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Socialized Is Not a Dirty Word: The Only Just and Reasonable Method for Assigning the Costs of High-Voltage Interstate Transmission Lines Is to Socialize Them

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SOCIALIZED IS NOT A DIRTY WORD: THE ONLY JUST AND REASONABLE METHOD FOR ASSIGNING THE COSTS OF HIGH-VOLTAGE INTERSTATE TRANSMISSION LINES IS TO SOCIALIZE THEM

Abstract: Following the federal government's requirement that electric utilities must allow other power generators to use their transmission lines, investment in the United States electric grid has faltered. The effects of underinvestment in the grid have limited the proper function of competitive energy markets and stifled investment in renewable energy sources. The Federal Energy Regulatory Commission ("FERC") has allowed states belonging to planning regions that coordinate transmission development to create multiple methods for allocating the costs of new facilities crossing state lines. Many of these methods use models to forecast which customers in each state benefit from the facility, and then assign costs based on those determinations. This Note argues that the fluid nature of the modern grid defies attempts to assign costs so specifically. Instead, FERC should require the costs of high-voltage interstate transmission facilities to be spread equally among all customers in a planning region. Only then, with this socialized cost allocation method, can cost allocations comply with the requirement that rate determinations be "just and reasonable."

INTRODUCTION

On April 14, 2003, just after 2:00 p.m., an overgrown tree in Ohio brushed up against a high-voltage transmission line, causing it to shut down.[1] Over the next two hours, this faulted line combined with two faulty monitoring programs and one generator outage to overload the electrical grid in the Midwest.[2] At 4:05 p.m., transmission lines began failing so quickly that operators

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[1] J.R. Minkel, *The 2003 Northeast Blackout—Five Years Later*, SCI. AM., Aug. 13, 2008, http://www.scientificamerican.com/article/2003-blackout-five-years-later/, *archived at* http://perma.cc/5ZA4-LCM7.

[2] STAN MARK KAPLAN, CONG. RESEARCH SERV., R40511, ELECTRIC POWER TRANSMISSION: BACKGROUND AND POLICY ISSUES 31 n.108 (2009) (describing how transmission line failures caused breakers to turn off transmission lines across the grid); Maggie Koerth-Baker, *Blackout: What's Wrong with the American Grid*, BOINGBOING.NET (Aug. 3, 2012, 6:06 AM), http://boingboing.net/2012/08/03/blackout-whats-wrong-with-t.html, *archived at* http://perma.cc/9Q7Q-QX4X (explaining that monitoring programs gather data on electrical flows throughout an entire grid, but that these programs still are not powerful enough to track changes in real time); Minkel, *supra* note 1 (noting how the monitoring program should have caught the fault, but the alarm system failed).

could not shut down or reroute power.[3] Circuit breakers tripped all the way from New York to Michigan and into Canada.[4] Within just seven minutes, 256 power plants were offline, and fifty-five million people in eight states and Canada were without power.[5] When the lights finally came back on, analysts estimated the 2003 blackout cost the U.S. economy $4 to $10 billion.[6]

The 2003 blackout highlights the importance of high-voltage transmission facilities, or "lines," to the U.S. energy market, the economy, and our daily lives.[7] By definition, transmission facilities are simply high-voltage power lines that efficiently move electricity from a generation facility, or power plant, to low-voltage distribution lines that feed electricity to consumers.[8] Transmission lines, however, are more than just a vehicle for moving electricity.[9] With-

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[3] KAPLAN, *supra* note 2, at 31 & n.108 (explaining that power plants often have sensitive triggers that automatically shut down transmission lines when there are voltage fluctuations, but that this can overload other transmission lines faster than grid operators can react to prevent a blackout from expanding).

[4] James Barron, *The Blackout of 2003: The Overview; Power Surge Blacks out Northeast, Hitting Cities in Eight States and Canada; Midday Shutdowns Disrupt Millions*, N.Y. TIMES, Aug. 15, 2003, at A1.

[5] KAPLAN, *supra* note 2, at 31 n.108; Koerth-Baker, *supra* note 2.

[6] Minkel, *supra* note 1 (estimating the cost to be about $6 billion); Koerth-Baker, *supra* note 2, at 1 (estimating the cost to be between $4 billion and $10 billion).

[7] *See* ROSS BALDICK ET AL., A NATIONAL PERSPECTIVE ON ALLOCATING THE COSTS OF NEW TRANSMISSION INVESTMENT: PRACTICE AND PRINCIPLES 1 (2007), *available at* http://www.hks.harvard.edu/hepg/Papers/Rapp_5-07_v4.pdf, *archived at* http://perma.cc/V52C-G227 (noting that significant investment in transmission systems will be needed if the U.S. electrical system is to continue providing the service that American's desire and on which the economy depends); Richard P. Bonnifield & Ronald L. Drewnowski, *Transmission at a Crossroads*, 21 ENERGY L.J. 447, 464 (2000) (stating that adequate transmission is the lynchpin for a functioning economy). *But see* KAPLAN, *supra* note 2, at 30–32 (concluding that although new transmission lines could prevent a blackout similar to the one in 2003, better training of network managers, more effective tree trimming, and increased information about grid traffic would likely be more effective alternatives).

[8] Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1805–06 (2012). Electricity market infrastructure can roughly be divided into generation, transmission, and distribution. *See id.* at 1805. An electrical system of interconnected transmission and distribution facilities is called a "grid." *See* Hari M. Osofsky & Hannah J. Wiseman, *Dynamic Energy Federalism*, 72 MD. L. REV. 773, 791 (2013). Power plants generate high-voltage electricity, but consumers mostly use electricity at low voltage. *See* Klass & Wilson, *supra* at 1805–06. Low voltage distribution is fifty kilovolts ("kV")—50kV—or less. *Id.* at 1806. A kV is a measurement of 1,000 volts. *Energy Units and Calculators Explained*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energyexplained/index.cfm?page=about_energy_conversion_calculator, *archived at* http://perma.cc/ZGL2-T7P (last updated Apr. 8, 2014). A megawatt ("mW") is 1,000 kilowatts. John Harrison, *Megawatt*, NW. POWER & CONSERVATION COUNCIL (Oct. 31, 2008), http://www.nwcouncil.org/history/Megawatt, *archived at* http://perma.cc/Q7UE-9F5Z. Transmission lines are thus used to bring power much of the distance before the power is "stepped down" into low voltage usable by most consumers, and put into short-distance distribution lines that feed directly to the consumers. Klass & Wilson, *supra* at 1805–06.

[9] *See* Ashley C. Brown & Jim Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the "Public Interest" in Balancing State and Regional Considerations*, 81 U. COLO. L. REV. 705, 729 (2010) (explaining that competitive power markets require open access to relatively uncongested grids); Steven Ferrey, *Restructuring a Green Grid: Legal Challenges to Accommodate

out adequate transmission facilities, the goal of competitive electricity markets providing reliable and economic power cannot be fulfilled.[10] As the electricity market is the third largest industry in the United States, even small changes in energy pricing and availability have a significant impact on the entire U.S. economy.[11]

Recently, however, the United States has suffered from a significant underinvestment in transmission facilities.[12] Between 2000 and 2008, only 668 miles of new transmission facilities were constructed in the United States, while the existing 200,000 miles of transmission facilities became increasingly strained by demand.[13] The 2003 blackout was a symptom of this growing strain.[14]

Although underinvestment in transmission facilities can be traced to various obstacles, such as state permitting processes and regulation changes, one

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New Renewable Energy Infrastructure, 39 ENVTL. L. 977, 985 (2009) (explaining that the significance of the grid expands beyond its ability to provide a commodity); Thomas-Olivier Léautier, *Regulation of an Electric Power Transmission Company*, 21 ENERGY J., no. 4, 2000, at 61, 63 (2000) (stating that the economic role of the transmission grid extends well beyond mere transportation of power; it has a significant impact on generation and energy pricing).

[10] Bonnifield & Drewnowski, *supra* note 7, at 464 (explaining that transmission facilities are essential infrastructure for customer economies); James W. Moeller, *Interstate Electric Transmission Lines and States' Rights in the Mid-Atlantic Region*, 40 B.C. ENVTL. AFF. L. REV. 77, 78 (2013) (stating that the Federal Energy Regulatory Commission ("FERC") has stressed the need for new interstate electric transmission in its 2009 to 2014 Strategic Plan).

[11] KAPLAN, *supra* note 2, at 11 (explaining that congestion costs caused by inadequate transmission capacity costs consumers hundreds of billions of dollars annually); Koerth-Baker, *supra* note 2 (noting that the only 90 to 214 minutes of average downtime per consumer on the grid costs the U.S. about $100 billion per year); *The Energy Industry in the United States*, COMMERCE.GOV, http://selectusa.commerce.gov/industry-snapshots/energy-industry-united-states, *archived at* http://perma.cc/Z3TH-U69C (last visited Mar. 2, 2015) (noting the energy sector's relative economic value to the overall U.S. market).

[12] *See* KAPLAN, *supra* note 2, at 17–18. Investment in transmission fell steadily from $4 billion annually in 1977 to $2.1 billion annually in 1998. *Id.* Though investment rose above the real dollar value investment in 2004, and has since continued to rise, investment overall has not kept pace with increased energy usage. *See id.*; Alexandra B. Klass, *Takings and Transmission*, 91 N.C. L. REV. 1079, 1084–85 (2013) (stating that demand for electricity increased twenty-five percent between 1990 and 2009 alone); Minkel, *supra* note 1 (stating that electric usage is projected to continue to grow by approximately 1.05% per year through 2030).

