-ACGY>] (surveying space heating in U.S. homes by housing unit type for the year 2020).

5. *U.S. Natural Gas Marketed Production*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/dnav/ng/hist/n9050us2a.htm> [<https://perma.cc/7DFE-55XM>] (last updated Sept. 29, 2023).

6. See, e.g., Coral Davenport & Brad Plumer, *Debt Deal Includes a Green Light for a Contentious Pipeline*, N.Y. TIMES (June 2, 2023), <https://www.nytimes.com/2023/05/30/climate/mountain-valley-pipe.html> [<https://perma.cc/3F7A-3AN7>].

7. See, e.g., Press Release, Env't Prot. Agency, EPA Proposes New Carbon Pollution Standards for Fossil Fuel-Fired Power Plants to Tackle the Climate Crisis and Protect Public Health (May 11, 2023), <https://www.epa.gov/newsreleases/epa-proposes-new-carbon-pollution-standards-fossil-fuel-fired-power-plants-tackle> [<https://perma.cc/SW58-5KPC>]; Press Release, City of New York, Mayor De Blasio Signs Landmark Bill to Ban Combustion of Fossil Fuels in New Buildings (Dec. 22, 2021), <https://www.nyc.gov/office-of-the-mayor/news/852-21/mayor-de-blasio-signs-landmark-bill-ban-combustion-fossil-fuels-new-buildings> [<https://perma.cc/LU98-A8MZ>].

8. *Natural Gas Explained: Natural Gas and the Environment*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/natural-gas/natural-gas-and-the-environment.php> [<https://perma.cc/4ECT-KN6Y>] (last updated Nov. 7, 2022).

that result from the leakage of natural gas from oil and gas facilities. This unintentional leakage, which accounts for one-third of U.S. methane emissions,<sup>9</sup> nearly doubles natural gas's climate impact.<sup>10</sup> In recognition of this climate impact—on top of natural gas's other negative health consequences<sup>11</sup>—states, cities, and even the federal government are working to reduce the prevalence of natural gas in our infrastructure and energy system. These policies require a certain percentage of energy to come from renewable sources, impose energy efficiency and demand reduction standards, or prohibit natural gas connection in new construction.<sup>12</sup>

Despite the fundamental change that these policies will work on the U.S. economy and energy systems, as we explain below, the process by which gas pipelines are authorized and built has remained the same for over twenty years. Under the Natural Gas Act (NGA),<sup>13</sup> the Federal Energy Regulatory Commission (FERC or the Commission) is responsible for overseeing the orderly development of the interstate natural gas supply. Before authorizing an interstate gas pipeline, FERC must determine that the pipeline is required by the “public convenience and necessity.”<sup>14</sup> Over time, the Commission—with input from the federal courts—has given meaning to this standard.

In the years after the NGA's passage, the Commission considered a range of economic, environmental, and public policy factors in de-

9. *Id.*

10. Ramón A. Alvarez et al., *Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain*, 361 *SCIENCE* 186, 188 (2018) (“[O]ur estimate of CH<sub>4</sub> emissions across the supply chain, per unit of gas consumed, results in roughly the same radiative forcing as does the CO<sub>2</sub> from combustion of natural gas over a 20-year time horizon (31% over 100 years).”).

11. Drew R. Michanowicz et al., *Home Is Where the Pipeline Ends: Characterization of Volatile Organic Compounds Present in Natural Gas at the Point of the Residential End User*, 56 *ENV'T SCI. & TECH.* 10,258, 10,266 (2022) (finding that natural gas appliances used in a residential setting emit a variety of carcinogenic compounds).

12. *State Climate Policy Maps*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/content/state-climate-policy> [https://perma.cc/AWQ8-XDYV] (last visited Dec. 24, 2023); *Table of 100% Clean Energy States*, CLEAN ENERGY STATES ALL., <https://www.cesa.org/projects/100-clean-energy-collaborative/guide/table-of-100-clean-energy-states> [https://perma.cc/M8VP-2WDF] (last visited Nov. 13, 2023); *State Renewable Portfolio Standards and Goals*, NAT'L CONF. OF STATE LEGISLATURES, <https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx> [https://perma.cc/G5HY-K8YS] (last updated Aug. 13, 2021); Talor Gruenwald & Mina Lee, *2020: Watt a Year for Building Electrification!*, RMI (Dec. 16, 2020), <https://rmi.org/2020-watt-a-year-for-building-electrification> [https://perma.cc/YZA8-Y6Z4].

13. 15 U.S.C. §§ 717 *et seq.*

14. *Id.* § 717f(e).

termining whether a proposed pipeline would serve the public convenience and necessity.<sup>15</sup> But in recent decades, FERC has narrowed its view. Today, despite the existence of a 1999 Policy Statement that instructs otherwise,<sup>16</sup> FERC approves pipelines on an ad hoc basis that is driven by the business decisions of individual developers. When a pipeline developer applies to the Commission, instead of asking for market-based evidence that the proposed pipeline would satisfy unmet regional demand or enhance reliability, the Commission bases its decision largely on the existence of a precedent agreement: a contract between the developer and a client who wants to purchase pipeline capacity.<sup>17</sup> If the developer can show FERC a precedent agreement, the Commission will approve the pipeline, effectively substituting the existence of private contracts for a demonstration of public interest.<sup>18</sup> Since 1999, the last time that the Commission updated the policy statement governing its pipeline approval process, it has approved over 400 pipeline applications, rejecting only two.<sup>19</sup>

This pipeline-by-pipeline approval process is costly and inefficient; it encourages developers to overbuild natural gas infrastructure without consideration of that infrastructure's long-term value. Usually, consumers foot the bill.<sup>20</sup> This approval process is especially problematic in light of recent electrification and decarbonization efforts,<sup>21</sup> which threaten to render a significant portion of the country's natural gas infrastructure obsolete.

FERC's approval methodology is particularly puzzling given its imposition of demanding infrastructure planning requirements on the interstate electric grid, a related regulated industry.<sup>22</sup> FERC's authority to regulate electric transmission planning comes from the

15. *See infra* Part IV(A).

16. Certification of New Interstate Natural Gas Pipeline Facilities; Statement of Policy, 64 Fed. Reg. 51,309 (Sept. 22, 1999).

17. Alison Gocke, *Pipelines and Politics*, 47 HARV. ENV'T L. REV. 207, 211 (2023).

18. *See infra* note 55.

19. Gocke, *supra* note 17, at 211; SUSAN TIERNEY, ANALYSIS GRP., NATURAL GAS PIPELINE CERTIFICATION: POLICY CONSIDERATIONS FOR A CHANGING INDUSTRY 12 (2017). In early 2022, FERC released a proposed update to the policy statement that would require FERC to take a more holistic approach to pipeline approval. Updated Policy Statement on Certification of New Interstate Natural Gas Facilities, 87 Fed. Reg. 11,548 (Mar. 1, 2022). As discussed *infra* Part III, this update was never finalized. *See infra* text accompanying notes 67–72.

20. *See infra* text accompanying notes 83–88.

21. *See supra* note 12.

22. *See infra* Part III(B).

Federal Power Act (FPA),<sup>23</sup> the statutory inspiration for the NGA. For over a decade, electric utilities and transmission system operators have had to consider a range of factors in conducting transmission planning, including the results of economic studies and state public policies favoring clean energy.<sup>24</sup> But even though the NGA contains similar mandates to the FPA, FERC has made no similar effort to engage in natural gas transmission planning in a comprehensive and systematic manner.<sup>25</sup>

Our article makes several contributions to the literature on energy law. First, using an economic framework, we describe why FERC should require regional gas transmission planning. Pipelines are natural monopolies: considering their large up-front costs and the fact that pipeline volume increases by a larger factor than diameter increases, it is more efficient for one large pipeline to serve a given population than several smaller pipelines. As with other natural monopolies, the government—here, FERC—must protect consumers by regulating the rates that pipelines charge their customers.<sup>26</sup> But in regulating those rates, the Commission guarantees that pipelines earn a profit on their capital investment, thereby creating perverse incentives for pipelines to invest beyond what customer demand truly requires. By directing pipelines to plan for infrastructure expansion together and account for regional need in investment decisions, FERC could make natural gas infrastructure more efficient and enhance social welfare.

Second, we explain that the Commission has both the authority and obligation to require regional pipeline transmission planning. Under its NGA Section 7 responsibility to consider whether a proposed pipeline would serve the “public convenience and necessity,”<sup>27</sup> FERC must consider a wide range of variables in determining whether a pipeline would serve the public interest. In fact, in the NGA’s earlier years, the Commission regularly took a broader view of the public interest, considering factors such as a pipeline’s anticipated impact on natural gas reliability, the intended end-use of the gas it would transport, and its likely effects on air quality, to name just a

23. 16 U.S.C. §§ 791a *et seq.*

24. *See infra* Parts III(B), IV(A).

25. *See infra* Part IV(A).

26. PAUL KRUGMAN & ROBIN WELLS, MICROECONOMICS 370–75 (2d ed. 2009) (explaining the inefficiencies that result from monopolies and describing public policies designed to mitigate those inefficiencies in the context of natural monopolies).

27. 15 U.S.C. § 717f(c).

few.<sup>28</sup> It was only later, and for non-legal reasons, that the Commission adopted such a cramped view of the public interest.

The Commission's broad authority to require regional transmission planning is bolstered by its NGA Section 5 responsibility to ensure that gas transmission rates are "just and reasonable."<sup>29</sup> As statutory analogues, the NGA and FPA share similar language,<sup>30</sup> and courts frequently interpret one in reference to the other.<sup>31</sup> Under both statutes, the Commission must ensure that the rates charged for natural gas and electricity, respectively, are "just and reasonable."<sup>32</sup> When dealing with electricity, FERC has used this language to require transmission providers to conduct centralized and regional transmission planning, explaining that the more siloed planning that previously occurred "fail[ed] to promote the more efficient and cost-effective development of new transmission facilities."<sup>33</sup> When it comes to natural gas, however, the Commission facilitates an inefficient infrastructure approval process that may contribute to a failure to ensure just and reasonable rates.<sup>34</sup> This is a policy decision, not a legal one; FERC has broad authority to remedy inefficiencies in natural gas transmission infrastructure, just as it does for electric transmission infrastructure.

Thus, FERC possesses the power—and the responsibility—to reshape how natural gas transmission expansion occurs. A better planning process could take a variety of forms; we offer several suggestions. First, the Commission should incentivize (or require) gas companies to form regional organizations to coordinate pipeline expansion planning. Second, the Commission should instruct these regional planning groups to account for projected regional demand when making infrastructure decisions. Third, the Commission should require gas companies and/or regional planning organizations to account for relevant state, regional, and national decarbonization and electrification policies when planning for pipeline expansion. To do otherwise would leave ratepayers with a mess of

28. *See infra* Part IV(A).

29. 15 U.S.C. § 717d(a).

30. *Id.*; 16 U.S.C. § 824e(a).

31. *See Hughes v. Talen Energy Mktg., LLC*, 578 U.S. 150, 164 n.10 (2016).

32. 15 U.S.C. § 717d(a); 16 U.S.C. § 824e(a).

33. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842, 49,852 (Aug. 11, 2011).

34. *See infra* Part III.

stranded assets that, judging from past experience,<sup>35</sup> they would likely be on the hook for. And fourth, the Commission should require the gas and electric sectors to harmonize their transmission planning processes. As part of a harmonization strategy, the Commission should account for the development of cleaner resources, such as hydrogen and renewable natural gas. Only through cross-resource coordination can consumer rates be minimized in fulfillment of the Commission's statutory mandate.<sup>36</sup>

In this article, we contend that the Commission's ad hoc pipeline approval process leads to inefficient, costly infrastructure investment that should be remedied through consideration of regional need. Our article proceeds as follows. Part II describes FERC's role under the NGA and details how the Commission currently goes about approving pipeline expansions. Relying on economic theory and drawing from the Commission's experience under the FPA, Part III explains why the Commission should reform its current approach. Part IV provides the legal justification for our suggested reforms; the Commission, using its authority under Sections 5 and 7 of the NGA, is authorized to require transmission expansion planning on a regional basis. Part V looks to the future, suggesting that, in taking a more regional perspective on pipeline need, the Commission should require consideration of state and local decarbonization and electrification policies and, ultimately, integrate the natural gas and electric transmission planning processes.

## II. THE NATURAL GAS ACT: STATUTORY FRAMEWORK FOR TRANSMISSION PLANNING

Congress passed the Natural Gas Act in 1938 to "encourage the orderly development of plentiful supplies of . . . natural gas at reasonable prices"<sup>37</sup> and "to protect the consumer interests against exploitation at the hands of private natural gas companies."<sup>38</sup> Under the NGA, FERC is responsible for overseeing the certification of interstate pipelines and related infrastructure. Before transporting or selling natural gas in interstate commerce or constructing or extending an interstate pipeline, a developer must apply for and receive a

35. *See infra* text accompanying notes 193–199.

36. *See infra* Part V(D).

37. *NAACP v. Fed. Power Comm'n*, 425 U.S. 662, 669–70 (1976).

38. *Fed. Power Comm'n v. Hope Nat. Gas Co.*, 320 U.S. 591, 612 (1944).

“certificate of public convenience and necessity.”<sup>39</sup> Importantly, this certificate delegates eminent domain authority to the pipeline developer, who can then take property and rights-of-way needed for the pipeline in exchange for just compensation should negotiations with relevant landowners fail.<sup>40</sup> The Commission must also ensure that rates for the sale and transmission of natural gas are “just and reasonable.”<sup>41</sup> These two provisions—(1) requiring a certificate of public convenience and necessity and (2) mandating just and reasonable rates—form the “heart” of the NGA.<sup>42</sup>

FERC’s methodology for analyzing whether a new pipeline will serve the public convenience and necessity has evolved over the years. In the initial decades after the NGA was passed, the Commission used a seven-factor test to evaluate whether a proposed pipeline would serve the public convenience and necessity.<sup>43</sup> The test considered, among other things, whether an applicant could show that it had an adequate supply of natural gas to meet anticipated demand and whether the costs of constructing the pipeline were reasonable.<sup>44</sup> As the natural gas industry matured and production was unbundled from transportation in the 1970s, this test grew obsolete.<sup>45</sup> In response, FERC started changing how it evaluated the

39. 15 U.S.C. § 717f(e). For an in-depth discussion of the history of the Natural Gas Act and Section 7, see Romany M. Webb, *Climate Change, FERC, and Natural Gas Pipelines: The Legal Basis for Considering Greenhouse Gas Emissions Under Section 7 of the Natural Gas Act*, 28 N.Y.U. ENV’T L.J. 179, 188–98 (2020), and Gocke, *supra* note 17.

40. 15 U.S.C. § 717f(h). See Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 996–98 (2015), for a history of this provision, which did not appear in the original 1938 law.

41. 15 U.S.C. § 717c(a).

42. *Atl. Refin. Co. v. Pub. Serv. Comm’n of N.Y.*, 360 U.S. 378, 388 (1959).

