

A R T I C L E

MARKETS, EXTERNALITIES, AND THE FEDERAL POWER ACT: THE FEDERAL ENERGY REGULATORY COMMISSION'S AUTHORITY TO PRICE CARBON DIOXIDE EMISSIONS

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Electricity generation in the United States is one of the leading sources of greenhouse gas emissions.¹ Those emissions cause severe climate change-related harms. Despite the severity of those harms, the Federal Energy Regulatory Commission (FERC), which regulates the interstate transmission and wholesale electricity markets, has avoided addressing the issue.

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FERC has historically shied away from environmental considerations in ratemaking.² But carbon dioxide (CO₂) emissions are not just an environmental consideration; they are a prime example of the market failure known as a negative “externality.” A negative externality is cost that is incurred by third parties and thus not considered by market participants. And, unless it is addressed, it hinders the efficiency of competitive markets by causing external damages to society. To correct that failure, economists recommend that the external costs are internalized through a carbon price that reflects the external damage that CO₂ emissions cause.

In this Article, we provide a comprehensive economic framework to show that addressing the CO₂ externality through a carbon price falls within FERC's authority to ensure an efficient market. Even though FERC is not an “environmental” regulator, FERC has long-standing authority to fix this market failure under its traditional role as an “economic” regulator. Consideration of CO₂ emissions is not simply an environmental concern, but rather a core market concern that is integral to a functional and efficient market.

I. Statutory and Economic Framework

In this part, we first review the statutory framework of the Federal Power Act (FPA). Then, we discuss the basic economic principles related to perfectly competitive markets.

1. See *Frequently Asked Questions*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/faqs/faq.php?id=77&t=11> (last visited Aug. 23, 2018).

2. See, e.g., *Grand Council of the Crees v. Fed. Energy Regulatory Comm'n*, 198 F.3d 950, 957, 30 ELR 29271 (D.C. Cir. 2000).

A. The FPA

Historically, states and localities regulated most electricity generation, transmission, and distribution.³ But in the 1930s, after the U.S. Supreme Court held that states could not regulate interstate electricity transactions,⁴ the U.S. Congress passed the FPA and created FERC's predecessor, the Federal Power Commission, to regulate wholesale interstate electricity transactions.⁵

1. Just and Reasonable and Undue Discrimination

Under the FPA, FERC must ensure that the rates that “public utilities”—generators or transmission owners trading in wholesale electricity⁶—charge on the interstate market are just and reasonable.⁷ In order to ensure just and reasonable rates, FERC reviews and approves utility tariffs showing the “rates and charges . . . and the classifications, practices, and regulations affecting such rates and charges.”⁸ FERC also has authority to investigate whether a “rule, regulation, practice, or contract affecting such rate, charge, or classification is unjust, unreasonable, unduly discriminatory or preferential” and impose a substitute rate that is just and reasonable.⁹

FERC’s “findings must be supported by ‘substantial evidence.’”¹⁰ This requires FERC to “specify the evidence on which it relied and . . . explain how that evidence support[s] the conclusion it reached.”¹¹ FERC is not required to provide empirical evidence to support all of its findings; it may support them with “reasonable economic propositions.”¹²

2. Direct Effect on Wholesale Rates

FERC has authority to regulate “interstate . . . wholesale rates and the panoply of rules and practices affecting them.”¹³ That authority, however, is limited to rules or practices that “directly affect the wholesale rate.”¹⁴

B. Markets and Economic Efficiency

An efficient market is one where “all the opportunities to make some people better off without making other people worse off have been exploited.”¹⁵ If all those transactions occur, the total welfare of consumers and producers—the social welfare—is maximized.¹⁶

In the language of economists, if markets are “perfectly competitive,” they are usually efficient.¹⁷ A perfectly competitive market features: (1) many sellers that compete to sell their identical goods to many buyers¹⁸ and (2) free entry and exit of firms.¹⁹

With these features, there is a single market clearing price where the supply curve for the product intersects the demand curve.²⁰ This is the equilibrium price, which is equal to the marginal cost of production—the additional cost of producing one more unit of a particular good or service.²¹

In the electricity context, additional generation would continue to increase social welfare until the marginal benefit of one more megawatt-hour of electricity equals its marginal cost. With the right price signals, wholesale markets will incentivize the entry of new generation when it is economical to do so, and the exit of existing generation when it is uneconomical. If FERC can ensure that the wholesale markets match the characteristics of perfectly competitive markets, then the wholesale rates and the resulting allocation of resources would be economically efficient. FERC’s actions over the past several decades show that it has indeed embraced these principles of perfectly competitive markets.