[13] Seth Blumsack et al., *A Quantitative Analysis of the Relationship Between Congestion and Reliability in Electric Power*, 28 ENERGY J., no. 4, 2007, at 73, 73–74 (explaining how the grid has seen a dramatic rise in stress on the system caused by congestion of transmission lines); Klass, *supra* note 12, at 1085 (reporting the transmission construction mileage); John R. Norris & Jeffery S. Dennis, *Electric Transmission Infrastructure: A Key Piece of the Energy Puzzle*, 25 NAT. RES. & ENV'T, Spring 2011, at 3, 5 (stating the overall mileage of the U.S. electrical network).

[14] Klass, *supra* note 12, at 1085 (noting that the 2003 blackout indicated the grid's difficulty satisfying peak electricity demand); *see supra* notes 1–6 and accompanying text (outlining the events of the 2003 blackout to highlight the difficulties of accommodating peak electrical demand with limited infrastructure).

of the most significant issues is cost allocation.[15] Transmission facilities, although costly to build, still represent a small portion of the total cost of operating a grid.[16] Rather than their actual cost, determining how much a state benefits from shouldering the cost of a new transmission facility constructed within its border is at issue, and whether the proposed line's perceived benefits outweigh its costs.[17] The more states a transmission facility crosses, the more difficult it becomes to assess who should pay for the line, making it more likely that the project will be tabled.[18]

This Note argues that spreading the costs of transmission facilities across an entire region is the best method for allocating the costs of high-voltage interstate transmission facilities.[19] Not only is this consistent with the modern function of the U.S. energy market, but spreading costs has the potential to incentivize needed investment in interstate transmission facilities.[20] Part I explains how transmission facilities function, how regulation over the past forty years has impacted the grid, and how the most recent Federal Energy Regulatory Commission ("FERC") determinations regulate regional transmission facilities cost allocation plans.[21] Part II then discusses judicial review of cost allocation decisions and flaws with the beneficiary-pay method for allocating costs at a regional level.[22] Finally, Part III argues that FERC should only ac-

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[15] Klass & Wilson, *supra* note 8, at 1804 (stating the three challenges to building transmission as permitting, regulation changes, and cost allocation). Cost allocation remains the most hotly contested issue because it is the most unresolved of the three listed issues. *See A Survey of Transmission Cost Allocation Issues, Methods and Practices*, PA.-N.J.-MD. (PJM), Mar. 10, 2010, at 1 [hereinafter PJM], http://ftp.pjm.com/~/media/documents/reports/20100310-transmission-allocation-cost-web.ashx, *archived at* http://perma.cc/5TQ7-9EHU; *see also* Brown & Rossi, *supra* note 9, at 755 (stating that the barrier to cost recovery of transmission lines is one of the most significant but "under-discussed" barriers to a proper functioning wholesale power market).

[16] *See* PJM, *supra* note 15, at 8–9 (showing that although a new transmission facility can cost on average between $2 million per mile for a 230 kV line to $6.6 million per mile for a 765 kV line, transmission costs in total amount to only between eight and ten percent of the overall costs to consumers).

[17] *See* BALDICK ET AL., *supra* note 7, at 30–31 (noting that transmission costs in traditional markets were not rejected because the actual cost of transmission facilities was so small in comparison to larger costs, such as generation); Klass & Wilson, *supra* note 8, at 1807 (listing both quantitative and qualitative costs and benefits that states consider when determining cost allocation, which does not include the magnitude of the transmission facilities cost, but just the comparison of the costs to benefits).

[18] *See* RICHARD J. CAMPBELL & ADAM VANN, CONG. RESEARCH SERV., R41193, ELECTRICITY TRANSMISSION COST ALLOCATION 4 (2012) (noting that cost allocation has become more complicated as the connection between ratepayers and utilities has become less direct); Brown & Rossi, *supra* note 9, at 717 (weighing costs and benefits at a regional scale produces very different results than at a local level); *id.* at 718 (explaining that the more state and local institutions a transmission facility traverses, the higher the transaction costs will be for the developer).

[19] *See infra* notes 169–217 and accompanying text.

[20] *See infra* notes 188–217 and accompanying text.

[21] *See infra* notes 24–121 and accompanying text.

[22] *See infra* notes 122–168 and accompanying text.

cept socialized cost allocation of high-voltage interstate transmission lines because that is the only just and reasonable method of allocating costs, and that this strong and consistent stance could help spur the development of needed transmission infrastructure.[23]

I. WHAT MAKES A TRANSMISSION FACILITY TICK: SCIENCE, REGULATION, AND POLICY

The importance of transmission facilities to the U.S. energy market can only be understood by providing a brief historical, political, and scientific context.[24] First, Section A describes how energy travels through transmission facilities.[25] Next, Section B explains how regulations and policies at the state and federal level have impacted the development of the national grid.[26] Section C then discusses how state and federal agencies determine cost allocation for new transmission facilities, and what methods and models they use.[27] Finally, Section D explains FERC's latest principles for allowing cost allocation of transmission facilities in regional plans as outlined in Order 1000, and the cost allocation methods FERC has accepted as fulfilling these principles.[28]

A. It's Electric: The Basics of Electricity in Transmission Lines

Two basic characteristics of electricity make identifying the costs and benefits of transmission facilities in an interconnected grid difficult.[29] First, energy moves along transmission facilities at almost the speed of light.[30] Second, energy flows in wires follow the path of least resistance, not the shortest

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[23] *See infra* notes 169–217 and accompanying text.

[24] *See* BALDICK ET AL., *supra* note 7, at 7–8 (describing how part of the problem with transmission line development in the United States stems from its historical roots); Brown & Rossi, *supra* note 9, at 705 (stating that the political aspects of state public utility laws pose a significant barrier to the development of new high-voltage transmission lines); Ferrey, *supra* note 9, at 985 (describing the scientific properties of electricity because transmission facilities are much more than "just wire and poles").

[25] *See infra* notes 29–39 and accompanying text.

[26] *See infra* notes 40–62 and accompanying text.

[27] *See infra* notes 63–106 and accompanying text.

[28] *See infra* notes 107–121 and accompanying text.

[29] *See* Blumsack et al., *supra* note 13, at 84 (explaining that whether a transmission facility benefits or impedes a network depends on the network's attributes such as energy usage, load, and transmission line capacity and design); Ferrey, *supra* note 9, at 31 (noting the characteristic speed of electricity); Jim Rossi, *The Trojan Horse of Electric Power Transmission Line Siting Authority*, 39 ENVTL. L. 1015, 1043 (2009) (describing characteristics of how electricity moves).

[30] Ferrey, *supra* note 9, at 31.

distance.[31] These two factors have an important impact on the design and utilization of transmission facilities.[32]

Whenever there is a change in the load or the amount of energy flowing over a transmission facility due either to a change in consumption or generation, the flow of energy across all other transmission facilities in the grid adjusts almost instantaneously to the new path of least resistance.[33] Maintaining a balanced energy flow is important, as flow changes may suddenly overload lines, causing losses in energy flow due to higher resistance or, at the extreme, causing the line to fault.[34] High-voltage facilities have a greater capacity to handle load shifts, have less resistance, and are able to carry energy longer distances than low-voltage facilities.[35]

Another consequence of electricity following the path of least resistance is that an electrical current in a transmission network will split between parallel transmission facilities if, in total, splitting creates the path of least resistance.[36] This creates "loop flows" where energy travels in a path hundreds of miles longer than the most direct distance between the generator and the consumer.[37] Loop flows occur regularly across state, regional, and national

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[31] *See* Rossi, *supra* note 30, at 1043.

[32] *See* Blumsack et al., *supra* note 13, at 79–80 (describing how connecting a single line immediately changes the flows on all other lines in even simple networks).

[33] *See* Koerth-Baker, *supra* note 2 (describing how the frequency and voltage of energy in a grid must be maintained in almost perfect balance to prevent congestion and blackouts, and that loads constantly shift to stay in balance).

[34] *See id.* (defining a fault as a short circuit caused by overloading a transmission facility with too much voltage). Faults can be problematic because when circuit breakers are tripped and cause transmission facilities to shut off, power in the grid is automatically rerouted to other transmission facilities, which in turn can cause that line to fault, resulting in a cascade of faults, and ultimately, a blackout. *See* KAPLAN, *supra* note 2, at 31–32.

[35] *See* PJM Interconnection, L.L.C., 138 F.E.R.C. ¶ 61,230, at 34 (Mar. 30, 2012) (stating that facilities between 500 kV and 765 kV are better able to absorb voltage and current swings); *id.* ¶ 62,022 (showing that 500 kV lines can transfer twice the power of a 345 kV line); *id.* (stating that a 345 kV line can only transfer a constant load of 1200 mW for 50 miles, while a 500 kV line and 765 kV line can transfer such a load 200 miles and 600 miles respectively). In this Note, 230 kV or above is considered a high-voltage transmission facility, and anything below 230 kV is a low-voltage transmission facility. *See* PJM, *supra* note 15, at 5. Loss is reduced by 75% when using a 500 kV line instead of a 345 kV line. *Id.* at 6. Loss is reduced by 85–90% when using a 765 kV line instead of a 345 kV line. *See id.* About 7% of the U.S. total electrical transmission volume is lost in transmission and distribution. *Frequently Asked Questions*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/tools/faqs/faq.cfm?id=105&t=3, *archived at* http://perma.cc/RW2Y-GPYK (last updated May 7, 2014).