43. Robert Christin et al., *Considering the Public Convenience and Necessity in Pipeline Certificate Cases Under the Natural Gas Act*, 38 ENERGY L.J. 115, 121–23 (2017). Under this test, “applicants were required to show that (1) they possess a supply of natural gas adequate to meet those demands which it is reasonable to assume will be made upon them; (2) there exist in the territory proposed to be served customers who can reasonably be expected to use such natural-gas service; (3) the facilities for which they seek a certificate are adequate; (4) the costs of construction of the facilities which they propose are both adequate and reasonable; (5) the anticipated fixed charges or the amount of such fixed charges are reasonable; (6) the rates proposed to be charged are reasonable; and (7) the anticipated fixed costs or the amount of such fixed costs (such as operating and maintenance expenses, depreciation, taxes, and return) must be reasonable.” *Id.* at 121 n.27 (citing *Kan. Pipe Line & Gas Co.*, 2 F.P.C. 29 (1939)).

44. *Id.* at 121 n.27.

45. Revisions to Regulations Governing Authorizations for Construction of Natural Gas Pipeline Facilities, 56 Fed. Reg. 52,330, 52,337 (Oct. 18, 1991) (explaining how unbundling has made it difficult for pipelines to provide FERC with the information, including gas supply and market demand, necessary to fulfill the seven-factor test).

public convenience and necessity.<sup>46</sup> Today, a Certificate Policy Statement from 1999 provides the official guidance on how FERC should evaluate project applications.<sup>47</sup>

The 1999 Policy Statement lays out a multipart test to determine whether pipeline need exists. First, a developer must meet a “threshold” requirement: that it can and will construct the pipeline without financial subsidies from its existing customers.<sup>48</sup> In other words, a developer must show that it is financially feasible to recoup the cost of pipeline construction and expansion solely through the rates of new pipeline customers, instead of through increasing existing customers’ rates.<sup>49</sup> Second, FERC should determine whether the pipeline developer has made efforts to minimize adverse impacts on (1) existing customers of the pipeline applicant, (2) existing pipelines in the market and their captive customers, and (3) landowners and communities surrounding the new pipeline’s proposed route.<sup>50</sup> If adverse effects remain after FERC determines that the developer has attempted to minimize those effects, the Commission says it will weigh those adverse impacts against the proposal’s anticipated public benefits to ensure that the benefits outweigh the adverse impacts.<sup>51</sup> Relevant benefits include “meeting unserved demand, eliminating bottlenecks, access to new supplies, lower costs to consumers, providing new interconnects that improve the interstate grid, providing competitive alternatives, [or] increasing electric reliability.”<sup>52</sup> Concurrently with this analysis, FERC conducts an independent environmental review under the National Environmental Policy Act (NEPA) to analyze the proposed project’s environmental impacts.<sup>53</sup> FERC then uses all this information to determine whether the proposed pipeline—along with any accompanying conditions the

46. Christin et al., *supra* note 43, at 123–26.

47. Certification of New Interstate Natural Gas Pipeline Facilities; Statement of Policy, 64 Fed. Reg. 51,309 (Sept. 22, 1999).

48. *Id.* at 51,315–16.

49. Alternatively, a developer may recoup costs from existing customers when pipeline construction or expansion is intended to improve service for those customers. *Id.* at 51,315 n.12. Note that this requirement does not protect the interests of existing customers of *other* pipelines. For example, a pipeline developer might siphon off customers that would otherwise use an existing pipeline, increasing costs for the existing pipeline’s remaining customers.

50. *Id.* at 51,316–17.

51. *Id.* at 51,317.

52. *Id.*

53. Order Clarifying Statement of Policy, 90 FERC ¶ 61,128, ¶ 61,397 (Feb. 9, 2000).

Commission imposes—is ultimately required by the public convenience and necessity.

The 1999 Policy Statement asserts that FERC will consider “any relevant evidence” in determining whether pipeline need exists, and that usually, such evidence will “include a market study” evaluating need.<sup>54</sup> In practice, however, the Commission’s inquiry is exceedingly narrow. FERC relies heavily—if not exclusively—on precedent agreements: contracts between pipeline developers and their customers specifying that the customers will purchase a certain amount of pipeline capacity.<sup>55</sup> FERC treats these binding agreements as “substantial—even sufficient—evidence of ‘need’ for [a proposed] project”<sup>56</sup> and views them as “the best evidence that additional gas will be needed in the markets that [a project] intends to serve.”<sup>57</sup> The Commission has also concluded that such long-term contracts for firm capacity are better evidence of need than studies and long-term demand projections, which are inherently uncertain given the potential influence of “economic growth, the cost of natural gas, environmental regulations, and legislative and regulatory decisions by the federal government and individual states.”<sup>58</sup> On this point, courts routinely defer to the Commission.<sup>59</sup> What has resulted is a

54. Certification of New Interstate Natural Gas Pipeline Facilities; Statement of Policy, 64 Fed. Reg. 51,309, 51,317 (Sept. 22, 1999).

55. Updated Policy Statement on Certification of New Interstate Natural Gas Facilities, 87 Fed. Reg. 11,548, 11,549 (Mar. 1, 2022) (“The Commission allowed an applicant to rely on a variety of factors to demonstrate that its proposed project was needed, but, in practice, applicants generally elected to submit, and the Commission accepted, precedent agreements with prospective customers for long-term firm service as the principal factor in demonstrating project need.”).

56. Brief for Respondent Fed. Energy Regul. Comm’n at 12, *Env’t Def. Fund v. Fed. Energy Regul. Comm’n*, 2 F.4th 953 (D.C. Cir. 2021) (Nos. 20-1016 & 20-1017).

57. *Atl. Coast Pipeline, LLC*, 161 FERC ¶ 61,042, para. 55 (2017).

58. *Adelphia Gateway, LLC*, 169 FERC ¶ 61,220, para. 37 (2019).

59. *See, e.g., Minisink Residents for Env’t Pres. & Safety v. Fed. Energy Regul. Comm’n*, 762 F.3d 97, 111 n.10 (D.C. Cir. 2014) (rejecting petitioners’ argument that the 1999 Policy Statement “requires . . . the Commission to assess a project’s benefits by looking beyond the market need reflected by the applicant’s existing contracts with shippers”); *Myersville Citizens for a Rural Cmty. v. Fed. Energy Regul. Comm’n*, 783 F.3d 1301, 1311 (D.C. Cir. 2015) (same); *Del. Riverkeeper Network v. Fed. Energy Regul. Comm’n*, 45 F.4th 104, 113–14 (D.C. Cir. 2022) (same).

Courts have, however, criticized the Commission’s practice of heavily (or exclusively) relying on *affiliate* agreements, precedent agreements between a developer and its corporate affiliate, particularly where a utility holding company sells capacity in a new pipeline to its affiliated regulated utility. *See, e.g., Env’t Def. Fund*, 2 F.4th at 972–76 (criticizing FERC’s reliance on a precedent agreement between a utility with captive end-use customers and an affiliate,

long series of ad hoc, project-by-project pipeline approvals and a natural gas infrastructure organized around the decisions of private corporations.

### III. THE NEED FOR A DIFFERENT ROLE

Since FERC issued its 1999 Policy Statement, circumstances have changed. As a result of advances in extraction technology,<sup>60</sup> natural gas production in the United States has almost doubled,<sup>61</sup> and proposals for gas pipelines have also increased.<sup>62</sup> At the same time, states and the federal government have become increasingly concerned about how the burning of fossil fuels contributes to climate change, and public battles over the siting of natural gas pipelines have become more prevalent.<sup>63</sup> As a result, calls for reform of FERC's pipeline approval process have intensified.<sup>64</sup>

In 2018, the Commission published a notice of inquiry seeking comment on how to reform its process for evaluating applications for certificates of public convenience and necessity.<sup>65</sup> Three years later, in response to a change in presidential administration and a series of new executive orders, the Commission issued a second no-

and the Commission's refusal to "look behind" the agreement to determine whether it represented legitimate need).

60. MORGAN RICKS ET AL., NETWORKS, PLATFORMS, AND UTILITIES: LAW AND POLICY 765–66 (2022).

61. *Natural Gas Explained: Where Our Natural Gas Comes From*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/natural-gas/where-our-natural-gas-comes-from.php> [<https://perma.cc/DXM6-CD7D>] (last updated Oct. 4, 2023).

62. Updated Policy Statement on Certification of New Interstate Natural Gas Facilities, 87 Fed. Reg. 11,548, 11,549 (Mar. 1, 2022).

63. *See id.* at 11,549–50; Phil McKenna, *2020: A Year of Pipeline Court Fights, with One Lawsuit Headed to the Supreme Court*, INSIDE CLIMATE NEWS (Jan. 3, 2020), <https://insideclimatenews.org/news/03012020/pipeline-lawsuits-2020-supreme-court-appalachian-trail-eminant-domain-natural-gas> [<https://perma.cc/Q3V2-H24Y>] (describing the fights over the Atlantic Coast, Mountain Valley, and PennEast pipelines); Vivian Wang & Michael Adno, *New York Rejects Keystone-Like Pipeline in Fierce Battle over the State's Energy Future*, N.Y. TIMES (May 15, 2019), <https://www.nytimes.com/2019/05/15/nyregion/williams-pipeline-gas-energy.html> [<https://perma.cc/VNK7-C5ND>] (describing the fight over the Northeast Supply Enhancement pipeline).

64. *See, e.g.*, SARAH LADIN & BURÇIN ÜNEL, INST. FOR POL'Y INTEGRITY, REFORMING PIPELINE REVIEW 5–15 (2022), [https://policyintegrity.org/files/publications/Pipeline\\_Review\\_Report\\_vF.pdf](https://policyintegrity.org/files/publications/Pipeline_Review_Report_vF.pdf) [<https://perma.cc/6LJC-YWTD>]; *Reforming Gas Pipeline Policies*, SUSTAINABLE FERC PROJECT, <https://sustainableferc.org/reforming-gas-pipeline-policies> [<https://perma.cc/4YYV-WCUK>].

65. Certification of New Interstate Natural Gas Facilities, 83 Fed. Reg. 18,020 (Apr. 25, 2018).

tice of inquiry to allow participants to refresh the record.<sup>66</sup> In early 2022, FERC issued a Draft Updated Policy Statement.<sup>67</sup> The Draft Statement describes how the Commission has relied “almost exclusively” on precedent agreements as evidence of project need and affirms that, going forward, the Commission will consider “*all* relevant factors” bearing on project need.<sup>68</sup> These factors include the circumstances surrounding a precedent agreement, information on how the gas being transported will ultimately be used, market studies demonstrating future gas demand, and projected increases in system reliability.<sup>69</sup> The Draft Statement also specifies that the Commission will now consider any adverse environmental impacts—including climate impacts—as weighing against a determination of public convenience and necessity, and that it will deny a certificate if the adverse impacts outweigh the project’s benefits.<sup>70</sup>

Unsurprisingly, the issuance of this updated policy statement has inspired much opposition from the natural gas industry.<sup>71</sup> Moreover, before finalizing the Draft Statement, the Commission lost Chairman Richard Glick, a Democratic commissioner who supported the pro-

66. Certification of New Interstate Natural Gas Facilities, 86 Fed. Reg. 11,268 (Feb. 24, 2021).

67. Updated Policy Statement on Certification of New Interstate Natural Gas Facilities, 87 Fed. Reg. 11,548 (Mar. 1, 2022). At the same time, the Commission issued a Draft Policy Statement regarding the consideration of greenhouse gas emissions in natural gas infrastructure project reviews. Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews, 87 Fed. Reg. 14,104 (Mar. 11, 2022). Both statements were initially issued as interim policy statements and later designated as draft statements. Press Release, Fed. Energy Regul. Comm’n, FERC Seeks Comment on Draft Policy Statements on Pipeline Certification, GHG Emissions (Mar. 24, 2022), <https://www.ferc.gov/news-events/news/ferc-seeks-comment-draft-policy-statements-pipeline-certification-ghg-emissions> [<https://perma.cc/C82M-CC5L>].

68. Updated Policy Statement on Certification of New Interstate Natural Gas Facilities, 87 Fed. Reg. 11,548, 11,556 (Mar. 1, 2022).

69. *Id.* at 11,556–57.

70. *Id.* at 11,558–59.

71. *See, e.g.*, Comments of Am. Petrol. Inst. at 6, 9, Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107 (Apr. 25, 2022) (No. PL18-1-000) (encouraging FERC not to distinguish between affiliate and nonaffiliate precedent agreements and questioning why FERC felt the need to update the 1999 Policy Statement); Comments of Am. Gas Ass’n at 12, Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107, and Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews, 178 FERC ¶ 61,108 (Apr. 25, 2022) (Nos. PL18-1-000, PL118-1-001, PL21-3-000 & PL21-3-001) (arguing that the Draft Statement exceeds FERC’s authority under the NGA).

posed changes.<sup>72</sup> It is exceedingly unlikely that a 2-2 FERC will finalize the Draft Statement in its current form.

In the meantime, and once a new Commissioner is confirmed, FERC can and should consider broader reform. In particular, FERC should move beyond piecemeal consideration of individual pipeline proposals and toward a regional model of gas transmission planning. As will be discussed in Part IV, FERC has the authority and responsibility to conduct a more holistic assessment of whether a project is needed and in the public interest. The rest of Part III, however, makes the case for why FERC *should* make planning decisions based on regional need, as opposed to the economic decisions of a single pipeline developer and its client. Doing so will require the Commission to look beyond precedent agreements in favor of regional market projections. It will also entail accounting for the electricity sector and public policy that increasingly favors electrification in the face of climate change. Expanding review in these ways will facilitate the development of more efficient and cost-effective projects and ensure just and reasonable rates.<sup>73</sup>

#### A. Economic Principles

Natural gas pipelines, like other infrastructure regulated under a public utility model, are *natural monopolies*: it is cheaper for one big firm to serve an entire geographic market than two or more smaller firms.<sup>74</sup> In part, this is because pipelines require relatively large capital investments. It costs millions—sometimes billions—of dollars to

72. Ethan Howland, *FERC Chairman Glick to Exit Agency by Early January, Setting Up Possible Tied-Vote Deadlocks*, UTIL. DIVE (Dec. 16, 2022), <https://www.utilitydive.com/news/ferc-glick-retire-leave-deadlock/638944> [<https://perma.cc/8KGA-ZNVZ>].

73. Commenters in FERC proceedings have previously argued that FERC should take a regional approach to assessing need rather than continuing its policy of determining need on a project-specific basis. *See, e.g.*, Comments of the Att'ys Gen. of Mass., Ill., Md., N.J., R.I., Wash., & D.C. at 5–6, Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107 (July 25, 2018) (No. PL18-1-000); Comments of Pub. Int. Orgs. at 35–42, Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107 (July 25, 2018) (No. PL18-1-000); Comments of Susan F. Tierney, Ph.D. at 36–39, Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107 (July 25, 2018) (No. PL18-1-000); *see also* Brief of Dr. Susan Tierney as Amicus Curiae in Support of Petitioners the Environmental Defense Fund in Support of Reversal of the Challenged Orders at 8–10, *Env't Def. Fund v. Fed. Energy Regul. Comm'n*, 2 F.4th 953 (D.C. Cir. 2021) (No. 20-1016) (discussing significant overbuild resulting from the Commission's certification policy).