II. FERC’s Shift Toward Competitive Wholesale Markets

A. Natural Monopolies and the Cost-of-Service Model

Until recently, vertically integrated utilities owned all levels of generation, transmission, and distribution and electricity was considered a natural monopoly.²² In this setting, FERC considered rates just and reasonable if they allowed utilities to recover costs as well as “a reasonable profit,” known as cost-based rates.²³

3. See Fed. Energy Regulatory Comm’n v. Elec. Power Supply Ass’n, 136 S. Ct. 760, 767, 46 ELR 20021 (2016).

4. See Pub. Util. Comm’n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 89 (1927).

5. See New York v. Fed. Energy Regulatory Comm’n, 535 U.S. 1, 6 (2002). We use “wholesale” and “interstate” interchangeably to refer to electricity sales made over an interstate grid, which are subject to FERC’s jurisdiction.

6. 16 U.S.C. §824(e).

7. *Id.* §824(d)(a).

8. *Id.* §824(d)(c).

9. *Id.* §824(e)(a); Atlantic City Elec. Co. v. Fed. Energy Regulatory Comm’n., 295 F.3d 1, 10 (D.C. Cir. 2002) (“[T]o make any change in an existing rate or practice, FERC must first prove that the existing rates or practices are ‘unjust, unreasonable, unduly discriminatory or preferential.’”).

10. S.C. Pub. Serv. Auth. v. Fed. Energy Regulatory Comm’n, 762 F.3d 41, 65 (D.C. Cir. 2014) (quoting 5 U.S.C. §706(2)(E)).

11. *Id.* at 54 (quoting Wis. Gas Co. v. Fed. Energy Regulatory Comm’n, 770 F.2d 1144, 1156 (1985)) (internal quotation marks omitted).

12. *Id.* at 65.

13. Fed. Energy Regulatory Comm’n v. Elec. Power Supply Ass’n, 136 S. Ct. 760, 773, 46 ELR 20021 (2016).

14. *Id.* (quotation marks omitted).

15. See PAUL KRUGMAN & ROBIN WELLS, MICROECONOMICS 15 (2d ed. 2009).

16. See *id.* at 14-15, 111; ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 315 (7th ed. 2009); STEVEN STOFT, POWER SYSTEM ECONOMICS: DESIGNING MARKETS FOR ELECTRICITY 54 (2002); Emily Hammond & David B. Spence, *The Regulatory Contract in the Marketplace*, 69 VAND. L. REV. 141, 169 (2016) (explaining that well-functioning competitive markets will maximize net benefits).

17. See KRUGMAN & WELLS, *supra* note 15, at 111.

18. See PINDYCK & RUBINFELD, *supra* note 16, at 272.

19. See *id.*

20. See *id.*

21. See KRUGMAN & WELLS, *supra* note 15, at 231, 235-36; STOFT, *supra* note 16, at 57.

22. See KRUGMAN & WELLS, *supra* note 15, at 359.

23. See ISO New England, Inc. & New England Power Pool Participants Comm. Fed. Power Comm’n v. Hope Nat. Gas Co., 320 U.S. 591, 603 (1944) (“The rate-making process under the Act, i.e., the fixing of ‘just and

B. Competition and FERC's Responses

Over the past several decades, smaller utilities have begun to compete with bigger utilities and transmission has become more economical.²⁴ As competition seeped into the electricity markets, FERC responded by embracing markets as a useful tool for ensuring just and reasonable rates.

1. Embracing Markets

As competition increased, FERC began allowing firms to use market-based rates to set wholesale prices, regularly upholding competition as a way to ensure just and reasonable rates.²⁵ As FERC has explained, if the price signals in competitive markets are accurate, they could be relied on to encourage efficient allocation of resources, adjust supply, promote expansion, and help determine where new generators should be located.²⁶

If FERC can ensure that wholesale markets imitate perfectly competitive markets, then the realized market prices also imitate perfectly competitive market prices and are efficient.²⁷ In this way, FERC has used competition to achieve its “just and reasonable” mandate.²⁸

2. Encouraging Markets

Besides embracing markets, FERC has also encouraged them. In 1996 and 2000, FERC issued two orders that encouraged the creation of Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs), wholesale market operators that are regulated as utilities and run wholesale electricity markets.²⁹ Those entities were set up to “operate the transmission system independently of, and foster competition for electricity generation among, wholesale market participants.”³⁰