[36] PJM, *supra* note 15, at 7–8. Because energy moves along the path of least resistance, its route cannot be controlled through mechanical means. *Id.* at 7.

[37] *Id.* at 7–8 (describing how a load being sent 100 miles from Ontario to Rochester where only 60% of the load follows the direct transmission line between the two points, while the remaining 40% follows a path of a few hundred miles through Michigan, Indiana, Ohio, and Pennsylvania because the overall resistance on those lines is less).

boundaries.[38] Thus, transmission lines often carry loads they were not intended to carry.[39]

B. Growing Pains: Policy and Regulatory Changes Impacting the Grid

Electricity markets traditionally operated as isolated natural monopolies because transmission and distribution facilities are major infrastructure investments that are not competitive if more than one exists in a given area.[40] States thus allowed electric companies to organize as utilities, which were vertical monopolies that controlled generation, transmission, and distribution.[41] Physically, utilities resembled isolated webs delivering electricity to industries and residences within the utility's sphere of control.[42] Typically the boundary of a utility was constrained to its home state.[43]

Most states created public utility commissions ("PUCs"), which regulated utilities and transmission development and set electrical rates.[44] In return for granting a utility the sole license to generate and supply electricity in a given area, the state imposed electricity rate caps on utilities to protect consumers.[45]

In 1978, Congress first broke the monopoly power of utilities with the Public Utility Regulatory Policies Act ("PURPA") by encouraging small non-utility, or "merchant," co-generation and renewable energy plants to enter the electricity market.[46] As these new plants came online, however, utilities faced

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[38] *Id.* (noting that the loop flow described *supra* in *supra* note 37 would go from Canada to the Midwest, Pennsylvania, New Jersey, and Maryland before ending up in New York).

[39] *See* PJM, *supra* note 15, at 7 (explaining that the flow of power knows no political or organizational boundaries).

[40] KAPLAN, *supra* note 2, at 2 (noting that transmission networks were originally isolated); Osofsky & Wiseman, *supra* note 8, at 794 (explaining the economics of transmission facilities).

[41] Osofsky & Wiseman, *supra* note 8, at 788. Within the electric market, each utility company would own the generation facility, the transmission lines, and the distribution facilities such as transformers and electric poles. *Id.* Each individual utility owning all elements of electrical delivery from generation to distribution is considered a vertical monopoly. *Id.*

[42] KAPLAN, *supra* note 2, at 2 (noting that, traditionally, utilities rarely linked to neighboring utilities); Bonnifield & Drewnowski, *supra* note 7, at 449 (describing traditional utility networks as webs).

[43] BALDICK ET AL., *supra* note 7, at 7–8 (explaining that utilities usually only connected for reliability purposes); David B. Spence & Robert Prentice, *The Transformation of American Energy Markets and the Problem of Market Power*, 53 B.C. L. REV. 131, 142 (2012) (explaining that utilities were originally limited to operating in a single state under the Public Utility Holding Act of 1935); *id.* at 142 n.64 (noting that the relevant portions of the 1935 Act limiting expansion were repealed by the Energy Policy Act of 2005).

[44] Spence & Prentice, *supra* note 43, at 141.

[45] *Electricity Regulation in the US: A Guide*, REGULATORY ASSISTANCE PROJECT 5 (2011) [hereinafter R.A.P.], *available at*, http://www.raponline.org/docs/RAP_Lazar_ElectricityRegulationInThe US_Guide_2011_03.pdf, *archived at* http://perma.cc/XKM9-PA65. This "agreement" is sometimes called the regulatory compact. *Id.*

[46] Pub. L. No. 95-617, 92 Stat. 3117 (1978) (codified as amended in 16 U.S.C. §§ 2601–2645; Spence & Prentice, *supra* note 43, at 147.

pressure to allow merchants access to their proprietary transmission lines.[47] Yet, their natural inclination was to discriminate on use and prices, preventing non-utility generators from selling their electricity.[48] Thus, in 1996, FERC required transmission line owners to provide nondiscriminatory access to their transmission lines at the same rates the owners of the lines would charge themselves.[49] As a result, utilities became required to file tariffs for using transmission lines with newly organized single- or multi-state Independent System Operators ("ISOs").[50] This effectively put transmission under federal control.[51]

Relatively quickly, many utilities split their transmission and generation assets into separate entities because they no longer derived an economic advantage from transmission facility ownership. [52] With increased grid access, more merchant generators constructed transmission facilities to link to the existing grid.[53] Thus, the once isolated municipal-level grid began to interconnect, and utilities and merchants began selling electricity to retailers across state lines.[54]

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[47] Spence & Prentice, *supra* note 43, at 147 (explaining that as more non-utility generators came online, it became necessary to allow these plants to competitively connect to the grid to sell their power to retail and industrial consumers).

[48] Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 62 Fed. Reg. 12,274, 12,276 (Mar. 14, 1997) [hereinafter FERC Order 888] (codified as amended at 18 C.F.R. pt. 35 (2015)) (explaining that discriminatory access, often to due existing contracts by utilities with captive ratepayers, was impeding competitive electrical markets); Osofsky & Wiseman, *supra* note 8, at 794 (noting the economic benefits that come from a transmission owner maintaining a natural monopoly).

[49] FERC Order 888, 62 Fed. Reg. at 12,276 (requiring utilities to file nondiscriminatory open access transmission tariffs following criteria approved by FERC); Spence & Prentice, *supra* note 44, at 147 (explaining that FERC Order 888 began the regulation of transmission rates to prevent rate discrimination).

[50] *See* FERC Order 888, 62 Fed. Reg. at 12,276 (requiring utilities to file tariffs with newly formed ISOs); Spence & Prentice, *supra* note 43, at 147 (explaining that an ISO is a body that helps manage and monitor system reliability, and ensure that transmission facility owners do not engage in price or access discrimination).

[51] *See* FERC Order 888, 62 Fed. Reg. at 12,276 (subjecting all transmission line owners who transmit wholesale power to FERC regulation); Klass & Wilson, *supra* note 8, at 1821–22 (noting that FERC Order 888 was unprecedented because transmission had previously been largely under state control).

[52] Spence & Prentice, *supra* note 43, at 148 (noting this push was also due to a number of states, including New York, California, and Texas, turning towards market-based rate competition).

[53] Brown & Rossi, *supra* note 9, at 735.

[54] *See* Klass & Wilson, *supra* note 8, at 1814 (describing the grid as a patchwork quilt of state-authorized facilities); Léautier, *supra* note 9, at 63 (noting that reluctance to invest in interconnecting transmission facilities occurs because utilities fear opening themselves to competition, and that as a result of open access the miles of transmission lines per mW of peak electricity demand declined between 1989 and 1997 by sixteen percent); Spence & Prentice, *supra* note 43, at 148 (describing wholesale markets for buying and selling electricity that developed within Regional Transmission Organizations ("RTOs") and ISOs).

With greater grid access, generation development increased.[55] Yet, with fewer incentives to build transmission facilities that did not give a utility market control, transmission development fell behind.[56] The grid became strained.[57]

In 1999, to manage the expanding grid and incentivize transmission development, FERC authorized entities called Regional Transmission Operators ("RTOs") to operate transmission facilities and coordinate planning for the construction of new transmission lines to ease congestion.[58] Therefore, the approximately 1,800 entities that together comprise the entire electric grid in the United States are now variously regulated by or belong to state PUCs, an RTO or an ISO, and FERC.[59]

Most recently, state legislatures have begun incentivizing transmission facility development by creating voluntary goals for attaining a certain percentage of the state's electricity generation from renewable energy sources.[60] Renewable Portfolio Standards ("RPS") generally hope that fifteen to twenty percent of a state's power usage will come from renewable energy sources by a target date by creating financial incentives for cooperating utilities.[61] The RPS

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[55] *See* Spence & Prentice, *supra* note 43, at 147–48 (explaining how a combination of FERC regulations and state changes to competitive electrical markets spurred private investment in generation facilities).

[56] *See* Alexander T. Dadok, Comment, *On the Pulse of America: The Federal Government's Assertion of Jurisdiction over Electric Transmission Planning and Its Effect on the Public Interest*, 91 N.C. L. REV. 997, 1012–13 (2013) (detailing how utilities, before open access requirements, could deny access to transmission facilities, and how after FERC Order 888 the absence of transmission facilities became problematic).

[57] *See* KAPLAN, *supra* note 2, at 9 (explaining that the absence of major investment in transmission facilities was pushing the system harder, and would result in more blackouts); Blumsack et al., *supra* note 13, at 74 (noting that both metrics RTOs and ISOs use to measure stress on the grid—transmission loading relief and market-based relief—have risen dramatically since grid restructuring).

[58] Reg'l Transmission Orgs., 89 F.E.R.C. ¶ 61,285 (Dec. 20, 1999), 65 Fed. Reg. 12,088 (Mar. 8, 2000) [hereinafter FERC Order 2000] (codified as amended at 18 C.F.R. pt. 35 (2015)); *see* Dadok, *supra* note 56, at 1013.