74. KRUGMAN & WELLS, *supra* note 26, at 359.

dig a pipeline;<sup>75</sup> upfront costs usually account for around 90% of a project's total lifetime costs.<sup>76</sup> But once a developer makes that initial infrastructure investment, it is relatively cheap to add additional customers; the cost per customer therefore decreases as more customers connect to the pipeline.<sup>77</sup> In addition, increasing the diameter of a pipeline by a factor increases the amount of gas that can be transported by more than that factor, reducing the unit cost of transportation.<sup>78</sup> Resulting *economies of scale* make it wasteful to build multiple smaller pipelines to serve the same demand.<sup>79</sup>

If a pipeline firm were granted monopoly rights in a geographic area without regulation, it could take advantage of its market power to charge monopoly prices. It is this concern that justifies government regulation of natural gas prices and pipeline development; in exchange for ensuring a pipeline an exclusive customer base—or in the case of gas transmission, a relatively exclusive base—the government can regulate prices to try to keep them at levels that would have been achieved under competitive conditions.<sup>80</sup> This is called “cost-of-service” regulation. To set a gas transportation rate under cost-of-service regulation, FERC assesses a pipeline’s “rate base”—the amount of capital investment in facilities and equipment (including pipes, land, buildings, and compressors)—adds a reasonable rate of return on top of that, and adds to that figure the pipeline’s operational expenses.<sup>81</sup> This is known as the “cost-of-service” or “re-course” rate. While not all gas capacity is priced using the cost-of-service method—some is priced through negotiations between the pipeline and its shippers, and some is priced according to the market—negotiated rates are capped by the cost-of-service rate, and

75. See, e.g., 173 FERC ¶ 61,074, para. 8 (2020) (cost of \$548 million); 169 FERC ¶ 61,131, para. 9 (2019) (cost of \$2.17 billion); 162 FERC ¶ 61,053, para. 5 (2018) (cost of \$1.13 billion).

76. Gergely Molnar, *Economics of Gas Transportation by Pipeline and LNG*, in THE PALGRAVE HANDBOOK OF INTERNATIONAL ENERGY ECONOMICS 23, 27 (eds. Manfred Hafner & Giacomo Luciani, 2022).

77. KRUGMAN & WELLS, *supra* note 26, at 359.

78. Molnar, *supra* note 76, at 30.

79. KRUGMAN & WELLS, *supra* note 26, at 322 (explaining that there are increasing returns to scale—also known as economies of scale—when long-run average total cost declines as output increases).

80. *Id.* at 373, 374 fig.14-9.

81. KRISTINA MOHLIN, ENV'T DEF. FUND, THE U.S. GAS PIPELINE TRANSPORTATION MARKET: AN INTRODUCTORY GUIDE WITH RESEARCH QUESTIONS FOR THE ENERGY TRANSITION 7–8 (2021), <https://www.edf.org/sites/default/files/content/The%20U.S.%20Gas%20Pipeline%20Transportation%20Market.pdf> [<https://perma.cc/E8GA-3GNJ>].

FERC permits market pricing only when a pipeline can show that it lacks market power.<sup>82</sup>

Regulating prices, however, is insufficient to ensure efficiency. Economic efficiency is attained “when the welfare of society as a whole is maximized.”<sup>83</sup> That is, efficient infrastructure decisions maximize the expected net present value of total infrastructure benefits minus total infrastructure costs, including externalities.<sup>84</sup> But cost-of-service regulation creates perverse incentives to overinvest in capital. By guaranteeing pipelines a return on their investments—in the natural gas industry, transmission developers regularly receive rates of return on equity of at least 10%,<sup>85</sup> and often higher<sup>86</sup>—cost-of-service regulation incentivizes pipeline companies to increase their capital investment. The larger the capital investment (rate base), the larger the pipeline’s potential profits. Pipelines are thus incentivized to build new infrastructure, rather than use existing pipelines and facilities, to meet demand.<sup>87</sup> Alfred Kahn, an economist celebrated for his efforts to introduce competition into regulated industries, suggests that it is this incentive to invest in capital that has driven natural gas transmission companies operating in the Northeast to build fewer underground storage facilities and over-build pipelines, which are more capital-intensive.<sup>88</sup>

Given these perverse incentives, regulators need additional tools to take advantage of economies of scale and avoid wasteful capital

82. *Id.* at 7.

83. See Mariano Venosa et al., *Power System Economics*, in REGULATION OF THE POWER SECTOR 47, 70 (Ignacio J. Pérez-Arriaga ed., 2013).

84. See, e.g., William W. Hogan, *A Primer on Transmission Benefits and Cost Allocation*, 7 ECON. ENERGY & ENV’T POL’Y 25, 26 (2018); Maximilian Auffhammer et al., *Chapter 4: Economic Considerations: Cost-Effective and Efficient Climate Policies*, 2 COLLABRA 1, 4 (2016).

85. Interstate and Intrastate Natural Gas Pipelines, 164 FERC ¶ 61,031, para. 103 (2018) (Order No. 849).

86. See, e.g., Mountain Valley Pipeline, LLC, 171 FERC ¶ 61,232, para. 57 (2020); Nexus Gas Transmission, LLC, 160 FERC ¶ 61,022, para. 81 (2017).

87. This is a well-established problem of cost-of-service regulation known as the “Averch-Johnson effect,” or more colloquially, as “gold-plating.” RICKS ET AL., *supra* note 60, at 174; Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052, 1068 (1962) (describing this tendency with regard to the telephone and telegraph industry). Because a project developer’s profits are directly proportional to incurred capital investment, the project developer has a direct incentive to incur excessive capital costs. ALFRED E. KAHN, *THE ECONOMICS OF REGULATION* 49 (1988). When deciding among alternative investments, therefore, the developer has a bias towards capital-based solutions. This is true even where natural gas contracts are based on negotiated rates, given that the recourse rate sets the price cap.

88. KAHN, *supra* note 87, at 51 & n.14.

investment. And a more regional planning structure can help regulators achieve exactly that. For transportation infrastructure, regional planning would allow a decisionmaker to select projects that maximize the total benefits of natural gas delivery given regional demand minus the expected costs of the natural gas supply and the infrastructure investment.<sup>89</sup> Cost-effective investment choices achieve the desired outcome at least-cost.<sup>90</sup> If the goal is to ensure the orderly development of natural gas supplies, investments should do so at least-cost, accounting for a broad set of factors, including fuel and capital costs, as well as externalities, like the climate impacts of resulting greenhouse gas emissions or the health and welfare impacts on local residents.

A regional approach would better facilitate the efficient and cost-effective development of natural gas infrastructure. Currently, the Commission permits pipelines on a project-by-project basis and relies almost exclusively on precedent agreements to assess pipeline need.<sup>91</sup> Unfortunately, this approach can identify only a pipeline project's private benefits and adverse effects, as opposed to a project's public impacts.<sup>92</sup> As such, the Commission is unable to accurately ascertain whether a project is actually needed in a given region, and if it is, whether its adverse impacts outweigh its benefits.

## B. Consistency in Infrastructure Decisionmaking

FERC's pipeline-by-pipeline approval process also conflicts with how it carries out an analogous statutory responsibility: the regulation of electricity infrastructure planning. Although operated separately, the U.S. gas and electric systems are inextricably linked: natural gas now accounts for nearly 40% of electricity generation, an all-time high.<sup>93</sup> But not only does FERC not plan for electricity and gas

89. See Hogan, *supra* note 84, at 26.

90. See Auffhammer et al., *supra* notes 84, at 2.

91. See *infra* text accompanying notes 95–96.

92. The Policy Statement says as much. Certification of New Interstate Natural Gas Pipeline Facilities; Statement of Policy, 64 Fed. Reg. 51,309, 51,314 (Sept. 22, 1999) (“The reliance solely on long-term contracts to demonstrate demand does not test for all the public benefits that can be achieved by a proposed project. . . . The amount of capacity under contract also is not a sufficient indicator by itself of the need for a project, because the industry has been moving to a practice of relying on short-term contracts, and pipeline capacity is often managed by an entity that is not the actual purchaser of the gas.”).

93. *What Is U.S. Electricity Generation by Energy Source?*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3> [<https://perma.cc/LV4L-S8KT>] (last updated Oct. 20, 2023). The growth in this figure over time happened largely because techno-

transmission in a single process, it also conducts the separate processes completely differently: electric transmission planning is centralized and regional, while gas transmission planning is conducted on a pipeline-by-pipeline basis.<sup>94</sup>

As described *supra* Part II, gas transmission development is conducted in an ad-hoc fashion; “planning” is too strong a word to describe the process. An interstate pipeline developer engages in private discussions with pipeline “shippers” that want to purchase some amount of pipeline capacity.<sup>95</sup> These shippers could be local distribution companies (utilities that sell gas to retail customers), gas marketers (companies that buy long-term pipeline capacity with the intent to resell that capacity in the short-term market at a markup), electricity generators, or other industrial customers.<sup>96</sup> Once the pipeline developer determines that a pipeline project will be financially viable, it holds an “open season” in which anyone can bid for pipeline capacity, a public process mandated by FERC.<sup>97</sup> After customers agree to contracts for capacity—precedent agreements—the pipeline developer applies for a Section 7 certificate, using those precedent agreements as evidence of need.<sup>98</sup>

In contrast, electric transmission planning is a fully public process that involves regional organizations representing a range of interests. FERC instituted its current regime in the early 2000s by promulgating two orders: Orders No. 890<sup>99</sup> and 1000.<sup>100</sup> The Commission promulgated Order No. 890 in 2007 to “promote efficient utilization of transmission by requiring an open, transparent, and coordinated

logical advances led to a decrease in the cost of natural gas production. *U.S. Energy Facts Explained*, U.S. ENERGY INFO ADMIN., <https://www.eia.gov/energyexplained/us-energy-facts> [<https://perma.cc/F8W7-FBMG>] (last updated Aug. 16, 2023). At the same time, more combined-cycle gas turbines have been built to take advantage of these low prices. Antonio J. Conejo et al., *Operations and Long-Term Expansion Planning of Natural Gas and Power Systems: A Market Perspective*, 108 PROC. INST. ELEC. & ELECS. ENG’RS 1541, 1541 (2020).

94. Seabron Adamson et al., *Coordination of Gas and Electricity Transmission Investment Decisions*, in TRANSMISSION NETWORK INVESTMENT IN LIBERALIZED POWER MARKETS 475, 476 (Mohammad Reza Hesamzadeh et al. eds., 2020).

95. *Id.* at 477.

96. *Id.*

97. *Id.*

98. *Id.*

99. Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. 12,266 (Mar. 15, 2007).

100. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842 (Aug. 11, 2011).

transmission planning process.”<sup>101</sup> The Commission emphasized that regional transmission planning would “increase efficiency through the coordination of transmission upgrades that have region-wide benefits, as opposed to pursuing transmission expansion on a piecemeal basis.”<sup>102</sup> That is, taking a regional perspective on transmission planning, rather than building transmission through ad hoc local investments, has efficiency benefits for the development of transmission infrastructure. Additionally, the Commission recognized the need for transmission providers to prepare economic planning studies that analyze transmission congestion to ensure that providers consider not just reliability, but also “whether transmission upgrades or other investments can reduce the overall costs of serving native load.”<sup>103</sup>

Four years later, FERC expanded upon Order No. 890 when it promulgated Order No. 1000. Order No. 1000 requires transmission providers to participate in a transmission planning process that “evaluates transmission alternatives at the regional level that may resolve the transmission planning region’s needs more efficiently and cost-effectively than alternatives identified by individual public utility transmission providers in their local transmission planning processes.”<sup>104</sup> The Commission also went beyond the coordination mandate in Order No. 890 to require that transmission providers take “affirmative steps to identify potential solutions at the regional level that could better meet the needs of the region.”<sup>105</sup> These solutions can take the form of increased transmission infrastructure, but non-transmission alternatives must also be considered.<sup>106</sup> Transmission providers should select a solution only if it is more efficient and cost-effective than the other alternatives considered.<sup>107</sup> In addition to considering reliability needs and economic studies, providers may also consider “transmission needs driven by public policy requirements in the local and regional transmission planning processes.”<sup>108</sup> Relevant policies include federal, state, and local electrifica-

101. Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. 12,266, 12,267 (Mar. 15, 2007).

102. *Id.* at 12,331.

103. *Id.* at 12,333.

104. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842, 49,845 (Aug. 11, 2011).

105. *Id.* at 49,867.

106. *Id.* at 49,868.

107. *Id.* at 49,846.

108. *Id.* at 49,876.

tion and decarbonization mandates. Transmission providers must also develop a cost-allocation method that apportions the costs of a selected transmission project such that they are “at least roughly commensurate with the benefits received by those who will pay those costs.”<sup>109</sup>

In practice, regional electric transmission planning is conducted primarily by independent system operators (ISOs) and regional transmission organizations (RTOs), independent, nonprofit entities that operate their regions’ transmission system and wholesale electricity market.<sup>110</sup> (Those regions that lack an ISO or RTO conduct transmission planning through a regional planning group composed of vertically integrated, federally regulated utilities.<sup>111</sup>) ISOs/RTOs engage with incumbent transmission owners and other stakeholders to establish a preliminary transmission plan.<sup>112</sup> Then, using economic and reliability studies<sup>113</sup> and considering state and federal public policy requirements, the ISOs/RTOs evaluate their regions’ transmission needs. This is a collaborative process. In some regions, the ISO/RTO consults with state actors or public utility commission (PUC) members to determine what public policy requirements the planning group should consider.<sup>114</sup> ISOs/RTOs ultimately address identified needs by either (1) determining the most cost-effective solution and soliciting a developer (“competitive bidding”) or (2) letting the market first offer solutions and then selecting a project-developer package (“project sponsorship”).<sup>115</sup> Solutions to address transmission needs include the construction of new transmission facilities, but an ISO/RTO could also select a non-transmission alterna-

109. *Id.* at 49,846.

110. *Electric Power Markets*, FED. ENERGY REGUL. COMM’N, <https://www.ferc.gov/electric-power-markets> [<https://perma.cc/L3GU-9CVL>] (last updated May 16, 2023). Examples of ISOs/RTOs include ISO New England (responsible for New England) and PJM Interconnection (responsible for all or part of 13 states and Washington, D.C.). *Id.* There is no practical difference between an ISO and an RTO.

111. Adamson et al., *supra* note 94, at 476.

112. JOSEPH H. ETO & GIULIA GALLO, LAWRENCE BERKELEY NAT’L LAB’Y, REGIONAL TRANSMISSION PLANNING: A REVIEW OF PRACTICES FOLLOWING FERC ORDER NOS. 890 AND 1000, at vii (Nov. 2017), [https://eta-publications.lbl.gov/sites/default/files/lbnl\\_2001079\\_final\\_102519.pdf](https://eta-publications.lbl.gov/sites/default/files/lbnl_2001079_final_102519.pdf) [<https://perma.cc/4BF5-MF5K>].