RTOs and ISOs manage electricity sales between utilities and generators and work to ensure reliable transmission.³¹ ISOs and RTOs set market prices by running auctions for

energy, capacity, and ancillary services.³² FERC ensures that the resulting rates are just and reasonable by reviewing the auction rules.³³

Although wholesale markets are administrative constructs, their design is intended to mimic perfectly competitive markets.³⁴ The auction “sends critical information to market participants, improves transparency, and generally results in more efficient outcomes in RTO/ISO energy markets.”³⁵

3. Supervising Markets

Yet, despite a set-up that is designed to harness the benefits of a perfectly competitive market, as with most markets, market failures persist in electricity.

Competitive markets generally fail for four reasons: (1) market power, (2) asymmetric information, (3) public goods, and (4) externalities.³⁶ And each of those market failures have been found in the electricity market. In response, FERC has intervened at various times “to break down regulatory and economic barriers that hinder a free market in wholesale electricity”³⁷ and ensure competition.³⁸

For example, in an effort to ensure just and reasonable rates, FERC has addressed market power. Market power is the ability of a consumer or a producer to affect the market price.³⁹ Market power usually arises when there is a limited number of buyers or sellers. A firm without any other sellers to compete with can charge a price higher than the marginal cost without worrying about losing market share to competitors.⁴⁰ But when the market price deviates from the competitive level, some mutually beneficial transactions do not take place. Therefore, the social welfare is lower than what it could be, and the market outcome is not economically efficient.

As FERC moved toward market-based rates and allowed sellers to “enter into freely negotiated contracts with purchasers,”⁴¹ it required sellers to demonstrate that they lack market power, thus ensuring that consumers

reasonable’ rates, involves a balancing of the investor and the consumer interests.”). For an economic critique of the cost-of-service framework, see Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052, 1052-69 (1962).

24. See Christopher J. Bateman & James T.B. Tripp, *Toward Greener FERC Regulation of the Power Industry*, 38 HARV. ENVTL. L. REV. 275, 289 (2014).

25. See Order Directing Submission of Information With Respect to Internal Processes for Reporting Trading Data, 103 FERC ¶ 61089, ¶ 11 (2003).

26. See *id.*

27. See *supra* Part I.B.

28. See *e.g.*, ISO New England, Inc. & New England Power Pool Participants Comm. New England Power Generators Ass’n, 135 FERC ¶ 61029, ¶ 254 (2011).

29. See Regional Transmission Organizations, 65 Fed. Reg. 810, 810 (Dec. 20, 1999) (to be codified at 18 C.F.R. pt. 35).

30. FED. ENERGY REGULATORY COMM’N, ENERGY PRIMER: A HANDBOOK OF ENERGY MARKET BASICS 40 (2015), <https://www.ferc.gov/market-over-sight/guide/energy-primer.pdf> (last visited Sept. 20, 2018) [hereinafter ENERGY PRIMER].

31. See Regional Transmission Organizations, 65 Fed. Reg. at 810; ENERGY PRIMER, *supra* note 30, at 40 (explaining that “two-thirds of the nation’s electricity load is served in RTO regions”). There is very little substantive difference between RTOs and ISOs. N.J. Bd. of Pub. Utils. v. Fed. Energy Regulatory Comm’n, 744 F.3d 74, 82 (3d Cir. 2014).

32. See ENERGY PRIMER, *supra* note 30, at 59; see also Morgan Stanley Capital Grp. Inc. v. Pub. Util. Dist. No. 1 of Snohomish Cty., 554 U.S. 527, 537 (2008).

33. See Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1294, 46 ELR 20078 (2016).

34. See *supra* Part I.B.

35. Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators, 157 FERC ¶ 36 (2016) (to be codified at 18 C.F.R. pt. 35).

36. See PINDYCK & RUBINFELD, *supra* note 16, at 612-13.

37. Fed. Energy Regulatory Comm’n v. Elec. Power Supply Ass’n, 136 S. Ct. 760, 768 (2016) (quoting Morgan Stanley Capital Grp. v. Pub. Util. Dist. No. 1 of Snohomish Cty., 554 U.S. 527, 536 (2008)); see, *e.g.*, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 61 Fed. Reg. 21540, 21541 (May 10, 1996) (to be codified at 18 C.F.R. pts. 35 and 385) (breaking down the monopoly power of transmission line owners).