[59] Dadok, *supra* note 56, at 1010 (noting that state, regional, and federal jurisdictions overlap in regulating transmission facilities). Municipalities in some states retain control of permitting transmission facilities. Osofsky & Wiseman, *supra* note 8, at 802. Only Alaska, Hawaii, and the Electric Reliability Council of Texas are exempt from FERC regulation because no transmission lines cross state boundaries. LAWRENCE R. GREENFIELD, AN OVERVIEW OF THE FEDERAL ENERGY REGULATORY COMMISSION AND FEDERAL REGULATION OF PUBLIC UTILITIES IN THE UNITED STATES 13 (2010).

[60] Klass, *supra* note 12, at 1119 (stating that as of 2013 thirty-eight states adopted goals for developing renewable energy generation facilities); Klass & Wilson, *supra* note 8, at 1832 (noting that Midwestern states are leaders in developing renewable energy goals); *see, e.g.*, IOWA CODE ANN. § 476B.2 (West 2014) (providing generous wind-production tax credits); MINN. STAT. § 216B.1691, subdiv. 2 (2012 & Supp. 2013) (requiring Minnesota to derive twenty-five percent of its consumer electricity from renewable energy sources); N.D. CENT. CODE § 49-02-28 (2014) (consisting of a voluntary renewable portfolio standard of ten percent by 2015, and lower taxes for these facilities).

[61] Klass, *supra* note 12, at 1119 (noting that incentives include renewable energy credits, tariffs, and tax incentives).

goals of most states, however, cannot be attained without greater investment in interstate transmission facilities.[62]

C. There Is No Such Thing as a Free Line: Cost Allocation for Transmission Facilities

With all of these pressures to build additional transmission facilities, the question invariably turns to how a developer will be repaid for its investment.[63] Accordingly, Subsection 1 first looks at who makes cost allocation decisions.[64] Then, Subsection 2 examines the formulas typically used to determine which ratepayers pay for new transmission facilities.[65]

1. Who Makes Cost Allocation Decisions

As control over transmission planning and use has evolved, so too have the methods for paying for transmission facilities.[66] When utilities had a small, defined number of customers only served by their generation, transmission, and distribution facilities, passing along the costs of new transmission facilities that benefited these native customers was relatively straightforward.[67] As electricity markets have expanded and become increasingly interconnected, however, determining how to allocate costs between customers who benefit from a new transmission facility and those who do not has become increasingly complex.[68]

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[62] *Id.* at 1119–20. Because the vast majority of renewable energy resources such as wind and solar power are located in remote parts of the United States, high-voltage transmission lines are needed to bring this power to urban centers. *See* KAPLAN, *supra* note 2, at 10.

[63] *See* Matthew H. Brown & Richard P. Sedano, *Electricity Transmission: A Primer*, NAT'L COUNCIL ON ELEC. POLICY 23 (2004) [hereinafter NCEP], *available at* http://energy.gov /sites/prod/files/oeprod/DocumentsandMedia/primer.pdf, *archived at* http://perma.cc/Q72A-PFEN (noting the challenge that occur in an interconnected grid of determining which generators should pay for transmission facilities, and then in turn which customers should be charged for those new facilities).

[64] *See infra* notes 66–97 and accompanying text.

[65] *See infra* notes 98–106 and accompanying text.

[66] *See* Gabe Maser, Note, *It's Electric, but FERC's Cost-Causation Boogie-Woogie Fails to Justify Socialized Costs for Renewable Transmission*, 100 GEO. L.J. 1829, 1832 (2012) (noting the difficulty FERC now has that it must balance the costs and benefits of projects that span multiple states). *See generally* CAMPBELL & VANN, *supra* note 18 (describing how, for many years, FERC took a hands off approach to cost allocation, leaving those decisions to PUCs).

[67] *See* CAMPBELL & VANN, *supra* note 18, at 4.

[68] *See* K N Energy, Inc. v. FERC, 968 F.2d 1295, 1300–01 (D.C. Cir. 1992) (stating the principle that rate allocation must match, as closely as possible, the costs of serving the customer); CAMPBELL & VANN, *supra* note 18, at 4 (stating that cost allocation in restricted energy markets has become complex); Brown & Rossi, *supra* note 9, at 755 (lamenting that increasingly the benefits from new transmission facilities do not necessarily accrue to those customers bearing the costs of those facilities).

Before FERC regulated transmission facilities, cost allocation occurred only when a utility applied to its state's PUC for approval of a new transmission facility.[69] Traditionally, transmission facilities have been categorized either as a reliability or economic upgrade to the grid.[70] Reliability upgrades are defined as transmission facilities that ensure a grid can accommodate peak loads under a reasonable set of contingencies, thus preventing blackouts.[71] Economic upgrades are defined as transmission facilities that lower consumer costs of electricity by expanding access to lower-cost generation facilities.[72]

In most states, statutes authorize PUCs to determine the need for new transmission facilities based on limited criteria, which usually require that projects benefit in-state customers and that any improvement to grid reliability exceeds the monetary and environmental costs.[73] In these states, the PUC first determines whether there is a need for the new transmission facility, and then decides if all the expenses for the new facility are reasonable.[74] If the facility passes both criteria, the PUC allows the utility to recover the cost of the new facility from a small portion of each native retail users' hourly electric bill.[75] This is called a "cost of service" approach, because a utility that builds a line is guaranteed repayment for costs, plus a reasonable rate of return, in exchange for the transmission operator only charging a reasonable price for transmission services.[76]

As Congress began to exert more control over electricity markets, cost allocation also became a federal matter.[77] Following the Federal Power Act

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[69] Osofsky & Wiseman, *supra* note 8, at 834 (explaining that utilities initiate ratemaking at the state level); Maser, *supra* note 66, at 1832 (noting that federal control of ratemaking only recently came about through RTO and ISO ratemaking control).

[70] BALDICK ET AL., *supra* note 7, at 13.

[71] *See id.* (explaining that typical analysis involves looking at the current network configuration and assessing future development and peak demand to see if there is worrisome probability that electric loads would be inconsistent without the new facility).

[72] *Id.* (detailing a typical way in which costs are lowered by having a new transmission facility allow power access from a more inexpensive distant source instead of a more expensive local generation source).

[73] Rossi, *supra* note 29, at 1019 (stating that about thirty states have PUCs created by state statute that determine transmission facility siting, while the remaining states rely on various state and local authorities). States control siting—determining which properties the transmission line will pass through. *See* Maser, *supra* note 66, at 1832.

[74] *See id.* at 1020–21 (explaining that state regulators have the power to disallow transmission facilities where the costs, on balance, were greater than the benefits).

[75] R.A.P., *supra* note 45, at 36 (explaining that utilities can recover the cost of transmission facilities within a state when it is determined that the state is benefitting from the facility); *id.* at 47 (explaining that different classes of customers, such as retail or industrial users, are charged different electric rates in cost allocation).

[76] *Id.* at 5.

[77] *See* Maser, *supra* note 66, at 1832 (noting how FERC's authority has expanded such that it now determines how the costs of a transmission facility should be spread across consumers in multiple states).

("FPA") of 1978, Congress gave FERC control over the transmission of electricity and sale of wholesale electricity in interstate commerce.[78] Cost allocation determinations for new transmission facilities crossing state lines thus fall under the control of FERC, RTOs or ISOs, and state PUCs.[79] In these instances, RTOs or ISOs apply to FERC for approval of their decision to assign costs to specific participating utilities at the regional level.[80] Despite RTO and ISO regional control of transmission, state PUCs largely retain control of important aspects of transmission siting and in-state cost allocation.[81]

Under the FPA, FERC is required to ensure that the transmission rates it controls are "just and reasonable."[82] If FERC determines they are not, it has the power to set the rates itself.[83] In making rate decisions, FERC must also consider what impacts their actions will have on the overall well-being of consumers using the grid.[84] Over the years, both FERC and the courts have used the cost-causation principle as the benchmark for determining just and reasonable rates.[85] The cost-causation principle requires that customers only pay rates that to some degree reflect the actual cost they have caused to the electrical system through their electrical use.[86] Similarly, under the beneficiary-pay principle, the cost of transmission facilities can be assigned to customers if it can reasonably show that the facility provides them a benefit.[87] In other words,

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[78] Federal Power Act, Pub. L. No. 109-58, § 203, 119 Stat. 594, 995 (2005) (codified at 16 U.S.C. § 824(b)(1) (2012)).

[79] *See* Dadok, *supra* note 56, at 1006 (stating that PUCs still retain control over the siting of interstate transmission lines); Maser, *supra* note 66, at 1832 (noting that utilities under the umbrellas of RTOs and ISOs must also comply with their directives).

[80] Osofsky & Wiseman, *supra* note 8, at 804 (noting that ISOs and RTOs apply to the FERC for approval of transmission tariffs); Maser, *supra* note 66, at 1832 (explaining that RTOs set region tariffs that must in turn be approved by FERC).

[81] Osofsky & Wiseman, *supra* note 8, at 815–16 (noting the significant control states continue to have over transmission decisions); Dadok, *supra* note 56, at 1006.