113. Reliability requirements are set by regional entities registered with the North American Electric Reliability Corporation (NERC), which FERC charges with developing reliability standards. *Id.* at 12–16.

114. *Id.* at viii.

115. *Id.* at 11.

tive, like demand response or changes in generation mix.<sup>116</sup> Non-ISO/RTO regions participate in a similar process, but their base transmission plans rely more heavily on the plans of individual participating utilities.<sup>117</sup>

While natural gas transmission planning is essentially nonexistent at the federal level,<sup>118</sup> electric transmission planning is moving forward. There is increasing pressure for ISOs/RTOs and electric utilities to plan for an electric system that is more reliable and cost-effective. For example, beginning in 2007, the Midcontinent Independent System Operator (MISO), an ISO covering 15 states,<sup>119</sup> used its long-term regional transmission planning (LTRP) process to develop a new type of transmission project, the Multi-Value Project (MVP).<sup>120</sup> To qualify as an MVP, a transmission project must enhance grid reliability and/or economic efficiency, be net beneficial, and provide economic value across multiple pricing zones over a twenty-year time horizon.<sup>121</sup> In 2011, MISO approved an almost \$6

116. *Id.* at 2.

117. *Id.* at 7-8.

118. In contrast, states have begun to recognize that the decarbonization and electrification policies that are necessary to mitigate climate change will alter demand for gas. New Jersey leads the pack: its Board of Public Utilities recently completed a proceeding in which it commissioned a study to analyze future gas supply and load and found that no new capacity is needed to meet demand. LONDON ECON. INT'L, FINAL REPORT: ANALYSIS OF NATURAL GAS CAPACITY TO SERVE NEW JERSEY FIRM CUSTOMERS (Nov. 5, 2021), <https://www.nj.gov/bpu/pdf/boardorders/2021/20211215/9B%20LEI%20Final%20Gas%20Capacity%20Report%2011%2005%202021%20Public%20Redacted.pdf> [<https://perma.cc/24BH-YS5G>]. This year, it initiated a proceeding regarding how gas utilities can develop plans to reduce carbon dioxide emissions. Press Release, N.J. Bd. of Pub. Utils., NJBPU Opens Proceeding on Natural Gas (Mar. 6, 2023), <https://www.nj.gov/bpu/newsroom/2023/approved/20230306b.html> [<https://perma.cc/FW7N-8T8A>]. The California Public Utilities Commission instituted a multipart gas planning rulemaking, which is ongoing. CA. PUB. UTILS. COMM'N, R.20-01-007 TRACK 2 – GAS INFRASTRUCTURE: FINAL WORKSHOP REPORT 1 (2022), <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/long-term-gas-planning-oir/final-track-2-january-workshop-report---20220707.pdf> [<https://perma.cc/DUQ8-5WNV>]. Massachusetts is engaged in a similar process. Mass. Dep't of Pub. Utils., D.P.U. 20-80, Vote and Order Opening Investigation Into the Role of Gas Local Distribution Companies as the Commonwealth Achieves Its Target 2050 Climate Goals (Oct. 29, 2020), <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/12820821> [on file with the Journal].

119. *About MISO*, MIDCONTINENT INDEP. SYS. OPERATOR, <https://www.misoenergy.org/about> [<https://perma.cc/KMA5-4LUC>] (last visited Nov. 27, 2023).

120. MIDCONTINENT INDEP. SYS. OPERATOR, MTEP21 REPORT ADDENDUM: LONG RANGE TRANSMISSION PLANNING TRANCHE 1 PORTFOLIO REPORT 7 (2022), <https://cdn.misoenergy.org/MTEP21%20Addendum-LRTP%20Tranche%201%20Report%20with%20Executive%20Summary625790.pdf> [<https://perma.cc/Y8HM-URNQ>].

121. *Id.*

billion portfolio comprising 17 MVPs anticipated to have a total benefit-cost ratio of between 1.8 and 3.1.<sup>122</sup> In 2022, MISO released LTRP Tranche 1, a proposal for 18 additional transmission projects anticipated to enhance reliability and renewable energy penetration.<sup>123</sup> The MVP planning process seems to work well; as of 2022, all but one of the initial MVPs were functioning and fully utilized.<sup>124</sup> The California Independent System Operator (CAISO) has also updated its transmission planning process. To get a more accurate sense of regional demand and resource availability, CAISO developed its most recent transmission plan in close consultation with the California Public Utilities Commission, which develops resource forecasts, and the California Energy Commission, which anticipates consumer load.<sup>125</sup> In doing so, the ISO can make more informed infrastructure planning and investment decisions. Although electric transmission planning is not perfect,<sup>126</sup> these types of developments will foster broader regional transmission planning driven by regional demand and public policy. The gas sector, meanwhile, lags behind.

#### IV. THE NATURAL GAS ACT ALLOWS FOR A BROADER ROLE

Today, FERC routinely rejects arguments to look beyond precedent agreements.<sup>127</sup> But as a legal matter, nothing prevents a more

122. *Id.* at 8.

123. *Id.* at 3.

124. *Id.* at 8.

125. CAL. INDEP. SYS. OPERATOR, 2022–2023 DRAFT TRANSMISSION PLAN 57 (Apr. 3, 2023), <http://www.caiso.com/InitiativeDocuments/Draft-2022-2023-Transmission-Plan.pdf> [<https://perma.cc/E595-W35R>]; Memorandum of Understanding Between Cal. Pub. Utils. Comm'n, Cal. Energy Comm'n & Cal. Indep. Sys. Operator Regarding Transmission and Resource Planning and Implementation (Dec. 23, 2022), <http://www.caiso.com/Documents/ISO-CEC-and-CPUC-Memorandum-of-Understanding-Dec-2022.pdf> [<https://perma.cc/2E62-Z8PG>].

126. Problems related to electric transmission planning include ISOs/RTOs' narrow view of transmission benefits and a lack of coordination across regions, both of which lead to the insufficient development of transmission infrastructure. For a more detailed discussion of problems like these, see Alexandra Klass et al., *Grid Reliability Through Clean Energy*, 74 STAN. L. REV. 969, 1028–35 (2022). FERC itself also outlined many of these problems in its 2022 notice of proposed rulemaking. Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, 87 Fed. Reg. 26,504, 26,509–16 (May 4, 2022).

127. *See, e.g.*, Mountain Valley Pipeline, 163 FERC ¶ 61,197, paras. 35–44 (2018) (“[I]t is current Commission policy not to look behind precedent or service agreements to make judgments about the needs of individual shippers. . . . [N]othing in the Certificate Policy Statement, nor any precedent construing it, indicates that the Commission must look beyond the market need reflected by the applicant’s contracts with shippers.” (*id.* para. 36)); NEXUS Gas Trans-

holistic approach.<sup>128</sup> The NGA does not dictate how FERC should assess whether a project meets the “public convenience and necessity” standard, nor does it define what factors could contribute to “unjust and unreasonable” rates. Rather, the NGA authorizes FERC to take a broad view of what constitutes pipeline need and, consequently, to organize the development of transmission infrastructure on a regional basis. In fact, a good argument could be made that FERC is legally obligated to take a broader view; as the Supreme Court has explained, Congress passed the NGA to “protect consumers against exploitation at the hands of natural gas companies.”<sup>129</sup>

In this Part, we explain how NGA Section 7<sup>130</sup>—which grants FERC authority to issue certificates of public convenience and necessity—and Section 5<sup>131</sup>—which grants FERC authority to remedy transmission rates that are “unjust” or “unreasonable”—require the Commission to overhaul its gas infrastructure approval process. The first section describes how, in the mid-twentieth century, Congress expanded the Commission’s authority to consider the public interest in pipeline approvals, and how the Commission relied on that authority

mission, 160 FERC ¶ 61,022, paras. 35–51; *Indep. Pipeline Co.*, 92 FERC ¶ 61,268, ¶¶ 61,892–93 (2000).

128. Alexandra B. Klass, *Evaluating Project Need for Natural Gas Pipelines in an Age of Climate Change: A Spotlight on FERC and the Courts*, 39 YALE J. ON REGUL. 658 (2022); Webb, *supra* note 39.

Several scholars also make the strong case that FERC can consider upstream and downstream greenhouse gas emissions in its evaluation of pipeline necessity. See generally Klass, *supra*; Webb, *supra* note 39. We agree that FERC has the authority to do so, and that FERC should monetize those emissions—as it does for other costs—using the social cost of greenhouse gases to better understand the costs of pipeline construction. See MAX SARINSKY ET AL., INST. FOR POL’Y INTEGRITY, BROADENING THE USE OF THE SOCIAL COST OF GREENHOUSE GASES IN FEDERAL POLICY (2021), [https://policyintegrity.org/files/publications/Broadening\\_the\\_Use\\_of\\_SCC\\_vF.pdf](https://policyintegrity.org/files/publications/Broadening_the_Use_of_SCC_vF.pdf) [<https://perma.cc/J7QN-TQ8F>]. In fact, a failure to consider the climate impacts of pipeline certification may render the Commission’s actions arbitrary and capricious. See, e.g., *Mont. Env’t Info. Ctr. v. U.S. Off. of Surface Mining*, 274 F. Supp. 3d 1074, 1096–99 (D. Mont. 2017) (determining that it was arbitrary and capricious for an agency to quantify the benefits of an action without quantifying its environmental costs, such as the emission of greenhouse gases, when such quantification was possible); *WildEarth Guardians v. Bernhardt*, No. CV 17-80-BLG-SPW, 2021 WL 363955, at \*9 (D. Mont. Feb. 3, 2021) (same). However, this Article’s argument does not rely on the assumption that FERC possesses the authority to consider all upstream and downstream emissions in its decisionmaking process.

129. *Fed. Power Comm’n v. Hope Nat. Gas Co.*, 320 U.S. 591, 610 (1944). The NGA’s original text explicitly states that, in passing the NGA, Congress wanted the Commission to facilitate the interstate sale of gas “at the lowest possible rate consistent with the maintenance of adequate service in the public interest.” Natural Gas Act, § 7(c), 52 Stat. 821, 825 (1938) (current version at 15 U.S.C. § 717f).

130. 15 U.S.C. § 717f(c).

131. 15 U.S.C. § 717d.

to consider regional need in transmission decisions. The second section details the historical connection between the NGA and the analogous FPA and explains how the Commission has wielded its authority under the FPA to require regional transmission planning, something it should also require of the natural gas industry. Read together, these provisions support our understanding of the law as authorizing the Commission to take a broad view of natural gas transmission planning.<sup>132</sup>

132. Note that the Commission's planning authority is not unlimited. In particular, per Section 7(a) of the NGA, although the Commission may "direct a natural-gas company to extend or improve its transportation facilities" or "to establish physical connection of its transportation facilities with the facilities of" a local distribution company, FERC may not "compel the enlargement of [natural gas] transportation facilities for such purposes." 15 U.S.C. § 717f(a). This statutory language is cryptic: When does the prohibition against compelled enlargement apply? And what do the words "compel" and "enlarge" mean in the context of a statute that clearly contemplates some sort of compelled "extension" and "improvement"?

As to the first question, FERC seemingly cannot require a natural gas transporter to commit capital to increasing its facility's capacity when operating under any provision of the NGA, including under Sections 7 and 5. *See* *Panhandle E. Pipe Line Co. v. Fed. Power Comm'n*, 204 F.2d 675, 679 (3d Cir. 1953) (explaining that Section 5's remedial power "must be read in the light of and construed as subject to the proviso in section 7(a) that the Commission may not compel the enlargement of the transportation facilities of a natural gas company"); *Cities Serv. Gas Co.*, 40 F.P.C. 463, 499 (1968) ("The prohibition [against compelled enlargement] . . . is held to pervade the entire law."). But what does it mean to "compel enlargement"? And how does the restriction against compelling enlargement square with the Commission's authority to "direct a natural-gas company to extend or improve its transportation facilities, to establish physical connection of its transportation facilities with the facilities of, and sell natural gas to, any [local distribution company], and for such purpose to extend its transportation facilities to communities immediately adjacent"? 15 U.S.C. § 717f(a). Read together, these two provisions are "baffling[ly]" contradictory. *Mich. Consol. Gas Co. v. Panhandle E. Pipe Line Co.*, 173 F.2d 784, 788 (6th Cir. 1949).

Courts and the Commission have yet to establish a clear answer. One early case found that the Commission could not condition a Section 7 certificate on facility enlargement without violating the prohibition. *Cent. W. Util. Co. v. Fed. Power Comm'n*, 247 F.2d 306, 311 (3d Cir. 1957). However, in recent years, FERC has given the term "compelled" a narrower construction, finding that it may use its Section 7 conditioning authority to require an increase in pipeline capacity without violating the statute, so long as the pipeline developer is free to abandon its proposed project. *Tex. E. Transmission, LP*, 141 FERC ¶ 61,043, ¶ 61,133 (2012); *Tex. E. Transmission, LP*, 146 FERC ¶ 61,086, ¶¶ 61,364–65 (2014). In at least one case, the Commission has conditioned a Section 7 certificate on increased capacity, a condition that the pipeline developer ultimately accepted. *Tex. Gas Transmission Corp.*, 11 F.P.C. 227, 273–74 (1952). And with regard to its Section 5 authority to remedy undue discrimination, the Commission considers its power "without limitation." *Tenn. Gas Pipeline Co. v. Colum. Gulf Transmission Co.*, 113 FERC ¶ 61,200, ¶¶ 61,817–18 (2005) (quoting *Mich. Consol. Gas Co.*, 173 F.2d at 789).

Thus, although FERC once claimed that the prohibition against compelled enlargement accounts for why it "has not historically engaged in planning the development of natural gas capacity," *Fla. Se. Connection, LLC*, 162 FERC ¶ 61,233, para. 18 (2018), this statement is inaccurate. Conducting transmission planning need not entail compelled enlargement; as in the electric transmission planning process, if incumbent transmission providers do not want to

### A. NGA Section 7: A History of Broader Review

The NGA “was intended to confer broad authority on [the Commission] to consider the public interest when certifying pipelines.”<sup>133</sup> According to Romany Webb and Alison Gocke, two scholars who have studied the history of the statute, in the NGA’s early years, the Commission assumed that its authority to authorize pipelines in the “public convenience and necessity” allowed it to consider several factors in its decisionmaking.<sup>134</sup> These included:

[W]hether the applicant had access to sufficient supplies of natural gas; whether the applicant had sufficient financial resources to construct the proposed facilities; whether there were sufficient customers in the territory to justify construction of the pipeline; and whether the costs of construction of the proposed facilities were “both adequate and reasonable.”<sup>135</sup>

But the Commission’s broad view of its natural gas planning authority eventually extended even further. After the NGA’s initial passage, the Commission believed the statute did not authorize it to consider the downstream economic impacts of its decisions on interests beyond the natural gas industry, such as the transportation and coal industries and labor interests.<sup>136</sup> Concerned with this perceived limitation on its ability to act in the public interest, in 1940, the Commission called on Congress to broaden its authority.<sup>137</sup> Two years later, Congress responded by amending the NGA; the updated statute expanded the Commission’s permitting authority to encompass all interstate natural gas pipelines,<sup>138</sup> authorized the Commission to attach conditions to pipeline permits, and, according to reports from both the House and Senate, gave the Commission the

extend their facilities, a regional planning entity can always solicit infrastructure from a different provider. Furthermore, planning requirements for the gas industry would likely lead to the conclusion that *less* infrastructure is needed than would otherwise be provided, obviating the concern compelled enlargement.