38. See Grid Reliability & Resilience Pricing, 162 FERC 61012, ¶ 9 (2018).

39. See KRUGMAN & WELLS, *supra* note 15, at 358; see also Citizens Power & Light Corp., 48 FERC ¶ 61210, 61777 (1989) (“Market power for a seller exists when the seller can significantly influence price in the market by withholding service and excluding competitors for a significant period of time.”).

40. See PINDYCK & RUBINFELD, *supra* note 16, at 349-50. Morgan Stanley Capital Grp. Inc. v. Pub. Util. Dist. No. 1 of Snohomish Cty., 554 U.S. 527, 537 (2008).

41. *Morgan Stanley Capital Grp. Inc.*, 554 U.S. at 537.

have “genuine alternatives to buying the seller’s product.”⁴² And in 1996, FERC issued Order 888, directing transmission owners to allow competitors to access their transmission lines and transmission providers to offer service to all customers equally.⁴³ The rule was designed to remove barriers to competition and improve efficiency in the electricity market.⁴⁴

Similarly, though it has not addressed the CO₂ externality, FERC has addressed other externalities. An externality is the unaccounted-for cost or benefit imposed on third parties by a market transaction not borne by the parties engaged in the transaction.⁴⁵ A negative externality, like CO₂ emissions by fossil fuel-fired plants, imposes damages on society.⁴⁶ Because these costs are not incurred directly by the parties making market decisions, the good’s price does not reflect its true social value.

Externalities must be fully “internalized” to reach economic efficiency.⁴⁷ The prices in this case “must reflect all the (marginal) costs of production and consumption—not only those borne directly by the transacting parties but also those that may be foisted on outsiders.”⁴⁸ A regulator can impose a tax in the amount of the external damage, or a subsidy in the amount of the external benefit.⁴⁹

FERC has addressed externalities in an effort to promote economic efficiency. For example, network congestion is an important externality that affects the justness and the reasonableness of wholesale rates.⁵⁰ With FERC’s blessing, market operators have developed Locational Marginal Prices to address this externality and ensure that energy prices reflect the true cost of delivering electricity to a particular location, including the opportunity costs related to the physical limits of the transmission system and the cost of generating electricity.⁵¹

FERC has taken similar steps to correct the rest of the typical market failures in the electricity sector.⁵² As a result of FERC’s use of efficiency to achieve just and reasonable rates and prevent undue discrimination, FERC has set a precedent the agency could rely on to correct the CO₂ emission market failure.

42. Louisville Gas & Elec. Co., 62 FERC ¶ 61016, 61144 (1993). Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 61 Fed. Reg. 21540, 21560 (May 10, 1996).

43. Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 61 Fed. Reg. 21540, 21560 (May 10, 1996).

44. See *id.* at 21541.

45. See KRUGMAN & WELLS, *supra* note 15, at 437.

46. See *id.*

47. See *id.* at 438.

48. *Id.*

49. See *id.* at 442-44, 450. In the context of CO₂ emissions, this principle would prescribe an economywide carbon tax on all polluters.

50. See PINDYCK & RUBINFELD, *supra* note 16, at 139; see also KRUGMAN & WELLS, *supra* note 15, at 437 (describing traffic congestion as an externality).

51. See Pa.-N.J.-Md. Interconnection Atl. City Elec. Co., 81 FERC ¶ 61257, 62253-56 (1997) (approving PJM’s locational marginal pricing model); Sacramento Mun. Util. Dist. v. Fed. Energy Regulatory Comm’n, 616 F.3d 520, 524-26 (D.C. Cir. 2010) (discussing the history of California’s implementation of locational marginal pricing).

52. See Burcin Unel & Bethany Davis Noll, *Markets, Externalities and the Federal Power Act: The Federal Energy Regulatory Commission’s Authority to Price Carbon Dioxide*, 27 N.Y.U. ENVTL. L.J. 1, 26-36 (2019).