[82] 16 U.S.C. § 824d(a); *see* Morgan Stanley Capital Grp. Inc. v. Pub. Util. Dist. No. 1 of Snohomish Cnty., 554 U.S. 527, 545 (2008) (stating that the just and reasonable standard of the FPA is the only standard for reviewing wholesale transmission rates); *id.* at 547 (noting that FERC has the authority to set aside rates that are not just and reasonable).

[83] 16 U.S.C. § 824e(a); *Morgan Stanley*, 554 U.S. at 547 (stating that FERC's power to set aside transmission rates need not be in the public interest).

[84] 16 U.S.C. § 824a(a) (2012) (declaring that selling and distributing electricity to the public is imbued with a public interest, and that federal regulation of transmission decisions impacting interstate commerce is also affected with the public interest).

[85] *K N Energy*, 968 F.2d at 1300 (noting that FERC and the courts have added detail to the otherwise open-ended "just and reasonable" requirement); *see* Maser, *supra* note 66, at 1836 (explaining how the courts have used the cost-causation principle and the similar beneficiary-pay principal as the measure for satisfying the just and reasonable requirement).

[86] *See K N Energy*, 968 F.2d at 1300–01.

[87] *See* Maser, *supra* note 66, at 1835 (explaining that the beneficiary-pay principle is really another formulation of the cost-causation principle). The minor differences between the beneficiary-pay and cost-causation principles are not significant enough to warrant differentiating them in detail in this Note. *See* Ill. Commerce Comm'n v. FERC (*Illinois I*), 576 F.3d 470, 476 (7th Cir. 2009) (noting the

PUCs can only allocate costs to consumers for improvements to the electric grid if the consumer benefits from that improvement.[88]

State PUCs under the umbrella of RTOs or ISOs have three general methods for allocating the costs of new interstate transmission facilities.[89] First, the PUC can include the portion used by the native load users in the rate base, and recover the remaining cost of the line from FERC rates.[90] Second, the PUC can exclude recovery from native load users' rate base, and pass this cost onto FERC rates for retail consumers.[91] Finally, the PUC can include all costs in the retail rate base and credit back to retail consumers the revenue the PUC gains from wholesale users of the transmission facility.[92]

Although these decisions by the PUCs may not initially seem to have much national impact, as electric grids have expanded beyond the boundaries of states, the impact of new transmission facilities can be spread more widely.[93] Historically, PUC cost decisions were limited within the state, and so a state PUC's determination of a transmission facility's costs and benefits within the state matched the overall costs and benefits of the proposed facility.[94] Today, the costs and benefits of interstate transmission facilities may not be equally divided among each state.[95] This can lead to PUCs blocking new

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similarity between the cost-causation principle and the beneficiary-pay principle by explaining that assigning costs to consumers based on benefits is another way of saying that those users caused the new facility to be built); Maser, *supra* note 66, at 1835 (declining to differentiate the beneficiary-pay principle from the cost-causation principle because the differences are so nuanced).

[88] *Illinois I*, 576 F.3d at 476; R.A.P., *supra* note 45, at 46 (noting how classes of consumers or individual consumers are allocated charges for transmission facilities based on some aspect of that segment's energy consumption).

[89] *See* Brown & Rossi, *supra* note 9, at 726–27.

[90] *Id.* at 727 (explaining that a similar method is used to exclude only the portion of the transmission dedicated to wholesale native load users). Native load users are those within a utilities service area. *Id.* at 709. The rate base is the total of all the long-lived investments made by a utility. *See* R.A.P., *supra* note 45, at 40. A utility is entitled to a reasonable rate of return on its rate base. *See id.* at 41 (detailing the revenue requirement in which the rate base is factored in); *see also* Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 605 (1944) (stating that the revenue requirement must allow a utility to earn a fair return on its invested capital).

[91] Brown & Rossi, *supra* note 9, at 727. For this method, FERC's wholesale tariff is used as the basis for recovering the cost of the transmission facility. *Id.* at 727 n.92. Wholesale electricity is a sale of electricity for resale, while retail sale is to an end user. *See* 16 U.S.C. § 824(b) (2012).

[92] Brown & Rossi, *supra* note 9, at 727; *see supra* note 90 and accompanying text (explaining a utility's rate base).

[93] *See* BALDICK ET AL., *supra* note 7, at 8–9 (summarizing the shift in the grid from isolated utilities serving captive ratepayers into an expanded energy market where consumers in one area depend on energy sources in another, and energy exchanges routinely cross territories, states, and even international boundaries).

[94] Brown & Rossi, *supra* note 9, at 722 (noting that statutory authority often limits state agencies from considering the benefits of a transmission facility outside the state); *see* CAMPBELL & VANN, *supra* note 18, at 4.

[95] *See* Rossi, *supra* note 29, at 1022 (outlining the Arizona PUC's rejection of a 230 mile long transmission line carrying power from Arizona to California, which would have been paid for by

transmission facilities that might be beneficial to the region as a whole, but that have just enough costs exceeding benefits in one PUC to lead that commission to deny the project any cost allocation to its native users.[96] When just one PUC rejects cost allocation for a transmission facility within its state, it essentially terminates the plans for the entire line.[97]

2. Formulas for Determining Who Pays

Most RTOs categorize new interstate transmission facilities as reliability or economic upgrades to the grid.[98] Depending on how the transmission facility is categorized, the RTO will then either choose a cost allocation methodology weighted towards determining costs through the beneficiary-pay principle, or through a socialization of costs.[99]

RTOs determine cost allocation largely under a beneficiary-pay methodology when a new transmission facility is deemed to have a quantifiable economic impact on consumers.[100] If the facility is expected to change production costs of wholesale energy prices, then parties that will benefit from lower energy costs are expected to pay for the new transmission facility in their base rate.[101] These models use production costs, wholesale energy prices, and expenditure and revenue data as inputs to compare market prices before and after a facility is constructed to see which specific consumers benefit.[102] A new transmission facility can lower electricity costs to consumers by relieving con-

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California ratepayers because Arizona did not want to bear the environmental burden of the project to benefit California).

[96] *See* Rossi, *supra* note 29, at 1046 (explaining that because states usually have to pay for the costs of transmission facilities within their boundaries, they have a strong incentive to block transmission projects that might have broad benefits outside its boundaries if the local benefits are not sufficient to justify the costs); *see also id.* at 1022 (noting that utilities have little incentive to add transmission lines that do not help their native load users).

[97] *See* Brown & Rossi, *supra* note 9, at 755–56 (explaining that cost allocation decisions ultimately have an enormous impact on siting, and outlining a typical scenario where a transmission facility connecting a generation load in New Mexico to California passes through Arizona, and the strong incentives an intermediary state like Arizona has to block that transmission facility); Rossi, *supra* note 29, at 1022 (noting that California cancelled a transmission facility plan because of this problem).

[98] *See* PJM, *supra* note 15, at 49–54 (summarizing cost allocation practices in all U.S. RTOs, which categorized transmission facilities—as they relate to this Note—as either reliability or economic upgrades).

[99] *See id.* at 18–19 (describing the basic use of beneficiary-based models to determine monetary and other specific benefits to identifiable beneficiaries, and the use of socialization for spreading the costs without specifying beneficiaries).

[100] *See id.* (explaining that modeling programs are used to compare the effects of a new transmission facility before and after the project).

[101] *See id.* Because consumers who do not benefit from a transmission facility should not be made to pay, those who benefit from the facility should pay for it. *See Illinois I*, 576 F.3d at 476.

[102] *See* PJM, *supra* note 15, at 19.

gestion in the grid, which often requires substituting cheap distant generation sources for expensive local power sources.[103]

Conversely, the socialization methodology of cost allocation is allowed where all grid users will benefit from a transmission upgrade, such as a reliability upgrade.[104] This method assumes that all system users enjoy increased reliability to the grid due to the new transmission facility.[105] Moreover, this method is supported by the logic that since the beneficiaries of the transmission system change over time as load configurations change, all users should pay because they will eventually benefit from the facility.[106]

D. FERC Order 1000: Cost Allocation Principles for Regional Transmission Facilities

Despite open access requirements enforced through RTOs, transmission operators continued to discriminate against competitors.[107] Consequently, in 2007, FERC reformed transmission line open access requirements so that transmission providers had to include customers, competitors, and PUCs in the transmission planning process.[108] Then, in 2011, FERC issued Order 1000, which again amended the transmission planning process by providing more guidelines for cost allocation at the regional and interregional level.[109] RTOs

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[103] Lester Hadsell & Hany A. Shawky, *Electricity Price Volatility and the Marginal Cost of Congestion: An Empirical Study of Peak Hours on the NYISO Market, 2001–2004*, 27 ENERGY J., no. 2, 2006, at 157, 166 (explaining that the cost of congestion is essentially determined by the cost to users for not being able to supply them with less expensive outside energy).

[104] PJM, *supra* note 15, at 19 (noting that socialization can be considered a method whereby costs are spread among a group of users because the positive impact of an upgrade benefits all users).

[105] W. Mass. Elec. Co. v. FERC, 165 F.3d 922, 927–28 (D.C. Cir. 1999) (stating that a transmission facility that is a reliability upgrade provides a system-wide benefit, and so the cost of the facility can be socialized to all customers on the grid); PJM, *supra* note 15, at 19 (noting that increased reliability is a public good that provides a positive externality for all grid users). For reliability-based upgrades, however, RTOs can model using a flow-based method to look at power use at system peak to identify users that are causing the reliability issue. PJM, *supra* note 15, at 34 (using distribution factors, the flow-based method can identify consumers that contribute to reliability issues in the grid). The load responsible for requiring the reliability, however, may not be the same load that causes the violation. *Id.* at 18.