133. Webb, *supra* note 39, at 191.

134. *See generally id.*; Gocke, *supra* note 17.

135. Gocke, *supra* note 17, at 219 (citing *Kan. Pipe Line & Gas Co.*, 2 F.P.C. 29 (1939)).

136. Webb, *supra* note 39, at 192 (citing *Kan. Pipe Line*, 2 F.P.C. at 57).

137. *Id.* (citing the Commission’s 1940 annual report to Congress, FED. POWER COMM’N, TWENTIETH ANNUAL REPORT OF THE FEDERAL POWER COMMISSION 10, 78 (1940)).

138. The NGA previously limited Commission certificate authority to markets already being served by the natural gas industry. Gocke, *supra* note 17, at 220.

power to consider the upstream and downstream economic impacts of its permitting decisions.<sup>139</sup>

In the years after the NGA's amendment, the Commission made use of its authority to consider a proposed pipeline's long-term impacts, and courts upheld the Commission's authority to do so. Alison Gocke unearths this forgotten history, describing how the Commission took a broader view of natural gas transmission planning in decisions like *Texas Gas Transmission Corp.* (1951).<sup>140</sup> In this order, FERC declined to provide Texas Gas with a pipeline permit, despite the fact that development of the pipeline was expected to reduce the cost of natural gas and increase electric reliability.<sup>141</sup> According to the Commission, while the proposed pipeline would result in some economic benefit, it was not necessary under the NGA because the steam plant to which the pipeline would deliver natural gas already had a sufficient supply of coal to use for fuel.<sup>142</sup> In other pipeline dockets from the same period, the Commission took a similarly broad view of its role, considering a pipeline's downstream impacts on air pollution.<sup>143</sup> For example, in *Federal Power Commission v. Transcontinental Gas Pipe Line Corp.* (1961), the Supreme Court upheld the Commission's denial of a certificate for a proposed natural gas pipeline based in part on the Commission's determination that the proposed end-use of the gas as fuel for existing coal-fired boilers was insufficient to justify a finding of public convenience and necessity.<sup>144</sup> In particular, the Commission explained that it would be a waste to use natural gas to fire the boilers when coal was available.<sup>145</sup> The Court, citing the NGA amendments, ratified the Commission's consideration of the private interests, conservation interests, and public health/environmental benefits.<sup>146</sup>

During this time, the Commission was also more likely to consider the regional demand for gas in a geographic area. In *Natural Gas Pipeline Co. of America*, the Commission heard a consolidated proceeding of three mutually exclusive applications for pipeline certifi-

139. Webb, *supra* note 39, at 193–94 (citing House Report and Senate Report); *see also* Gocke, *supra* note 17, at 221–22.

140. *Tex. Gas Transmission Corp.*, 10 F.P.C. 391 (1951).

141. *Id.* at 398.

142. *Id.* at 399–400.

143. *See, e.g.*, *El Paso Nat. Gas Co.*, 22 F.P.C. 900, 902–03 (1959); *Transcon. Gas Pipe Line Corp.*, 38 F.P.C. 906, 911–13 (1967).

144. *Fed. Power Comm'n v. Transcon. Gas Pipe Line Corp.*, 365 U.S. 1, 8–22 (1961).

145. *Id.* at 8–9.

146. *Id.* at 10–22.

cates in the St. Louis area.<sup>147</sup> Denying each application, the Commission explained that the public convenience and necessity required consideration of regional demand: “Any determination regarding the best suited project must begin with an analysis of the present and future natural gas needs of the St. Louis area.”<sup>148</sup> None of the proposals, according to the Commission, would enhance natural gas service in the region. In arriving at this decision, the Commission probed into whether the pipeline developer’s description of the region’s need for natural gas was consistent with reality, concluding that the developer overstated the amount of capacity needed.<sup>149</sup> The Commission was particularly skeptical of a claim of need based on precedent agreements with the pipeline developer’s affiliates,<sup>150</sup> a type of claim that has regularly succeeded in more recent Section 7 proceedings.<sup>151</sup> In a different proceeding a few years earlier, the Commission similarly denied a Section 7 certificate on the grounds that (1) the pipeline’s proposed supply of gas was uncertain, and (2) the pipeline’s proposed direct sales to the steel industry would not serve the public convenience and necessity, as the steel industry was already served by local utility companies.<sup>152</sup>

It is only recently that FERC has begun to ignore these types of regional demand considerations and act like a rubber stamp for natural gas pipeline applications. Over the past two decades, the Commission approved 423 out of 425 major pipeline proposals; the two proposals that the Commission did not approve failed to provide evidence of precedent agreements.<sup>153</sup> This transformation is not due to any change in the NGA, agency rulemaking, or courts’ statutory in-

147. Nat. Gas Pipeline Co. of Am., 34 F.P.C. 771 (1965).

148. *Id.* at 776.

149. *Id.* at 789–80.

150. *Id.* at 780 (“The fact that [the pipeline developer] must base virtually its entire market showing on affiliated industrial customers or customers taken from the existing supplier undermines its claim that there exists a large unsatisfied industrial market in that area.”); *cf.* Am. La. Pipe Line Co., 29 F.P.C. 932, 935–36 (1963) (“As years of regulatory experience attest, sales to affiliates present possibilities of abuse and should be scrutinized with care.”).

151. *Mountain Valley Pipeline*, 163 FERC ¶ 61,197, para. 36 (“[E]ven though the MVP Project shippers are affiliated with Mountain Valley, the Commission is not required to look behind precedent agreements to evaluate project need.”); *NEXUS Gas Transmission*, 160 FERC ¶ 61,022, para. 47 (“[A]bsent evidence of anti-competitive or other inappropriate behavior, the Commission views service agreements with affiliates like those with any other shipper for purposes of assessing the demand for capacity.”).

152. Am. La. Pipe Line Co., 20 F.P.C. 575, 592–93 (1958).

153. Gocke, *supra* note 17, at 211.

interpretation.<sup>154</sup> Rather, the Commission has, without explanation, decided that private agreements, as opposed to any of several possible factors bearing on the public interest, are the best indication of public convenience and need. This change is contrary to past agency precedent and the Commission's statutory mandate.

#### B. NGA Section 5: Just and Reasonable Authority to Require Regional Planning

Under NGA Section 5, FERC must ensure that rates charged for the interstate transmission and sale of gas are "just and reasonable."<sup>155</sup> As this section explains, FERC and the federal courts have interpreted identical language in the FPA to authorize regional planning requirements for electric transmission. The Commission could do the same for the natural gas industry.

The NGA possesses numerous similarities to the FPA, a statute that gives FERC the authority to regulate the sale and transmission of "wholesale" electricity, or electricity sold by generators and bought by retail distributors.<sup>156</sup> In fact, Congress modeled the NGA on the FPA, which it passed just three years earlier.<sup>157</sup> In interpreting the NGA, courts have noted the similarity between its language and structure and those of the FPA; provisions of the FPA and NGA are often cited interchangeably, and actions by the Commission under one law are routinely applied as precedent for actions under the other.<sup>158</sup> Importantly for the present purposes, both statutes require FERC to ensure that transmission rates are "just and reasonable": the NGA in Section 5<sup>159</sup> and the FPA in Section 206.<sup>160</sup> And it is this lan-

154. *Id.* at 253–57. For a detailed look into why FERC now takes a narrower view of its permitting authority, *see id.* at 253–64.

155. 15 U.S.C. § 717d(a).

156. 16 U.S.C. § 824; *Market for Electricity, PJM INTERCONNECTION*, <https://learn.pjm.com/electricity-basics/market-for-electricity.aspx> [<https://perma.cc/XCF2-K475>] (last visited Nov. 13, 2023).

157. Matthew R. Christiansen & Joshua C. Macey, *Long Live the Federal Power Act's Bright Line*, 134 HARV. L. REV. 1360, 1366 n.29 (2021).

158. *See Hughes v. Talen Energy Mktg., LLC*, 578 U.S. 150, 164 n.10 (2016) ("The Supreme Court has routinely relied on [Natural Gas Act] cases in determining the scope of the [Federal Power Act], and vice versa.").

159. 15 U.S.C. § 717d(a).

160. 16 U.S.C. § 824e(a).

guage that authorizes FERC to engage in regional transmission planning.<sup>161</sup>

Section 206, like Section 5 of the NGA, grants the Commission authority to remedy unjust and unreasonable or unduly discriminatory or preferential rates and practices.<sup>162</sup> Under this authority, FERC has promulgated two key orders relating to electric transmission: Order No. 890 and Order No. 1000.<sup>163</sup> In its summary of Order No. 890, the Commission explained that it was amending its transmission tariff to “ensure that transmission services are provided on a basis that is just, reasonable and not unduly discriminatory or preferential.”<sup>164</sup> In Order No. 1000, the Commission more explicitly made the connection between transmission planning and electricity rates, stating that “[i]t is through the transmission planning process that public utility transmission providers determine which transmission facilities will more efficiently or cost-effectively meet the needs of the region, the development of which directly impacts the rates, terms and conditions of jurisdictional service.”<sup>165</sup> The Commission determined that addressing issues like the “narrow focus of current planning requirements” was necessary to ensure just and reasonable rates because the existing process “fail[ed] to promote the more efficient and cost-effective development of new transmission facilities.”<sup>166</sup> In 2014, the D.C. Circuit upheld this expansive understanding of the Commission’s authority to set just and reasonable rates, finding that FERC reasonably determined that regional planning was necessary as a remedy under FPA Section 206.<sup>167</sup>

Today, FERC is in the process of reforming its transmission planning, selection, and cost allocation processes with an eye toward regional and interregional infrastructure planning. In early 2022, the Commission issued a notice of proposed rulemaking, asserting that

161. Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, 87 Fed. Reg. 26,504, 26,506 (May 4, 2022).

162. 16 U.S.C. § 824e(a) (FPA); 15 U.S.C. § 717d(a) (NGA).

163. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842, 49,845 (Aug. 11, 2011) (Regional transmission planning is necessary to ensure that rates for FERC-jurisdictional services are “just and reasonable in light of changing conditions in the industry.”).

164. Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. 12,266 (Mar. 15, 2007).

165. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842, 49,862 (Aug. 11, 2011).

166. *Id.* at 49,852.

167. S.C. Pub. Serv. Auth. v. Fed. Energy Regul. Comm’n, 762 F.3d 41, 55–59 (D.C. Cir. 2014).

reform is needed because the Order No. 1000 processes “may not be planning transmission on a sufficiently long-term, forward-looking basis to meet transmission needs driven by changes in the resource mix and demand.”<sup>168</sup> In several ways, FERC’s explanation of why this proposed electric transmission planning rule is needed overlaps with this Article’s argument about why planning reform is needed for natural gas transmission. The Commission cites its concern that “continuing with the status quo approach may cause public utility transmission providers to undertake relatively inefficient investments in transmission infrastructure, the costs of which are ultimately recovered through Commission-jurisdictional rates” and which “may result in transmission customers paying more than necessary to meet their transmission needs” or “forgoing benefits that outweigh their costs.”<sup>169</sup>

Thus, FERC continues to exercise its authority to require regional electric transmission planning. If the Commission can do so for electric transmission, it can use the NGA’s identical statutory language to require the same of natural gas transmission planning; after all, the NGA “evinces the same concern for ‘just and reasonable’ rates as does the Federal Power Act.”<sup>170</sup> The natural gas industry does not need to be “shoehorn[ed]” into the electric model,<sup>171</sup> but the Commission should take its conclusions in the electric context regarding just and reasonable practices and apply them to reform its natural gas policy and methodology for evaluating whether to approve a project.<sup>172</sup>

168. Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, 87 Fed. Reg. 26,504, 26,509 (May 4, 2022).

169. *Id.*

170. NAACP v. Fed. Energy Regul. Comm’n, 520 F.2d 432, 438–39 (D.C. Cir. 1975).

171. Supplemental Comments of the Am. Gas Ass’n at 29, Certification of New Interstate Natural Gas Facilities, 174 FERC ¶ 61,125 (May 26, 2021) (No. PL18-1-000).

172. In future efforts to reform its gas infrastructure approval process, the Commission may encounter challenges to its authority under the newfound “major questions doctrine.” Per this doctrine, which a Supreme Court majority first explicitly articulated in *West Virginia v. Environmental Protection Agency*, 142 S. Ct. 2587 (2022), an agency must “point to ‘clear congressional authorization’ when it interprets a statute in such a way as to effectuate an ‘unheralded power’ representing a ‘transformative expansion in [its] regulatory authority.’” *Id.* at 2609–10 (quoting *Util. Air Regul. Grp. v. Env’t Prot. Agency*, 573 U.S. 302, 324 (2014)); see also *Biden v. Nebraska*, 143 S. Ct. 2355 (2023). While the exact contours of the doctrine remain unclear, see Natasha Brunstein, *Taking Stock of West Virginia on Its One-Year Anniversary*, YALE J. ON REGUL. & ABA SECTION ADMIN. L. & REGUL. PRAC.: NOTICE & COMMENT BLOG (June 18, 2023), <https://www.yalejreg.com/nc/taking-stock-of-west-virginia-on-its-one-year-anniversary-by-natasha-brunstein> [<https://perma.cc/DH4L-NVYK>], its threat looms large over essentially any significant administrative action.

## V. TOWARD BETTER PLANNING

A regional approach to natural gas transmission planning could take a variety of forms. The following Part offers examples of regional approaches taken when conducting infrastructure planning. Any economically efficient approach will take into account a broader range of factors than FERC currently considers in determining pipeline need and weigh any proposed project's costs and benefits. For example, FERC should consider current and future shifts in natural gas supply and demand; whether existing infrastructure could support demand; whether non-gas solutions may be more cost-effective; whether there are congestion constraints that could be alleviated with new capacity; whether there are regulatory changes that will alter demand; and any other aspect of the regional market that may be relevant. Of course, a regional approach could—and likely should—include consideration of precedent agreements; such contracts are still one piece of relevant evidence in determining project need. But precedent agreements should not be dispositive and should serve only as one factor among many.