III. Authority to Address Externalities Related to Carbon Dioxide Emissions

FERC’s authority extends to regulating any rules or practices that “directly affect the wholesale rate.”⁵³ Thus, FERC has the authority to address issues that directly affect the efficiency of rates and services, which includes the external cost of CO₂ emissions.⁵⁴

Production decisions are made using a marginal analysis, where producers compare marginal costs to the price they receive for each megawatt-hour—the marginal benefit.⁵⁵ When generators emit CO₂ and cause damages to society, they do not incur any additional cost themselves, and they will make decisions based on their private costs. The resulting market price will only reflect the costs to generators and not the external cost of CO₂ emissions. Therefore, the market price will be lower than the social marginal cost of producing electricity.⁵⁶

When there are external costs such as this, the generation mix will be decided based on this (low) market price, and fossil fuel-fired generators will be paid to generate electricity that is costlier to society than the market price. Further, some firms will not have the incentive to remain in the market, even though it would be more socially efficient for them to exit.⁵⁷ In addition, failing to recognize the external cost of CO₂ emissions poses a disadvantage to generation sources that do not entail a high external cost.⁵⁸

As a way to address this problem, a carbon price would change the market price to reflect the social cost of generating electricity.⁵⁹ And, it would align markets so that they accurately account for this externality and remove a barrier to development of generation that is less costly.

Because the CO₂ externality is directly related to the social marginal cost of electricity generation, it is not relevant that CO₂ emissions are an environmental issue

53. Fed. Energy Regulatory Comm’n v. Elec. Power Supply Ass’n, 136 S. Ct. 760, 774 (2016) (internal quotation marks omitted).

54. See Todd S. Aagaard, *Energy-Environment Policy Alignments*, 90 WASH. L. REV. 1517, 1533 (2015) (“A rational regulatory approach . . . would pursue an efficient market that would be both competitive and would internalize externalities.”); Joel B. Eisen, *FERC’s Expansive Authority to Transform the Electric Grid*, 49 U.C. DAVIS L. REV. 1783, 1783 (2016) (FERC’s jurisdiction extends to the terms and conditions of the operation of wholesale markets that affect the markets directly and significantly); *Miss. Indus. v. Fed. Energy Regulatory Comm’n*, 808 F.2d 1525, 1553 (D.C. Cir. 1987), *vacated in part on other grounds*, 822 F.2d 1103 (D.C. Cir. 1987) (upholding FERC’s jurisdiction over capacity that directly affects costs and thus rates); *Municipalities of Groton v. Fed. Energy Regulatory Comm’n*, 587 F.2d 1296, 1296 (D.C. Cir. 1978); *Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61076, ¶¶ 540-56 (2007) (finding that maintaining adequate resources falls within Commission jurisdiction because it has a direct and significant effect on wholesale rates and services); *ISO New England, Inc.*, 119 FERC ¶ 61161, ¶¶ 18-30 (2007) (same).

55. See *supra* Part I.B.

56. See *supra* Part I.B.

57. See PINDYCK & RUBINFELD, *supra* note 16, at 648.

58. See, e.g., *Demand Response Compensation in Organized Wholesale Energy Markets*, 76 Fed. Reg. 16658, 16664 (2011) (to be codified at 18 C.F.R. pt. 35) (describing concerns that fossil fuel-priced generation is mispriced).

59. See Catherine M.H. Keske et al., *Total Cost Electricity Pricing: A Market Solution for Increasingly Rigorous Environmental Standards*, 25 ELECTRICITY J. 7 (2012) (describing Colorado’s experience with one type of “adder” program); see also Bateman & Tripp, *supra* note 24, at 329 (describing an approach that would internalize the cost of carbon in the wholesale markets).

as well.⁶⁰ Instead, the question is whether the practice directly affects rates. To illustrate, *FERC v. EPSA* approved demand response programs, which might also have an environmental benefit by decreasing the need for emission-intensive generators.⁶¹ But, rather than focus on the question of whether FERC had authority to address the environmental aspects of the program, the Court focused on whether the program directly affects rates.⁶² With CO₂ emissions too, the principle that should guide FERC's decision to regulate is whether the practice "directly affect[s] the wholesale rate" and not whether the decision has environmental implications.⁶³

And it is clear that CO₂ emissions cause a market failure that is directly related to rates. The market failure is directly related to the social marginal cost of electricity generation and the efficient price that suppliers should receive for producing electricity as well as the "costs actually caused by the customer who must pay them."⁶⁴ Because the FPA gives authority to FERC to harness efficiency in pursuit of just and reasonable rates, it must also give FERC authority to correct externalities of this sort. In fact, barring FERC from regulating those externalities perpetuates an inefficiency and "would subvert the FPA."⁶⁵

IV. The Limits on FERC's Authority to Address Externalities Related to Carbon Dioxide Emissions

FERC's authority to address CO₂ emissions is not without bounds. There are three important constraints to bear in mind.