[106] BALDICK ET AL., *supra* note 7, at 9 (noting that since the grid changes often, the benefits of the grid also change over time).

[107] *See* FERC Order 2000, 65 Fed. Reg. at 810 (noting that the purpose of RTOs is to prevent discrimination by utilities); Osofsky & Wiseman, *supra* note 8, at 839 (explaining that allowing utilities to control use of transmission lines leads to unproductive markets).

[108] Preventing Undue Discrimination and Preference in Transmission Service [*hereinafter* FERC Order 890], 72 Fed. Reg. 12,492, 12,492 (Mar. 15, 2007) (codified as amended at 18 C.F.R. § 35.28 (2015)) (creating more stringent open access requirements for transmission facilities used in interstate commerce).

[109] Transmission Planning & Cost Allocation by Transmission Owning & Operating Public Utilities, 76 Fed. Reg. 49,842, 49,844–45 (Aug. 11, 2011) [hereinafter FERC Order 1000] (codified as amended in scattered section of 18 C.F.R. pt. 35 (2015)) (describing the elements and purpose of FERC Order 890 that required updating).

and ISOs had twelve months to file ratemaking plans consistent with the Order.[110]

FERC Order 1000 helps ensure that regional transmission planning processes meet emerging transmission needs in an efficient and cost-effective manner, and that the costs of new facilities are fairly allocated to those who benefit from them.[111] At the planning level, FERC Order 1000 requires that regional plans be open to cost allocation for both utility and merchant transmission developments.[112] The Order requires RTOs and ISOs to state their methods for allocating costs for new transmission facilities within the region, and for lines crossing into neighboring planning regions.[113]

For both regional and interregional cost allocation, FERC Order 1000 outlines six guiding principles, three of which are relevant to this Note.[114] First, regions must allocate the costs of new transmission facilities in a manner roughly equal to the benefits those consumers or regions derive from the project.[115] Second, parties or regions receiving no benefits from a new transmission facility at present, or are unlikely to benefit from it in the future, must not be forced to accept the cost allocation determination.[116] Finally, planning regions may choose to create different cost allocation methods for transmission facilities they designate as either reliability, economic, or public policy upgrades to the grid.[117]

By mid-2013, FERC had either accepted RTO and ISO ratemaking plans or remanded the plans as not meeting the cost allocation principles of FERC

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[110] *Id.* at 49,957 (explaining that this deadline was to allow for utility compliance with FERC Order 1000's non-interregional coordination rules).

[111] *Id.* at 49,845 (summarizing the two main objectives of FERC Order 1000).

[112] *Id.* at 49,846. In terms of eligibility, non-incumbent transmission developers must be considered for regional cost allocation on the same basis as an incumbent transmission developer. *Id.* at 49,899.

[113] *Id.* at 49,928 (stating that RTOs, ISOs, and PUCs must comply with the planning requirements of FERC Order 1000).

[114] *Id.* at 49,932. Three of the six principles either deal with aspects of cost allocation related to transmission planning or coordination between regions that are beyond the scope of this Note. *Id.*

[115] *Id.* at 49,932. FERC Order 1000 states:

> [I]n determining the beneficiaries of transmission facilities, a regional transmission planning process may consider benefits including, but not limited to, the extent to which transmission facilities, individually or in the aggregate, provide for maintaining reliability and sharing reserves, production cost savings and congestion relief, and/or meeting public policy requirements established by state or federal law or regulation that may drive transmission needs.

Id.

[116] *Id.* ("A transmission planning region that receives no benefit from an interregional transmission facility that is located in that region, either at present or in a likely future scenario, must not be involuntarily allocated any of the costs of that facility.").

[117] *Id.* This rule further requires that the cost allocation method used must be explained in detail to prove compliance with FERC Order 1000. *Id.*

Order 1000.[118] The proposals FERC accepted for transmission facilities selected in regional plans for multi-state RTOs or ISOs allowed projects to be categorized as economic, reliability, and public policy for cost allocation purposes per FERC Order 1000.[119] For reliability projects, FERC approved total socialization of costs, mixed socialization and beneficiary-pay methods, and entirely beneficiary-pay methods.[120] For economic projects, in RTOs and ISOs where economic and reliability projects were differentiated and approved by FERC, no cost allocation methods were fully socialized, but rather would generally be half-socialized and half-beneficiary-pay or entirely beneficiary-pay.[121]

II. MORE ART THAN SCIENCE: QUANTIFYING COSTS AND BENEFITS

The Federal Energy Regulatory Commission ("FERC") determines if an interstate transmission rate is just and reasonable by reviewing methods for determining which users have caused the need for the new transmission facility and thus will pay for the facility.[122] Methods for determining cost-causation, however, are seldom discussed in detail in cases involving cost allocation disputes because courts defer to FERC's determinations.[123] There are methodo-

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[118] *See* FERC, ORDER NO. 1000 COMPLIANCE FILINGS & ORDERS, *available at* http://www.ferc.gov/industries/electric/indus-act/trans-plan/filings.asp, *archived at* http://perma.cc/TQ9M-NQWK (last visited Mar. 3, 2015) (listing each RTO and ISO filing and the corresponding FERC responses).

[119] FERC Order 1000, 76 Fed. Reg. at 49,932 (allowing facilities to be categorized as reliability, economic, or public-policy based projects); *see* Pub. Serv. Co. of Colo., 142 F.E.R.C. ¶ 61,206, paras. 284–86 (Mar. 22, 2013) [hereinafter WESCO Filing] (assigning different cost allocation methods to economic, reliability, and public-policy projects); Midwest Indep. Transmission Sys. Operator, Inc. & the MISO Transmission Owners, 142 F.E.R.C. ¶ 61,215, paras. 421, 487 (Mar. 22, 2013) [hereinafter MISO Filing] (categorizing projects as either multi-value projects, multi-economic projects, or baseline reliability projects). *But see* Southwest Power Pool, Inc., 144 F.E.R.C. ¶ 059, para. 336 n.675 (July 18, 2013) (only differentiating transmission facilities in regional plans based on kV, not on project type).

[120] *See* MISO Filing, 142 F.E.R.C. at para. 421 (allowing 100% postage stamp cost allocation of projects that meet green energy guidelines); WESCO Filing, 142 F.E.R.C. at para. 284 (allocating 100% of a reliability line's cost by the cost-causation principle); PJM Interconnection, L.L.C., Indicated PJM Transmission Owners, PJM Interconnection, L.L.C., Pub. Serv. Elec. & Gas Co., 142 F.E.R.C. ¶ 61,214, para. 347 (Mar. 22, 2013) [hereinafter PJM Filing] (splitting cost allocation for reliability projects on a 50% postage stamp basis and 50% on a beneficiary-pay basis).

[121] *See* WESCO Filing, 142 F.E.R.C. at para. 285 (allocating 100% of a reliability line's cost by aggregate load-weighted benefits to cost for each system benefiting from the new facility); PJM Filing, 142 F.E.R.C. at para. 349 (allowing 50% postage stamp cost allocation of economic regional facilities and 50% allocation based on decrease in load energy payments by zone).

[122] *See* 16 U.S.C. § 824(b)(1) (2012) (granting FERC authority over transmission of electricity in interstate commerce); *id.* § 824e(a) (granting FERC power to approve rates, or set rates where they are not just or reasonable).

[123] *See* Ill. Commerce Comm'n v. FERC (*Illinois I*), 576 F.3d 470, 474–75 (7th Cir. 2009) (stating that FERC did not articulate a plausible reason for assigning costs only because it gave no reason for assigning costs); Pub. Serv. Comm'n of Wis. v. FERC, 545 F.3d 1058, 1061 (D.C. Cir. 2008)

logical issues, however, with the way in which Regional Transmission Operators ("RTOs") and Independent System Operators ("ISOs") categorize transmission facilities as either reliability or economic upgrades to allocate costs in a non-socialized manner.[124] Section A examines how courts review cost allocation determinations using the cost-causation principle.[125] Section B then discusses issues with the distinction between reliability and economic categorizations that lead to employing different cost-allocation methods.[126]

A. Close Enough for Government Work: Judicial Review of Cost Allocation

On appeal from a party challenging FERC's socialized cost allocation determination, courts require FERC to identify beneficiaries and quantify the benefits these consumers receive from the proposed transmission facility to satisfy the cost-causation principle.[127] Courts will uphold a cost allocation where FERC articulates a plausible reason that consumers will roughly pay for a service that is commensurate with the benefits they receive, even if the cost allocation imperfectly tracks the cost-causation principle.[128] The courts have allowed socialized cost allocations for reliability projects to satisfy the just and reasonable requirement because courts usually adopt FERC's reasoning that in large grids the diffuse benefit and economic impact of such projects warrants spreading costs equally among all grid users.[129]

(noting that FERC's ratemaking decision will be upheld by the court so long as it is not arbitrary and capricious).

[124] *See* BALDICK ET AL., *supra* note 7, at 8 (noting that the benefits of a transmission facility will eventually accrue to users of the grid other than those who originally built the facility); Blumsack et al., *supra* note 13, at 76 (arguing that drawing a distinction between reliability and economic benefits of transmission lines is incorrect).