This Part explains how the Commission could reform its pipeline approval process. First, FERC should incentivize the creation of regional transmission planning organizations. Second, it should factor anticipated regional demand into its pipeline approval process. Third, it should insist on transmission planning that accounts for a region's federal, state, and local electrification and decarbonization policies. And fourth, it should require the coordination of gas and electric transmission expansion planning. Adopting these practices,

Of course, it is impossible to know what a court will do in response to an assertion of agency authority. But if FERC were to require regional planning for interstate gas infrastructure development, it would stand on particularly firm ground. As described *supra* Part III(B), the NGA and FPA contain *identical* language requiring “just and reasonable” rates, and courts have repeatedly upheld FERC’s authority to impose extensive planning requirements on electric transmission providers under that authority. While the Commission has, concededly, never required regional planning in the gas sector, the oft-acknowledged link between the NGA and FPA imply that prior statutory authorization under the FPA is equivalent to authorization under the NGA. *Ark. La. Gas Co. v. Hall*, 453 U.S. 571, 577 n.7 (1981) (“[W]e follow our established practice of citing interchangeably decisions interpreting the pertinent sections” of the NGA and FPA.); *Granholm ex rel. Mich. Dep’t of Nat. Res. v. Fed. Energy Regul. Comm’n*, 180 F.3d 278, 280 n.2 (D.C. Cir. 1999) (“Substantially identical provisions of the Natural Gas Act and the Federal Power Act are to be interpreted consistently with each other.”). Add to that the additional public interest requirement of NGA Section 7 and FERC’s previous refusals to authorize gas infrastructure it did not deem required by the public convenience and necessity, and it seems likely that federal courts would uphold eventual reforms.

while more challenging than conducting pipeline approvals on a case-by-case basis, will help avoid the construction of unnecessary infrastructure and reduce costs for gas and electricity consumers.

#### A. Develop Regional Transmission Planning Organizations

As described *supra* Part III(B), FERC requires all electric transmission providers to engage in a regional transmission planning process and produce a regional transmission plan.<sup>173</sup> And while the U.S. electricity system differs significantly from its natural gas system, regional planning would benefit both.

The European Union offers a model of what gas planning organizations might look like. Within the European Union, most member states have at least one gas transmission system operator (TSO), an entity akin to an RTO/ISO that operates gas transmission infrastructure. In 2009, the European Commission issued a directive requiring all member states to coordinate capacity allocation across regions through their TSOs, which member states must certify.<sup>174</sup> Simultaneously, the Commission published a regulation establishing a European Network of Transmission System Operators for Gas (ENTSOG), a body that would coordinate across TSOs “to promote the completion and functioning of the internal market in natural gas and cross-border trade and to ensure the optimal management, coordinated operation and sound technical evolution of the natural gas transmission network.”<sup>175</sup> The regulation requires ENTSOG to publish a ten-year network development plan (TYNDP) every two years that includes a supply adequacy outlook informed by projected demand for gas.<sup>176</sup> The regulation also requires TSOs to publish gas regional investment plans (GRIPs) every two years.<sup>177</sup> Today, ENTSOG com-

173. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49,842 (Aug. 11, 2011).

174. Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 2003/55/EC, arts. 7, 10, 2009 O.J. (L 211) 94, 105, 107.

175. Regulation No 715/2009 of the European Parliament and of the Council of 13 July 2009 on Conditions for Access to the Natural Gas Transmission Networks and Repealing Regulation No 1775/2005, art. 4, 2009 O.J. (L 211) 36, 41.

176. *Id.* arts. 8.3(b), 8.4, 2009 O.J. (L 211) at 42–43.

177. *Id.* art. 12.1, 2009 O.J. (L 211) at 44.

prises 44 member TSOs divided into six regional groups that coordinate to develop GRIPs and a biennial TYNDP.<sup>178</sup>

Under a regional planning regime, FERC would organize the United States into regions and require gas companies within those regions to coordinate infrastructure planning activities. (While national planning would be ideal, given that electric transmission planning is currently done at the regional level, regional planning may be the easiest and most politically feasible option.) Regional organizations would work together to predict natural gas supply and demand within their areas, soliciting input from state PUCs and state-regulated gas utilities. Only then, once regional needs were determined, would transmission infrastructure projects be solicited and approved. Ideally, this process would be conducted regularly—perhaps once every two or three years—so that transmission planning could respond to the population’s changing needs. Conducting this type of infrastructure planning on a regional basis will lead to more efficient and cost-effective approval of new facilities, which in turn will lead to implementation of just and reasonable rates in accordance with FERC’s statutory mandate.<sup>179</sup>

#### B. Factor Regional Demand into Pipeline Permitting Decisions

Simply requiring regional transmission planning may not be enough to ensure efficient gas markets. Although U.S. electric transmission providers regularly engage in regional planning, either through RTO/ISOs or independent planning processes, inefficiencies remain. While problems differ across resources—the U.S. electric

178. *Members*, ENTSOG, <https://entsog.eu/members> [<https://perma.cc/RWP5-ZVLP>]; *Gas Regional Investment Plans*, EUGASTSOG RIP, <https://www.eugastsogrip.eu> [<https://perma.cc/3XQK-58Y4>].

179. *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, 76 Fed. Reg. 49,842–49,852 (Aug. 11, 2011) (“We conclude that the narrow focus of current planning requirements and shortcomings of current cost allocation practices create an environment that fails to promote the more efficient and cost-effective development of new transmission facilities, and that addressing these issues is necessary to ensure just and reasonable rates.”); *see also* S.C. Pub. Serv. Auth. v. Fed. Energy Regul. Comm’n, 762 F.3d 41, 56 (D.C. Cir. 2014) (explaining that in Order No. 1000, the Commission concluded that failing to participate in a regional process was having a “direct and discernable affect [sic] on rates” and thus was a practice that needed to be remedied).

industry generally suffers from transmission *underbuild*<sup>180</sup>—sources of inefficient planning exist in common.

For example, failing to account for anticipated demand growth or shrinkage increases costs for all consumers.<sup>181</sup> Infrastructure overbuild is a persistent problem in rate-regulated industries,<sup>182</sup> including the natural gas industry.<sup>183</sup> Over the past decade, several reports have been published calling into question the need for new gas transmission infrastructure. One report from 2016 found that two proposed pipelines that would transport gas from the Marcellus Shale into Virginia and the Carolinas, the Atlantic Coast and Mountain Valley Pipelines, would be unnecessary to meet expected future peak demand.<sup>184</sup> Another came to the same conclusion and further determined that the two pipelines, which would cost \$9 billion to build, would increase pipeline capacity beyond what is necessary to transport the total amount of natural gas produced in the region over the pipelines' lifetimes.<sup>185</sup> And using a national-level optimization model, a 2022 working paper found that, over the first two decades of the twenty-first century, the United States has built 38%

180. See Steve Cicala, *Decarbonizing the U.S. Economy with a National Grid*, in U.S. ENERGY & CLIMATE ROADMAP 78, 83 (2021), <https://epic.uchicago.edu/wp-content/uploads/2021/02/EPIC-Energy-and-Climate-Roadmap.pdf> [<https://perma.cc/PJ3P-42WN>].

181. See generally Melissa Powers, *Natural Gas Lock-In*, 69 KAN. L. REV. 889 (2021); Gregory C. Unruh, *Escaping Carbon Lock-In*, 30 ENERGY POL'Y 317 (2002).

182. RICKS ET AL., *supra* note 60, at 174.

183. Allison Good, *Texas Pipeline Overbuild Looms as Companies Rush to Add Permian Infrastructure*, S&P GLOB. (Mar. 11, 2019), <https://www.spglobal.com/marketintelligence/en/news-insights/trending/SYs7HAMIYbA87h0HyaFH2g2> [<https://perma.cc/JTJ6-HJD2>] (discussing overbuild concerns in Texas); Maya Webber, *Shipper Study Finds 23 of 32 Major Gas Pipelines Over-Recovered*, S&P GLOB. (Mar. 13, 2020), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/shipper-study-finds-23-of-32-major-gas-pipelines-over-recovered-57569674> [<https://perma.cc/DXK2-FCDH>]. This fact has even been acknowledged by the gas industry itself; one CEO of a Texas natural gas and propane company stated that “[t]he pipeline business will overbuild until the end of time[.]” Gillian Neimark, *Advocates: Ratepayers Will Be on the Hook for Unnecessary Pipelines*, ENERGY NEWS NETWORK (Nov. 14, 2016), <https://energynews.us/2016/11/14/advocates-ratepayers-will-be-on-the-hook-for-unnecessary-pipelines> [<https://perma.cc/JA6E-CH86>] (quoting Kelcy Warren, CEO of Energy Transfer Partners).

184. RACHEL WILSON ET AL., SYNAPSE ENERGY ECON., ARE THE ATLANTIC COAST PIPELINE AND THE MOUNTAIN VALLEY PIPELINE NECESSARY? 1 (2016), [https://legacy.uploads.southernenvironment.org/words\\_docs/2016\\_09\\_12\\_Synapse\\_Report\\_-\\_Are\\_the\\_ACP\\_and\\_MVP\\_Necessary\\_FINAL.PDF](https://legacy.uploads.southernenvironment.org/words_docs/2016_09_12_Synapse_Report_-_Are_the_ACP_and_MVP_Necessary_FINAL.PDF) [<https://perma.cc/BL85-9UBS>].

185. CATHY KUNKEL & TOM SANZILLO, INST. FOR ENERGY ECON. & FIN. ANALYSIS, RISKS ASSOCIATED WITH NATURAL GAS PIPELINE EXPANSION IN APPALACHIA 11–12 (2016), <https://ieefa.org/wp-content/uploads/2016/04/Risks-Associated-With-Natural-Gas-Pipeline-Expansion-in-Appalachia-April-2016.pdf> [<https://perma.cc/99VG-XHBQ>].

more natural gas pipeline and 27% more underground storage than necessary, spending around \$180 billion in needless investment.<sup>186</sup>

Intervenors in FERC pipeline approval proceedings regularly raise these points. Parties have presented FERC with evidence suggesting that a particular region contains sufficient natural gas infrastructure to satisfy regional demand, obviating the need for an additional pipeline or pipeline expansion. For example, during the FERC proceeding authorizing the Atlantic Coast Pipeline, commenters argued that the project was not justified based on future production or demand and that FERC should evaluate need on a region-wide basis.<sup>187</sup> During the proceeding authorizing the Broad Run Expansion Project,<sup>188</sup> intervenors argued that there was “ample infrastructure in place to accommodate even anticipated increases in shale gas production” and that the project in question would result in pipeline overbuild.<sup>189</sup> In both cases, FERC dismissed the intervenors’ arguments, claiming that precedent agreements evinced the requisite need and that regional demand analysis was unnecessary.<sup>190</sup> And yet, after FERC approved the Atlantic Coast Pipeline, the developers themselves shut down the project due to the pipeline’s uncertain economic viability.<sup>191</sup>

In the natural gas context, reduced societal demand for gas risks creating a sprawling network of underutilized or potentially stranded assets: capital that is unable to earn a return before the end of its

186. Thuy Doan et al., *Are We Building Too Much Natural Gas Pipeline? A Comparison of Actual US Expansion of Pipeline to an Optimized Plan of the Interstate Network 1* (Econ. Rsch. Org. at Univ. of Haw., Working Paper No. 2022-2, 2022) <https://uhero.hawaii.edu/wp-content/uploads/2022/04/UHEROwp2202.pdf> [<https://perma.cc/TK59-9EXX>].

187. Atl. Coast Pipeline, LLC, 164 FERC ¶ 61,100, paras. 40–59 (2018).

188. Tenn. Gas Pipeline Co., 163 FERC ¶ 61,190 (2018).

189. Petition of Lori Birckhead et al., Individual Members of the Concerned Citizens for a Safe Environment (CCSE) for Rehearing of Order Issuing Certificate for the Broad Run Expansion Project at 2, *Tenn. Gas Pipeline Co.*, 163 FERC ¶ 61,190 (No. CP15-77-001).

190. *Atl. Coast Pipeline*, 164 FERC ¶ 61,100, paras. 41, 52; *Tenn. Gas Pipeline*, 163 FERC ¶ 61,190, para. 7.

191. Press Release, Duke Energy, Dominion Energy and Duke Energy Cancel the Atlantic Coast Pipeline (July 5, 2020), <https://news.duke-energy.com/releases/dominion-energy-and-duke-energy-cancel-the-atlantic-coast-pipeline> [<https://perma.cc/QU95-WK7T>]; see also Julie Strupp, *Proposed, Under Construction, Abandoned: 6 Key US Pipeline Projects*, CONSTR. DIVE (June 21, 2022), <https://www.constructiondive.com/news/proposed-under-construction-abandoned-6-key-us-pipeline-projects/625756> [<https://perma.cc/54SG-7QG9>]. For examples of other abandoned pipelines, see Greta Moran, *How Activists Successfully Shut Down Key Pipeline Projects in New York*, GRIST (Jan. 4, 2021), <https://grist.org/fix/advocacy/how-activists-shut-down-key-pipeline-projects-new-york> [<https://perma.cc/PY4R-SVLP>].

expected economic lifetime<sup>192</sup> and whose costs are usually borne by ratepayers. To recoup the costs of underutilized pipelines, developers increase the costs for remaining customers so that they can make back their initial investments.<sup>193</sup> Incidentally, these increased costs are likely to fall on the customers who are least able to afford them.<sup>194</sup>

The issue of stranded assets is one that FERC has previously encountered.<sup>195</sup> Over the past fifty years, the Commission has addressed stranded costs resulting from the competitive restructuring of the natural gas and electricity generation and transmission markets.<sup>196</sup> In the case of natural gas market restructuring, pipeline operators were left with a surplus of natural gas inventory; in the case of electricity market restructuring, utilities were left with uncompetitive, expensive power plants.<sup>197</sup> In the first case, FERC initially required pipeline operators to split the costs with consumers but subsequently permitted the operators to pass on 100% of the costs to ratepayers;<sup>198</sup> in the second, FERC allowed full cost recovery from the very beginning.<sup>199</sup> Both of these cost-allocation decisions were made ex post, with FERC waiting until after projects had been approved and large-scale investments made.<sup>200</sup> This history of ex post consideration and compensation for stranded costs has slowed tech-

192. Ben Caldecott, Editorial, *Introduction to Special Issue: Stranded Assets and the Environment*, 7 J. SUSTAINABLE FIN. & INV. 1, 2 (2017).

193. For a helpful illustration of this in the utility context, see Lucas W. Davis & Catherine Hausman, *Who Will Pay for Legacy Utility Costs?* (Nat'l Bureau of Econ. Rsch., Working Paper No. 28,955, 2022).

194. *Id.* at 21–23.

195. See Emily Hammond & Jim Rossi, *Stranded Costs and Grid Decarbonization*, 82 BROOK. L. REV. 645, 651 (2017).

196. *Id.* at 655–59.

197. *Id.*

198. *Id.* at 656–57 (first citing Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol, 52 Fed. Reg. 30,334 (Aug. 14, 1987) (Order No. 500); and then citing Pipeline Service Obligations and Revisions to Regulations Governing Self-Implementing Transportation; and Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol, 57 Fed. Reg. 13,267 (Apr. 8, 1992) (Order No. 636)).