A. Areas of Traditional State Control

The FPA grants FERC authority over wholesale sales only, "and thereby maintains a zone of exclusive state jurisdiction."⁶⁶ FERC does "not have jurisdiction . . . over facilities used in local distribution."⁶⁷ Indeed, states have

"traditional authority over the need for additional generating capacity, the type of generating facilities to be licensed, land use, ratemaking, and the like"⁶⁸ and the FPA has preserved that authority.⁶⁹

If FERC acts within its authority to regulate wholesale rates, the fact that a carbon price might affect state programs would not invalidate FERC's action, however.⁷⁰ States retain the authority to "develop whatever capacity resources they wish,"⁷¹ and any incidental effect that those resources might have on wholesale markets is permissible.⁷² But it would remain within FERC's authority to consider whether to adjust market rules in response.⁷³

This is analogous to EPA's actions in issuing the Clean Power Plan,⁷⁴ which imposed national guidelines restricting CO₂ emissions. Those guidelines may affect state decisions, just like a carbon price. But because EPA was acting within its statutory authority, any impact on the states was permissible.⁷⁵ Under either statute, states have authority over their generation mix, and any effort to explicitly and directly interfere with that authority would require a clear statement from Congress. But if FERC were to set a carbon price in order to correct a market failure or approve a carbon pricing plan, that would be within FERC's statutory authority.⁷⁶

Conversely, carbon pricing would not eliminate or "water down" any other non-carbon-related policies that states have.⁷⁷ Because as long as states do not directly supplant wholesale rates, states remain free to pursue policies that may affect rates.⁷⁸ But if FERC sets a price on CO₂ emissions to directly undermine state programs that promote certain generation types, it could face a significant challenge.

"facilities used in the local distribution of electric energy." §824o.

68. *Pac. Gas & Elec. Co.*, 461 U.S. at 212; see also *Entergy Nuclear Vt. Yankee, LLC v. Shumlin*, 733 F.3d 393, 417, 43 ELR 20201 (2d Cir. 2013) (traditional state authority includes the ability to "direct the planning and resource decisions of utilities").

69. See generally 16 U.S.C. §824(b).

70. See *Elec. Power Supply Ass'n*, 136 S. Ct. at 760; see also *Eisen*, *supra* note 54, at 1839, 1844 (explaining that *Elec. Power Supply Ass'n*, 136 S. Ct. at 760, demonstrates that FERC can regulate reliability "even if that impacts the states").

71. *N.J. Bd. of Pub. Utilities v. Fed. Energy Regulatory Comm'n*, 744 F.3d 74, 98 (3d Cir. 2014).

72. See *Coalition for Competitive Elec., Dynergy Inc. v. Zibelman*, 906 F.3d 41, 57 (2d Cir. 2018).

73. See *Elec. Power Supply Ass'n v. Star*, 904 F.3d 518, 524 (7th Cir. 2018) (explaining that the dual federal-state system allows states to set policies and FERC to determine what changes to make when regulating wholesale markets).

74. See *Carbon Pollution Emission Guidelines for Existing Stationary Sources*, 80 Fed. Reg. 64662, 64666 (2015) (to be codified at 40 C.F.R. pt. 60).

75. See Respondent EPA's Final Brief at 101-06, *West Virginia v. EPA*, No. 15-1363 (D.C. Cir. Apr. 22, 2016), https://www.edf.org/sites/default/files/content/epa_final.pdf (last visited Sept. 14, 2018).

76. *But see infra* Parts IV.B.

77. See *Shelley Welton, Electricity Markets and the Social Project of Decarbonization*, 118 COL. L. REV. 1067, 1074, 1115 (2018) (arguing that state preferences for particular types of clean energy, particular locations or scales, or broad-based inclusion or redistribution "could be watered down if decarbonization happens at the federal wholesale level).

78. See *Coalition for Competitive Elec., Dynergy Inc. v. Zibelman*, 906 F.3d 41, 53-54 (2d Cir. 2018).

60. See, e.g., John Moot, *Subsidies, Climate Change, Electric Markets and the FERC*, 35 ENERGY L.J. 345, 348 (2014) (arguing that action by FERC to price CO₂ emissions would "constitute a jurisdictional bridge too far"); JUSTIN GUNDLACH & ROMANY WEBB, COLUMBIA LAW SCH. SABIN CTR. FOR CLIMATE CHANGE LAW, CARBON PRICING IN NEW YORK: ISO MARKETS 2 (2017), <https://ssrn.com/abstract=2876895> ("Many view climate change as an environmental externality whose attendant costs lay beyond the scope of what ought to inform FERC's assessment of wholesale rates' justness and reasonableness."). *But see* Bateman & Tripp, *supra* note 24, at 279 (arguing that FERC has authority to "consider environmental factors in its rate regulation").