[125] *See infra* notes 127–147 and accompanying text.

[126] *See infra* notes 148–168 and accompanying text.

[127] Maser, *supra* note 66, at 1836 (noting the general rule that courts require individualized cost-benefit analysis for cost allocations to meet the cost-causation principle). Due to the deference courts give to FERC, FERC has great power to set transmission rates. Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 843–44 (1984) (holding that courts are to be deferential to decisions made by agencies where Congress has spoken clearly on the matter); Town of Norwood v. FERC, 962 F.2d 20, 22 (D.C. Cir. 1992) (explaining the requirement that an agency decision must be reasoned and based on substantial evidence).

[128] *See, e.g.*, *Illinois I*, 576 F.3d at 477 (noting that courts have never required precision when approving cost allocation decisions); *Pub. Serv. Comm'n of Wis.*, 545 F.3d at 1061 (requiring only that FERC's ratemaking decision not be arbitrary and capricious); W. Mass. Elec. Co. v. FERC, 165 F.3d 922, 928 (D.C. Cir. 1999) (deferring to FERC's decision when it supplies sufficient reasoning backed up by substantial evidence, even though the court need only find FERC's decision reasonable).

[129] *See* Entergy Servs., Inc. v. FERC, 319 F.3d 536, 543 (D.C. Cir. 2003) (crediting reasoning that socializing the costs of reliability upgrades prevents price signal issues with the market); *W. Mass. Elec.*, 165 F.3d at 927 (holding that the project had system-wide benefits to the grid); Maser, *supra* note 66, at 1840 (stating that courts consistently uphold socializing costs for reliability upgrades). *But*

Courts have upheld socialized cost allocation where FERC has determined that specifically identifying transmission facility beneficiaries is not feasible.[130] For example, in 1999, in *Western Massachusetts Electric Co. v. FERC*, the U.S. Court of Appeals for the D.C. Circuit held that any grid enhancement is presumed to benefit the entire grid, and so its cost can be socialized.[131] The court accepted FERC's three reasons that the upgrades provided a system-wide benefit due to the difficulty of assigning benefits to consumers when electricity flows freely though a grid.[132] First, the physical configuration of the upgrades made it such that they not only connected a new generation facility to the grid, but also enhanced system reliability for all users.[133] Second, the load on the upgraded transmission facilities would not remain constant, and therefore, when the flow from the new generation facility is low, other grid customers would be making use of the new transmission facility.[134] Finally, because of the variable load from the new facility, it could not be determined whether the upgrade was merely restoring the grid to its previous capability, or improving it.[135]

In other cases, socializing the costs of reliability upgrades has also been based on a desire to minimize distortions for new generation plants that could result from holding to traditional cost-causation principles.[136] For example, in 2003, in *Entergy Services, Inc. v. FERC*, the U.S. Court of Appeals for the D.C. Circuit upheld socialization primarily because the court credited FERC's evidence and logic that a standard policy to spread the costs of transmission upgrades protecting equipment near new generators minimized the incentive for

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cf. Illinois I, 576 F.3d at 476 (stating that FERC cannot approve socialized cost allocation where it does not justify the costs borne by users to the benefits those users receive).

[130] *See W. Mass. Elec.*, 165 F.3d at 927 (noting that since the grid configuration will not remain constant and the upgrades cannot be deemed to flow to consumers who cased the reliability issue, the court would not require identifying beneficiaries for cost allocation); Me. Pub. Serv. Co. v. FERC, 964 F.2d 5, 8 (D.C. Cir. 1992) (explaining that, in an integrated transmission network, all transmission facilities contribute to all users of the system); City of Holyoke Gas & Elec. Dep't v. FERC, 954 F.2d 740, 743 (D.C. Cir. 1992) (noting that if a transmission network is integrated all users benefit in some way from new transmission facilities).

[131] *W. Mass. Elec.*, 165 F.3d at 927 (finding that FERC had a "consistent policy to assign the costs of system-wide benefits to all customers on an integrated transmission grid," and noting that the court "approved the underlying rationale of this policy" because "[w]hen a system is integrated, any system enhancements are presumed to benefit the entire system").

[132] *Id.*

[133] *Id.* When buyers and sellers want more electricity on a grid than transmission facilities can support, ISOs have the ability to curtail or stop contracts. NCEP, *supra* note 63, at 32. If there is not enough capacity, the operators will cut off parts of the grid to prevent a blackout. *Id.*

[134] *W. Mass. Elec.*, 165 F.3d at 927. When the load on a transmission facility is low, but is high on other lines, electricity will automatically redirect along the lower load wire even if that power has been contracted to flow through different transmission facility. *See* NCEP, *supra* note 63, at 32–33; *supra* notes 36–39 and accompanying text (explaining loop flows).

[135] *W. Mass. Elec.*, 165 F.3d at 927.

[136] *See Entergy*, 319 F.3d at 544; PJM, *supra* note 15, at 19.

utilities to make lavish expenditures.[137] In addition, the court was persuaded that by spreading these costs among all market participants, new generators would not be disadvantaged when trying to compete against incumbent utilities already capable of rolling transmission costs into their retail base rate.[138]

Still, FERC must provide a plausible basis for determining that a socialized cost allocation is just and reasonable, even if FERC can provide little evidence for its decision.[139] In 2009, in *Illinois Commerce Commission v. FERC* (*Illinois I*), the U.S. Court of Appeals for the Seventh Circuit denied FERC's acceptance of the RTO's socialized cost allocation because FERC did not provide any reasons for why it could not articulate the benefits of 500 kV transmission facilities when it could articulate benefits for 345 kV transmission facilities.[140] Although the D.C. Circuit noted that a new transmission facility benefited any utility on that grid, FERC could not then assign costs where it did not justify the costs in relation to those benefits.[141] When identifying costs to be allocated, however, FERC did not need to calculate benefits to any specific threshold—not even to the last hundred million dollars.[142] Thus, the court gave little indication as to what sort of relationship between costs and benefits

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[137] 319 F.3d at 544 (crediting FERC's rationale that spreading costs creates more accurate pricing). In this case, Entergy Services, Inc. wished to have the cost of upgrades to protect its equipment against faults near newly interconnecting merchant generators assigned to merchant generators. *Id.* at 538–39. Merchant generators are at a market disadvantage in this context, because unlike utilities, they do not have native customers to assign costs to. *See id.* at 543; *cf.* R.A.P., *supra* note 45, at 59 (explaining the Averch-Johnson Effect, which finds that where a utility has the power to assign the costs of investments to native ratepayers the utility has the incentive to overbuild its system to increase revenue and profit).

[138] *Entergy*, 319 F.3d at 543.

[139] *See Norwood*, 962 F.2d at 22 (noting that because rate determination require a high degree of technical expertise and involve policy judgments, judicial review is deferential).

[140] 576 F.3d at 477. FERC had approved a Pennsylvania-New Jersey-Maryland ("PJM") RTO interconnection's decision to socialize the costs of new transmission facilities over 500 kV across the entire system. *Id.* at 473–74. This decision intended to benefit the eastern part of PJM, located mostly in a more rural area of Midwestern United States, where power plants are located further from customers and 500 kV or greater facilities are needed. *Id.* at 475. Conversely, the western part of PJM is largely the area around Chicago where there are many power plants located near customers and only 345 kV lines are necessary. *Id.*

[141] *Id.* at 477–78. FERC simply argued that new high-capacity transmission facilities benefit all system users because it increases the grid's reliability, but did not then adequately compare these benefits to the costs it then allocated. *Id.* at 474. FERC gave no specifics for stating how they intended to show that new transmission lines over 500kV would benefit the utilities in the western part of the interconnect that brought the suit, yet had provided this information for 345 kV. *Id.* at 477. The court would not accept FERC's contention that it was too difficult to measure benefits because both sides would endlessly litigate the results. *Id.* at 475.

[142] *Id.* at 477 ("We do not suggest that the Commission has to calculate benefits to the last penny, or for that matter to the last million or ten million or perhaps hundred million dollars.").

would have satisfied the cost-causation principle had FERC put one forward.[143]

Moreover, FERC's ability to set socialized cost allocations has not been found to violate the Tenth Amendment even if many of the benefits of a proposed transmission facility do not accrue to a state.[144] In 2013, in *Illinois Commerce Commission v. FERC* (*Illinois II*), the U.S. Court of Appeals for the Seventh Circuit quickly dispatched the appellant utilities' concerns that FERC's socialized cost allocation amounted to the federal government requiring states to build transmission lines for the federal government to use.[145] The court determined that just because a state may be incentivized to accept a project that provides it little benefit—so that in turn it reaps the benefit of other socialized cost determinations providing the state with greater benefit—this does not make a rate determination by FERC impermissible.[146] Rather, if a utility disagrees with an RTO's rate determination, it is free to leave and try its luck with another RTO.[147]

B. Blurred Lines: Determining Whether a Transmission Facility Helps Reliability or Improves Cost Is Not as Easy as It Used to Be

Courts have followed logic put forward by FERC that transmission facilities can be designated as reliability or economic upgrades to the grid.[148] Economic upgrades are largely calculated under the beneficiary-pay principle, and are less often subject to socialized cost-allocation by RTOs.[149] Although the distinction between reliability and economic upgrades thus results in significant differences in who pays for the transmission facilities, the actual distinction between these categories is problematic.[150]

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[143] *See id.* at 476 (comparing costs and benefits in a passing reference by stating that a hypothetical monetized benefit 480 times greater than the cost allocated would not satisfy the cost-causation principle).