199. *Id.* at 659; Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. 21,540 (May 10, 1996) (Order No. 888).

200. Hammond & Rossi, *supra* note 195, at 660 (discussing consideration and compensation of stranded costs by state commissions in the context of nuclear facilities, and by FERC in the context of natural gas take-or-pay contracts and electricity restructuring).

nological transitions and led to “systematic overcompensation [of investors] for regulatory risk.”<sup>201</sup>

In these cases, FERC’s own, potentially unforeseeable actions led to the stranding of assets, so some compensation for investors may have been appropriate, even though that compensation increased consumer costs. (One could still argue that the investors should have borne the cost of industry evolution, but reasonable minds can differ.) Conversely, we would expect infrastructure developers, who are sophisticated market actors, to anticipate the clean energy transition; using the same logic, they should not be allowed to recover the full costs of improvident investments in gas infrastructure. But FERC has given no indication that it will require rate decreases for underutilized pipelines that, because of the upcoming energy transition, should never have been built.

Coordinated transmission infrastructure planning, combined with robust regional demand studies conducted on a regular basis, can ameliorate the problems of stranded assets, allowing transmission providers to target investment where demand is anticipated to grow and decline to invest where demand is anticipated to fall.<sup>202</sup> The European Commission adopted such an approach in 2017 when it passed Regulation 459/2017, a policy that, among other things, al-

201. *Id.* at 661.

202. Note that a regional approach to natural gas transmission planning does not foreclose the possibility of new pipeline construction. In some regions—the Northeast, for example—an assessment of regional demand may lead to the conclusion that there currently exists insufficient capacity to meet demand. In regions with a true need for additional infrastructure, a proper regional assessment would show that new infrastructure is indeed a cost-effective solution that best serves the region’s needs. See Andrew Kleit et al., *Weather or Not? Welfare Impacts of Natural Gas Pipeline Expansion in the Northeastern U.S.*, 10 ENERGY SYS. 593, 613 (2019) (citing Russell Bent et al., *Joint Expansion Planning for Natural Gas and Electric Transmission with Endogenous Market Feedbacks*, 51 HAW. INT’L CONF. ON SYS. SCIS. 2595 (2018)). But, when there is no true need, or where a non-pipeline solution is feasible, a regional approach could support the conclusion that existing infrastructure is sufficient to meet demand or that other, more cost-effective alternatives should be explored. See, e.g., Comments of the Env’t Def. Fund at 22, Certification of New Interstate Natural Gas Facilities, 163 FERC ¶ 61,042 (July 25, 2018) (PL18-1-000) [hereinafter EDF 2018 NOI Comments] (arguing that, while the Northeast faces congestion, solving seasonal constraints with a pipeline solution, as compared to other alternatives, would result in significant ratepayer costs, and that additional point-to-point throughput capacity may not be the best solution to the problems in the New England market); cf. JONATHAN PERESS & NATALIE KARAS, ENV’T DEF. FUND, ALIGNING NATURAL GAS AND ELECTRICITY MARKETS TO REDUCE COSTS, ENHANCE MARKET EFFICIENCY AND RELIABILITY 6 (2017), <https://www.edf.org/sites/default/files/aligning-us-natural-gas-and-electricity-markets.pdf> [<https://perma.cc/9H4K-7DQN>] (“Long term contracts for pipeline capacity which is unneeded from a market rationale standpoint is a prescription for uneconomic fossil fuel lock-in and stranded costs being imposed on energy consumers paying for excess capacity.”).

tered the process through which new natural gas capacity is allocated.<sup>203</sup> Recognizing that “[d]uplication of gas transmission systems is in most cases neither economic nor efficient” and that “[i]nefficient use of and limited access to the Union’s high-pressure gas pipelines lead to suboptimal market conditions,” Regulation 459 prohibits a member state’s relevant regulator from approving infrastructure investment decisions that are not economical.<sup>204</sup> Per the regulation, TSOs must regularly “assess[] market demand for incremental capacity.”<sup>205</sup> These assessments must account for, among other things, whether the TYNDP “identifies a physical capacity gap whereby a specific region is undersupplied in a reasonable peak scenario and where offering incremental capacity at the interconnection point in question could close the gap,” and whether any other capacity product could fix the issue.<sup>206</sup> If demand for new capacity is found to exist, the relevant TSO (or in the alternative, national regulatory authority) must perform an economic test to determine if the subscribed demand will be sufficient to satisfy a certain portion of the costs of the proposed infrastructure.<sup>207</sup> Only if the project satisfies that test can it move forward.

FERC should similarly ask for a demonstration of real regional need. Before approving any transmission infrastructure, the Commission should require a showing that there is anticipated regional demand that requires the installation of new capacity and that the demand cannot be satisfied through a non-transmission alternative. The Commission should require all pipeline applicants to submit a market study that shows anticipated regional demand for natural gas over the pipeline’s expected lifetime. The Commission should also take more seriously market data submitted by state agencies in pipeline approval proceedings. For example, in a recent certificate decision, FERC approved a pipeline expansion despite the New Jersey Board of Public Utilities’ submission of a study showing that existing natural gas capacity was sufficient to meet state demand.<sup>208</sup> In a different proceeding, FERC approved a pipeline over the protest of the

203. Commission Regulation 2017/459 of 16 Mar. 2017, Establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and Repealing Regulation No. 984/2013, 2017 O.J. (L 72) (EU).

204. *Id.*

205. *Id.* art. 26.

206. *Id.* art. 26(12)(a).

207. *Id.* art. 22.

208. Transcon. Gas Pipe Line Co., 182 FERC ¶ 61,006, para. 22 (2023).

Missouri Public Service Commission, which questioned the pipeline's need.<sup>209</sup> These types of determinations, which are made by expert state agencies that are the jurisdictional regulators of the gas utility shippers contracting for new interstate capacity, merit a high level of deference, certainly more than they were given in the aforementioned proceedings. By taking a more informed look at anticipated regional demand, one that accounts for state knowledge, analysis, and policy implementation, FERC can avoid approving pipelines that will unnecessarily cost consumers.

### C. Account for Electrification and Decarbonization Policies

In addition to accounting for demand more generally, FERC should factor in the effects of electrification and decarbonization policies when making decisions. It is highly likely that in the coming years, demand for natural gas will shrink due to the government's response to climate change. Increasingly, states, localities, and the federal government are enacting laws and policies intended to spur decarbonization and electrification in the face of looming climate change. Decarbonization policies that dictate a low-carbon resource mix and technological and market changes will reduce natural gas demand from gas-fired power plants, the largest consumers of natural gas.<sup>210</sup> Electrification will reduce demand for gas heating from residential, commercial, and industrial buildings.<sup>211</sup> Reduced demand for natural gas will in turn reduce demand for natural gas transportation services.

The push for decarbonization and electrification has come from all levels of government. Upon assuming office, President Biden signed an executive order directing the federal government to achieve net-

209. *Env't Def. Fund v. Fed. Energy Regul. Comm'n*, 2 F.4th 953, 963–64 (D.C. Cir. 2021). FERC's approval was later vacated. *Id.* at 977.

210. Even if more gas plants are needed in the short-term to ease the transition to a renewable energy economy, those plants would operate infrequently, freeing up pipeline capacity.

211. See SHERRI BILLIMORIA ET AL., RMI, *THE ECONOMICS OF ELECTRIFYING BUILDINGS* 38 (2018) (finding that building electrification will result in a net decline in natural gas, even where all electricity for heat pumps is generated by gas-fired power plants). Research demonstrates that while electrification might shift consumption and emissions from demand sectors to the power sector, there will still be "energy system-wide reductions in both" because electrified end-use technologies are more energy-efficient. CAITLIN MURPHY ET AL., NAT'L RENEWABLE ENERGY LAB'Y, *ELECTRIFICATION FUTURES STUDY: SCENARIOS OF POWER SYSTEM EVOLUTION AND INFRASTRUCTURE DEVELOPMENT FOR THE UNITED STATES*, at xii (2021), <https://www.nrel.gov/docs/fy21osti/72330.pdf> [<https://perma.cc/RUQ9-SXX9>].

zero emissions by 2050.<sup>212</sup> Congress subsequently passed two major spending bills, the Infrastructure Investment and Jobs Act<sup>213</sup> and the Inflation Reduction Act,<sup>214</sup> which both allocate billions of dollars toward decarbonization. As of 2022, twenty-four states and the District of Columbia have established greenhouse gas emissions targets,<sup>215</sup> most of which call for totally renewable or carbon-free energy by 2050.<sup>216</sup> Thirty states and D.C. have established renewable or clean energy requirements (also known as renewable portfolio standards), which seek to increase investment in renewables and advanced technologies and phase out fossil fuel-fired power plants.<sup>217</sup> States have also instituted tax credits and other incentives to encourage the development and use of renewable energy.<sup>218</sup> An increasing number of towns and cities have banned or are considering banning natural gas in the construction of new buildings.<sup>219</sup> These federal, state, and local policies will lower demand for natural gas. RMI, a well-known, multidisciplinary nonprofit focused on the energy transition, projected in 2019 that nearly 85% of fuel use from new gas-fired generation will be replaced by clean energy projects

212. Exec. Order No. 14,057 § 101, 86 Fed. Reg. 70,935, 70,935 (Dec. 13, 2021).

213. Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, 135 Stat. 429 (2021).

214. Inflation Reduction Act, Pub. L. No. 117-169, 136 Stat. 1818 (2022).

215. *State Climate Policy Maps*, *supra* note 12.

216. *Table of 100% Clean Energy States*, *supra* note 12.

217. *State Renewable Portfolio Standards and Goals*, NAT'L CONF. OF STATE LEGISLATURES (Aug. 13, 2021), <https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx> [<https://perma.cc/JV9D-YETX>]; Climate Leadership and Community Protection Act, S. S6599, 2019-2020 S. Assemb. (N.Y. 2019) (New York law requiring that electricity demand be served by 100% zero-emission resources by 2040); *see also* Madison Condon et al., *Mandating Disclosure of Climate-Related Financial Risk*, 24 N.Y.U. J. LEGIS. & PUB. POL'Y 745, 757-58 (2022).

218. *Find Policies & Incentives by State*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, <https://www.dsireusa.org> [<https://perma.cc/4WTQ-F5HN>] (last visited Nov. 13, 2023).

219. *See, e.g.*, Gruenwald & Lee, *supra* note 12 (cataloguing cities and states with building electrification codes and other action taken at the subnational level on building electrification); Deepa Shivaram, *The Largest City in the U.S. Bans Natural Gas in New Buildings*, NPR (Dec. 15, 2021), <https://www.npr.org/2021/12/15/1064496749/new-york-natural-gas-buildings-electrification> [<https://perma.cc/S2GW-4WS5>] (discussing bans in New York City, San Francisco, and San Jose, among others cities); Gianna Melillo, *What Does a Ban on Natural Gas Appliances Mean for Homeowners*, THE HILL (Sept. 27, 2022), <https://thehill.com/changing-america/sustainability/energy/3663271-what-does-a-ban-on-natural-gas-appliances-mean-for-homeowners> [<https://perma.cc/KVM6-MVKH>] (discussing Los Angeles's move to ban gas stoves in new residential and commercial buildings).

by 2035.<sup>220</sup> Researchers at the University of California, Berkeley found that a 90% clean grid is possible, dependable, and affordable by 2035, with natural gas representing only 10% of annual generation—a 70% decrease from that same figure in 2019.<sup>221</sup>

Ultimately, decarbonization and electrification policies create a type of climate-related transition risk: a category of potential costs that can be incurred due to actions society takes in response to the effects of climate change. These actions include the adoption of new legal limits on greenhouse gas emissions, the development and adoption of new climate-friendly technologies, or an increase in private demand for sustainable products.<sup>222</sup> FERC usually assumes that a major interstate pipeline possesses a useful economic life of 35 years;<sup>223</sup> however, given the increasingly rapid development of renewable resources, that assumption may be overly optimistic for many projects. In other words, FERC continues to approve pipeline applications based on the assumption that they will be used through 2058, almost ten years after many states hope to achieve carbon neutrality.<sup>224</sup> RMI estimates that \$32 billion of proposed gas pipelines are at risk of becoming stranded assets based on 2030 natural gas demand.<sup>225</sup>

This issue has already begun to take shape. In 2021, Corning Gas filed tariff revisions seeking to accelerate the depreciation life of its infrastructure “because the [Climate Leadership and Community Protection Act, New York State’s signature climate law,] will shorten

220. MARK DYSON ET AL., RMI, PROSPECTS FOR GAS PIPELINES IN THE ERA OF CLEAN ENERGY 10 (2019), <https://rmi.org/wp-content/uploads/2022/03/rmi-cep-prospects-for-gas-pipelines.pdf> [<https://perma.cc/2YMF-VPCP>].

221. AMOL PHADKE ET AL., GOLDMAN SCH. OF PUB. POL’Y, 2035: THE REPORT 4 (2020), <https://www.2035report.com/wp-content/uploads/2020/06/2035-Report.pdf> [<https://perma.cc/JL8M-49AP>].

222. Condon et al., *supra* note 217, at 757–61; Felipe Feijoo et al., *The Future of Natural Gas Infrastructure Development in the United States*, 228 APPLIED ENERGY 149, 155–56 (2018) (calling on decisionmakers like FERC to mitigate this underutilization risk); *see also* Alex Morales, ‘Stranded Assets’: Will Efforts to Counter Warming Render Energy Reserves Worthless?, WASH. POST (Dec. 5, 2014), [https://www.washingtonpost.com/business/stranded-assets-will-efforts-to-counter-warming-render-energy-reserves-worthless/2014/12/05/ecbc73a6-7a45-11e4-9a27-6fdb612bff8\\_story.html](https://www.washingtonpost.com/business/stranded-assets-will-efforts-to-counter-warming-render-energy-reserves-worthless/2014/12/05/ecbc73a6-7a45-11e4-9a27-6fdb612bff8_story.html) [<https://perma.cc/83JW-3246>] (describing how untapped fossil fuel reserves could become stranded assets as the economy decarbonizes).

223. EDF 2018 NOI Comments, *supra* note 202 (cataloguing applicant depreciable life assumptions); Panhandle E. Pipe Line Co., 181 FERC ¶ 61,211, para. 191 (2022) (stating that, although FERC does not “dictate a uniform 35-year remaining economic life for every pipeline,” the Commission regularly approves economic lives of that duration).

224. *See Table of 100% Clean Energy States*, *supra* note 12.