61. See *Fed. Energy Regulatory Comm'n v. Elec. Power Supply Ass'n*, 136 S. Ct. 760, 767, 46 ELR 20021 (2016); Aagaard, *supra* note 54, at 1557 (explaining that FERC found demand response programs to have "possible environmental benefits") (citing FED. ENERGY REGULATORY COMM'N, ASSESSMENT OF DEMAND RESPONSE & ADVANCED METERING 5 (2008), <http://www.ferc.gov/legal/staff-reports/demand-response.pdf>).

62. See *Elec. Power Supply Ass'n*, 136 S. Ct. at 774.

63. See *id.*

64. *Ill. Commerce Comm'n v. Fed. Energy Regulatory Comm'n*, 576 F.3d 470, 476 (2009).

65. *Elec. Power Supply Ass'n*, 136 S. Ct. at 780.

66. *Id.* at 767.

67. 16 U.S.C. §824(b)(1) (2012). Similarly, FERC's jurisdiction over electric reliability is limited to the "bulk-power system" which explicitly excludes

B. FERC's Decisions Must Be Based on Substantial Evidence

In order to require public utilities to implement tariff changes, FERC must justify its findings with a record supported by substantial evidence.⁷⁹ If FERC's judgment is not based on empirical evidence, it must be based on "reasonable economic propositions."⁸⁰ FERC must "specify the evidence on which it relied" and "explain how that evidence supports the conclusion it reached."⁸¹

As FERC's authority to set a carbon price is based on its role in promoting economic efficiency, its solutions to internalize this externality must be grounded in economic theory. The best solution is to charge emitters a price based on the external cost emissions impose on society.

The Interagency Working Group's Social Cost of Carbon represents the best estimate for the external damages of CO₂ emissions.⁸² And the significant vetting and analysis that have been done on the estimate would allow FERC or an ISO/RTO to make the required showing that carbon pricing based on the Interagency Working Group's Social Cost of Carbon is supported by substantial evidence.

C. Rates Must Be Just and Reasonable

FERC actions must result in just and reasonable rates. To make the required showing, FERC would need to consider

factors including whether the additional charge is reasonable and whether it properly balances customer and generator interests. Benefits of a wholesale price on carbon could include "harmonizing fragmented implementation" of renewable mandates and diversifying supply.⁸³ Auctions have begun to take the external costs of CO₂ emissions into account as utilities include the cost of compliance with an emissions reduction program in their bids. And FERC has deemed the resulting rates just and reasonable.⁸⁴ Similarly, fully internalizing the external cost of CO₂ emissions would be just and reasonable as it would promote an efficient marketplace.

V. Conclusion

FERC has long sought to regulate the market for energy by promoting efficiency. In pursuit of an efficient market, FERC has regulated market power, asymmetric information, public goods, and certain externalities. CO₂ emissions are just another externality. Unless the cost of the emissions is internalized by the generators, the market outcomes will not maximize social welfare. By failing to address this market failure, FERC falls short of satisfying its mandate to ensure just and reasonable rates.

79. See S.C. Pub. Serv. Auth. v. Fed. Energy Regulatory Comm'n, 762 F.3d 41, 65 (D.C. Cir. 2014).

80. *Id.*

81. *Id.* at 54.

82. See Richard Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 655 (2017).

83. Ari Peskoe, *Easing Jurisdictional Tensions by Integrating Public Policy in Wholesale Electricity Markets*, 38 ENERGY L.J. 1, 14 (2017); see also ISO New England Inc., 158 FERC ¶ 61138, ¶ 9 (2017) (finding that ISO-NE's plans to exempt new renewable generators that had received state subsidies from the minimum offer price rule was reasonable); Bateman & Tripp, *supra* note 24, at 313 (FERC could play a useful role in reducing inefficiencies in scattered state-federal regulation of greenhouse gases).

84. See, e.g., Nat'l Grid Generation, LLC, 143 FERC ¶ 61,163, ¶¶ 5, 12 (2013).