225. DYSON ET AL., *supra* note 220, at 9.

the effective life of the Company's existing and future investment in infrastructure."<sup>226</sup> While the New York Public Service Commission rejected the tariff, the request itself is telling.<sup>227</sup>

The Commission should also require transmission planners to consider how underused natural gas infrastructure could be harnessed to transport other types of fuel that feature prominently in federal and state decarbonization strategies. A contentious—but important—opportunity that FERC should evaluate is the ability of natural gas pipelines to transport hydrogen, a gas that releases no carbon dioxide emissions when burned but which, like natural gas, is dispatchable.<sup>228</sup> The federal government has already allocated substantial funds toward developing a clean hydrogen network. Most notably, the Infrastructure Investment and Jobs Act of 2021 and the Inflation Reduction Act of 2022 offer billions of dollars in tax credits and direct funding to spur the development of clean hydrogen technology and infrastructure.<sup>229</sup> Beyond these large incentives, the National Renewable Energy Laboratory (NREL) is currently leading a cross-laboratory research initiative, HyBlend, to address barriers to blending hydrogen into natural gas pipelines.<sup>230</sup> States have also taken on the challenge. Hawaii Gas has used a gas mix containing 12% hydrogen in its pipelines since the 1970s, the most successful domestic utility to do so.<sup>231</sup> Recently, the California Public Utilities Commission conducted a study to ascertain how much hydrogen could be safely inserted into existing natural gas infrastructure with-

226. N.Y. Pub. Serv. Comm'n, Order Establishing Rates and Rate Plan, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Corning Natural Gas Corporation for Gas Service*, Case 20-G-0101, at 27 (May 19, 2021).

227. *Id.* at 60.

228. Producing hydrogen gas requires energy, which itself may or may not be clean; this is one of the reasons why the widespread deployment of hydrogen is controversial. See Emily Pontecorvo, *Why the "Swiss Army Knife" of Climate Solutions Is So Controversial*, GRIST (Sept. 27, 2021), <https://grist.org/energy/why-the-swiss-army-knife-of-climate-solutions-is-so-controversial> [<https://perma.cc/V97B-URHX>].

229. ALAN KRUPNICK & AARON BERGMAN, RES. FOR THE FUTURE, INCENTIVES FOR CLEAN HYDROGEN PRODUCTION IN THE INFLATION REDUCTION ACT 1 (2022), [https://media.rff.org/documents/Report\\_22-13\\_UNfLJLS.pdf](https://media.rff.org/documents/Report_22-13_UNfLJLS.pdf) [<https://perma.cc/659Q-D8KW>].

230. *HyBlend: Opportunities for Hydrogen Blending in Natural Gas Pipelines*, DEP'T OF ENERGY, <https://www.energy.gov/eere/fuelcells/hyblend-opportunities-hydrogen-blending-natural-gas-pipelines> [<https://perma.cc/5M7Y-PNCL>] (last visited Nov. 13, 2023); see also KEVIN TOPOLSKI ET AL., NAT'L RENEWABLE ENERGY LAB'Y, HYDROGEN BLENDING INTO NATURAL GAS PIPELINE INFRASTRUCTURE: REVIEW OF THE STATE OF TECHNOLOGY (2022), <https://www.nrel.gov/docs/fy23osti/81704.pdf> [<https://perma.cc/4HQC-AQS6>].

231. TOPOLSKI ET AL., *supra* note 230, at 37.

out conducting system updates or impairing service.<sup>232</sup> Even investor-owned utilities are now investigating how they can introduce hydrogen into the gas mix.<sup>233</sup>

This research is in its early stages. An NREL survey of the literature highlights several studies that estimate how much hydrogen can be blended into current infrastructure without compromising safety or reliability; many of these studies took place in Europe, and most assume blending small percentages of hydrogen.<sup>234</sup> The California PUC study determined that the state could not currently insert more than 5% hydrogen into the natural gas mix without compromising safety.<sup>235</sup> The difficulties with higher-volume hydrogen blending are varied. Hydrogen speeds the growth of fatigue cracks and fractures in steel pipelines,<sup>236</sup> and because hydrogen is a small molecule, it is more prone to leaking than larger natural gas molecules.<sup>237</sup> Hydrogen is less energy-dense than natural gas, and thus would need to be transmitted under higher pressures to maintain current levels of reliability.<sup>238</sup> These are only a few of the issues that scientists and engineers would need to address before injecting significant amounts of hydrogen into existing natural gas infrastructure.

Clearly, the use of gas pipelines to transport cleaner fuels will not be a viable opportunity for all existing infrastructure, and the Com-

232. ARUN S.K. RAJU ET AL., CAL. PUB. UTILS. COMM'N, HYDROGEN BLENDING IMPACTS STUDY (2022), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M493/K760/493760600.pdf> [https://perma.cc/H4K5-3LWV] (finding hydrogen blending above 5% “concerning,” *id.* at 4).

233. *See, e.g.*, NAT'L GRID, OUR PLAN: NATIONAL GRID NET ZERO BY 2050, <https://www.nationalgridus.com/media/pdfs/our-company/netzeroby2050plan.pdf> [https://perma.cc/9BN7-BWVY] (last visited Nov. 13, 2023) (describing how National Grid will partner with the New York State Energy Research and Development Authority and Stony Brook Institute to study how the utility can blend hydrogen into existing infrastructure); Press Release, SoCalGas, SoCalGas and the University of California, Irvine Announce Hydrogen Blending Project to Promote Clean Energy and Resiliency Goals (Sept. 9, 2022), <https://newsroom.socalgas.com/press-release/socalgas-and-the-university-of-california-irvine-announce-hydrogen-blending-project> [https://perma.cc/35YD-AW56] (announcing a project to blend hydrogen into UC Irvine's natural gas infrastructure).

234. TOPOLSKI ET AL., *supra* note 230, at 32.

235. RAJU ET AL., *supra* note 232, at 4.

236. TOPOLSKI ET AL., *supra* note 230, at 10–13. Once again, Europe has moved faster than the United States. In 2020, a group of TSOs formed the European Hydrogen Backbone initiative. AMBER GRID ET AL., EUROPEAN HYDROGEN BACKBONE 3 (2022), <https://ehb.eu/files/downloads/ehb-report-220428-17h00-interactive-1.pdf> [https://perma.cc/7RT8-WAK4]. This group, which now encompasses thirty-one energy infrastructure companies from twenty-eight countries, hopes to repurpose over 60% of natural gas pipelines for hydrogen transportation by 2040. *Id.* at 3 & n.4.

237. *Id.* at 19.

238. *Id.* at 13–15.

mission should require comprehensive, verifiable data before finding that a proposed project can and will be used to transport cleaner fuels in the future. If there is not a hydrogen hub or demand center near a pipeline, for example, transporting these fuels will not make the energy system more efficient. But given the existence of billions of dollars' worth of federal incentives, clean hydrogen will likely be part of the energy transition. If it is possible to integrate cleaner resources into proposed natural gas infrastructure, FERC should require gas companies or a future regional transmission organization to consider and study that possibility.

Before approving a pipeline, FERC should require a developer—or better yet, a regional planning organization—to submit a report detailing existing and anticipated electrification and decarbonization policies in the communities that the pipeline would serve, as well as the results of any state gas capacity or planning studies. Such a report would allow the Commission to better analyze whether new gas infrastructure is warranted and whether existing infrastructure could be repurposed for use with low-carbon fuel alternatives. FERC should also consult with the governments of affected states when considering a pipeline application; state actors will have a better sense of their own policies' anticipated impacts on demand for gas. As discussed *supra*, this is something that the California ISO has voluntarily begun to do to better understand future demand and resource mix, and it is fully within FERC's authority to require something similar of the natural gas industry.

#### D. Integrate Natural Gas and Electric Transmission Planning

The Commission should also integrate electric transmission planning considerations into its certification process. Today, as described *supra* Part III(B), FERC addresses these two sides of the energy system completely separately, despite the increasing interdependence of the system. Natural gas continues to make up a bigger and bigger share of the U.S. electricity resource mix,<sup>239</sup> and while renewable resources will likely become the dominant source of generation over the next few decades, demand for gas is still pro-

239. *Electricity Explained*, U.S. ENERGY INFO. ADMIN. (July 15, 2022), <https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php> [<https://perma.cc/VG9T-XGVP>].

jected to grow by 10% in the next ten years.<sup>240</sup> Simultaneously, as public policy increasingly favors decarbonization and electrification, and as renewable energy and battery storage become more cost-effective, demand for cheaper, solar- and wind-based electricity will displace a substantial amount of demand for natural gas.

Already today, electricity infrastructure is both an important substitute for and complement to natural gas infrastructure.<sup>241</sup> Small, dispatchable, gas-fired generating units can enhance the reliability of the electric grid as there is increasing penetration of variable solar- and wind-based energy.<sup>242</sup> At the same time, more interregional electric transmission may lessen the need for natural gas capacity to maintain reliability by reducing the impact of solar and wind variability.<sup>243</sup> Electric heating and stoves substitute for gas heating and stoves, even as that electricity might be generated using natural gas as a fuel. Electricity is needed to power compressors that compensate for fluctuations in pressure as natural gas moves through a pipeline.<sup>244</sup> And new power-to-gas technology takes excess electricity generated from renewable sources and uses it to create hydrogen gas, which could potentially be blended with natural gas and transmitted through existing natural gas pipelines to be used for electricity generation.<sup>245</sup>

240. MCKINSEY & CO., GLOBAL ENERGY PERSPECTIVE 2022: EXECUTIVE SUMMARY 16 (2022), <https://www.mckinsey.com/~media/McKinsey/Industries/Oil%20and%20Gas/Our%20Insights/Global%20Energy%20Perspective%202022/Global-Energy-Perspective-2022-Executive-Summary.pdf> [<https://perma.cc/J6CY-X734>].

241. See Hung-po Chao & Robert Wilson, *Coordination of Electricity Transmission and Generation Investments*, 86 ENERGY ECON., art. 104623, 2020, at 10.

242. *Id.* at 23–24.

243. See, e.g., JOHANNES PFEIFENBERGER ET AL., THE VALUE OF DIVERSIFYING UNCERTAIN RENEWABLE GENERATION THROUGH THE TRANSMISSION SYSTEM (2020), [https://www.brattle.com/wp-content/uploads/2021/05/20186\\_the\\_value\\_of\\_diversifying\\_uncertain\\_renewable\\_generation\\_through\\_the\\_transmission\\_system\\_-\\_cost\\_savings\\_associated\\_with\\_interconnecting\\_systems\\_with\\_high\\_renewables\\_generation.pdf](https://www.brattle.com/wp-content/uploads/2021/05/20186_the_value_of_diversifying_uncertain_renewable_generation_through_the_transmission_system_-_cost_savings_associated_with_interconnecting_systems_with_high_renewables_generation.pdf) [<https://perma.cc/MH89-KDLH>]; MICHAEL GOGGIN, GRID STRATEGIES, TRANSMISSION MAKES THE POWER SYSTEM RESILIENT TO EXTREME WEATHER 6 (2021), [https://acore.org/wp-content/uploads/2021/07/GS\\_Resilient-Transmission\\_proof.pdf](https://acore.org/wp-content/uploads/2021/07/GS_Resilient-Transmission_proof.pdf) [<https://perma.cc/BJ4S-CCA8>] (“Many recent studies show that interregional transmission lines like those discussed in this paper become increasingly essential as wind and solar penetrations increase in different parts of the country. Just as these lines aggregate diverse sources of electricity supply and demand to balance out localized disruptions during extreme weather, they provide a similar value by canceling out local fluctuations in wind or solar output.”).

244. Chuan He et al., *Coordination of Interdependent Electricity Grid and Natural Gas Network—A Review*, 5 CURRENT SUSTAINABLE/RENEWABLE ENERGY REPS. 23, 23 (2018).

245. *Id.* at 26.

Given these trends, it will become progressively more important to harmonize electricity and natural gas transmission planning if the United States is to achieve an efficient, cost-effective energy system.<sup>246</sup> Once again, Europe provides a helpful example of how this harmonization could work. In 2018, ENTSOG and its electricity counterpart, the European Network of Transmission System Operators for Electricity (ENTSO-E), for the first time published a joint report outlining scenarios for use in their ten-year development plans.<sup>247</sup> ENTSOG and ENTSO-E have continued to collaborate on scenario development with the goal of an “interlinked approach to energy system analysis,” publishing their most recent joint scenario report in 2022.<sup>248</sup> This report relies on supply and demand data from member TSOs and uses “sector-coupling methodologies and dedicated modelling tools” to optimize efficiency and capture the interactions between natural gas, the electric grid, and adoption of new technologies such as electric vehicles and electrolysis.<sup>249</sup>

Harmonizing gas and electricity infrastructure planning would be a big change for the United States, and FERC could move in phases. At one extreme, FERC could require electric and natural gas transmission planning groups to *co-optimize* their planning models. Using a co-optimizing tool that considers all options, including how transmission and pipeline expansion may be substitutes, can provide more efficient and sustainable expansion solutions compared to a decoupled approach that looks at electric transmission planning and pipeline expansion separately. Significant research has gone into modeling and improving the co-optimization of expansion planning for both electricity and natural gas networks.<sup>250</sup> Studies all reach the

246. See, e.g., Russell Bent et al., *Joint Electricity and Natural Gas Transmission Planning with Endogenous Market Feedbacks*, 33 IEEE TRANSACTIONS POWER SYS. 6397, 6397 (2018); Conejo et al., *supra* note 93, at 1541–42; Santiago Lemos-Cano & James McCalley, *Co-Optimized Analysis and Design of Electric and Natural Gas Infrastructures*, ENERGIES (May 2019).

247. ENTSO-E & ENTSOG, TEN-YEAR NETWORK DEVELOPMENT PLAN 2022: SCENARIOS FINAL STORYLINE REPORT 4 (2022), [https://www.entsog.eu/sites/default/files/2021-04/entsog\\_entso-e\\_TYNDP2022\\_Joint\\_Scenarios\\_Final\\_Storyline\\_Report\\_210426\\_WEB.pdf](https://www.entsog.eu/sites/default/files/2021-04/entsog_entso-e_TYNDP2022_Joint_Scenarios_Final_Storyline_Report_210426_WEB.pdf) [<https://perma.cc/74MJ-DB4F>].

248. *Id.*

249. *Id.* at 7.

250. Venkat Krishnan et al., *Co-Optimization of Electricity Transmission and Generation Resources for Planning and Policy Analysis: Review of Concepts and Modeling Approaches*, 7 ENERGY Sys. 297, 314 & fig.3 (2016). Several models have been developed to integrate or coordinate natural gas transportation and electric transmission capacity expansion, including models that rely on open-source tools. MOHLIN, *supra* note 81, at 31–32 (describing various models and platforms that allow planners to “analyze the relevant interactions and interdependencies be-



proach would help optimize infrastructure investments in relation to genuine regional demand as well as state and federal policy objectives that favor decarbonization and electrification. As we explain above, the NGA offers FERC a robust legal foundation for implementing such regional gas transmission planning. Both the “public convenience and necessity” provision and the overarching mandate to ensure “just and reasonable” rates vest FERC with the authority and the obligation to integrate regional considerations into its approval process.

As the federal agency charged with administering our country’s energy system during a time of rapid change, FERC faces many challenges with unclear solutions. Regional planning, however, is not one of them. Just as it has asked electric transmission providers to engage in regional planning for over a decade, FERC should require the same of the natural gas industry.