[144] Ill. Commerce Comm'n v. FERC (*Illinois II*), 721 F.3d 764, 773 (7th Cir. 2013), *cert. denied*, 134 S. Ct. 1277 (2014).

[145] *See id.*

[146] *See id.* (holding that the argument by appellant utilities was frivolous).

[147] *Id.* (noting that belonging to an RTO or ISO is voluntary); *id.* at 780 (asserting that withdrawing from an RTO does not mean the utility no longer has an obligation to make cost allocation payments determined when it was a part of the RTO).

[148] *See Norwood*, 962 F.2d at 22 (stating that since ratemaking determinations are highly technical, the courts are deferential to FERC's determinations); FERC Order 1000, 76 Fed. Reg. at 49,932 (allowing applicants to classify transmission facilities as being economic or reliability upgrades); Pub. Serv. Co. of Colo., 142 F.E.R.C. ¶ 61,206, paras. 284–86 (Mar. 22, 2013) (classifying transmission facilities as being economic and reliability upgrades).

[149] *See supra* notes 118–121 and accompanying text (detailing RTO and ISO filings for interstate transmission facilities, which indicate that economic facilities are more often subject to beneficiary-pay cost allocation methodologies than are reliability facilities).

[150] *See* BALDICK ET AL., *supra* note 7, at 13 (explaining that the distinction between economic and reliability facilities has become more flawed as the electric market has evolved).

The category of reliability transmission facilities developed partly because labeling a facility as such eased its approval in the planning process.[151] Although a state wants to ensure all its citizens have access to electricity, it does not want to increase rates on residential consumers who vote.[152] If a transmission facility is designated as a reliability upgrade, then economic benefits become incalculable, and so the fear of blackouts spurs investment and quells opposition.[153]

Similarly, the category of economic transmission facilities developed at the state level planning process.[154] In a stable and perfectly contained transmission system, the benefits of new transmission facilities could be accurately calculated.[155] When electric markets were vertically controlled and isolated, load use by native ratepayers was well known, making beneficiary determinations relatively straightforward.[156]

In modern open-access markets, however, identifying beneficiaries has become more complex because none of the assumptions required for accurate modeling hold.[157] As transmission systems have expanded, there are more consumers connecting to the system that are changing their energy usage over time.[158] Moreover, there are more changes in the location and intensity of

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[151] *Id.* at 16 (explaining how bypassing the beneficiary-pay process of cost assigning may ease acceptance of facilities in the planning and development process); *see* PJM, *supra* note 15, at 15 (showing how an RTOs planning process focuses on reliability upgrades).

[152] *See* Rossi, *supra* note 29, at 1019 (explaining that utilities have a duty to serve native customers, and detailing the delicate balance that exists between providing needed infrastructure and not having rates go up unnecessarily); R.A.P., *supra* note 45, at 50 (stating that there is political pressure on PUCs to limit electrical rate increases).

[153] *See* BALDICK ET AL., *supra* note 7, at 16 (describing how the "bogeyman" fear of blackouts can be used in the transmission planning process to push reliability upgrades through opposition that cites increased costs and land use concerns); PJM, *supra* note 15, at 16 (noting that the core of transmission planning is ensuring system reliability).

[154] *See* BALDICK ET AL., *supra* note 7, at 14 (noting that the economic terminology developed before open access requirements); Rossi, *supra* note 30, at 1019 (explaining that state and local regulators began evaluating transmission projects on a need basis to ensure that customers did not pay for wasteful projects); *see also* N.Y. PUB SERV. LAW § 122(1) (McKinney 2014) (requiring that a transmission facility fulfill a public interest, convenience, and necessity to justify construction).

[155] *See* BALDICK ET AL., *supra* note 7, at 25 (stating that transmission models are accurate in their predictions if their assumptions about the future of generation and load growth are known, and the market is perfectly competitive); *cf.* PJM, *supra* note 15, at 18 (admitting that there is no consensus on exactly how to define a beneficiary in an interconnected grid).

[156] *See* BALDICK ET AL., *supra* note 7, at 7–8 (noting that before open access to transmission systems, cost allocation determinations were not contentious because a transmission facility only benefitted a defined number of customers); Spence & Prentice, *supra* note 43, at 146 (noting that electricity markets were largely vertically integrated before restructuring in the 1980s).

[157] *See* BALDICK ET AL., *supra* note 7, at 8 (explaining that the old cost-causation model may no longer be appropriate); *id.* at 25 (stating that none of the assumptions required for accurate calculation can be found in practice).

[158] *See id.* at 25 (noting the responsiveness of demand load to changes in prices); CAMPBELL & VANN, *supra* note 18, at 3 (explaining that demand loads have expanded as transmission facilities expand beyond contained investor-owned utilities); NCEP, *supra* note 63, at 23 (stating that when

transmission generators.[159] Since models for determining beneficiaries rely on forecasts of future system conditions, the more variable and uncertain the factors are, the more inaccurate the calculations for benefits become.[160]

More importantly, the distinction between transmission facilities serving either economic or reliability functions does not accurately describe how transmission facilities function in an open grid.[161] Now that transmission systems are not vertically integrated, electricity flows from multiple generation sources to multiple end users through an interconnected system along the path of least resistance.[162] At some point, all transmission facilities in a grid will either lower the risk of interruptions, provide economic benefits to users, or function in both capacities.[163]

More problematically, the quantified benefits of certain transmission facilities may in turn have negative impacts to users on other parts of the grid.[164] For instance, built transmission facilities increasing grid reliability can actually *increase* congestion in the grid.[165] Conversely, lines that decrease costs to certain users by easing congestion may raise prices for consumers in other parts of the grid.[166] As the grid changes, however, so too may the roles of these trans-

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vertically integrated monopolies built new transmission facilities, there was no question about who would build the transmission facilities—the utilities—and thus no question as to who would pay—their native load users).

[159] *See* BALDICK ET AL., *supra* note 7, at 26 (explaining that it is easier to determine generation development in vertical monopoly markets than it is in restructured electricity markets); Rossi, *supra* note 29, at 1017 (describing federal pushes to expand renewable energy sources); *id.* at 1042 (noting that renewable energy is more volatile than traditional fossil fuel generation).

[160] BALDICK ET AL., *supra* note 7, at 25 (noting that the uncertainty of multiple factors in beneficiary-pay models make them inaccurate); Brown & Rossi, *supra* note 9, at 755 (noting that increasing the benefits of new transmission facilities do not actually flow to the customers who are determined through traditional rate regulation).

[161] *See* BALDICK ET AL., *supra* note 7, at 14 (arguing that the distinction between economic and reliability is artificial); Blumsack et al., *supra* note 13, at 76 (concluding that the distinction between economic and reliability is inaccurate).

[162] *See* BALDICK ET AL., *supra* note 7, at 15 (noting that in an integrated system supply and demand are both are increasing); NCEP, *supra* note 63, at 23 (explaining that the modern grid has changed by having multiple generators all interconnected); *supra* notes 33–39 and accompanying text (describing how electricity moves along transmission facilities by following the path of least resistance, which can create loop flows).

[163] *See* BALDICK ET AL., *supra* note 7, at 14–15 (explaining that all transmission facilities will at some point serve both economic and reliability purposes).

[164] *See* Blumsack et al., *supra* note 13, at 79 (outlining how the addition of a connecting line in a simple parallel network can create congestion in all other lines in the network).

[165] *See id.* When a lower voltage line joins simple parallel networks, the new line can cause congestion without becoming congested. *See id.* at 79–80 (detailing this theory, known as Braess's paradox, through modeling energy networks).

[166] *See* BALDICK ET AL., *supra* note 7, at 24 (explaining how economic lines that increase access to once remote and inexpensive generation plants raises the price of electricity from that plant, thus raising prices for the plant's original customers).

mission facilities.[167] Therefore, the very reasons for focusing on benefits to specific users that were the hallmark of the distinction between the two categories may lead to inaccurate cost and benefit determinations to all grid users over time.[168]

III. ACCEPTING UNCERTAINTY FOR THE BENEFIT OF ALL: SOCIALIZING THE COSTS OF HIGH-VOLTAGE INTERSTATE TRANSMISSION FACILITIES

The increasing complexity of the interconnected electrical grid requires the Federal Energy Regulatory Commission ("FERC") to adapt and modernize its cost allocation principles.[169] To achieve this, socialized cost allocation should become recognized as the primary method for fulfilling the just and reasonable requirement for high-voltage interstate transmission facilities.[170] To accomplish this, both FERC and the courts should accept that although beneficiary-pay models can temporarily specify beneficiaries, the changing nature of the grid is such that in the long run these determinations are no longer just and reasonable.[171] Socializing costs across an entire grid, however, is a far more fair and accurate method.[172] Section A argues that the beneficiary-pay principle is no longer a just and reasonable method for determining cost allocation for interstate transmission facilities.[173] Section B then argues that socializing the costs for these transmission facilities is not only just and reasonable, but it is also preferable for incentivizing transmission development.[174]

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[167] *See* Blumsack et al., *supra* note 13, at 94 (stating that the more complex the grid becomes, the more difficult it becomes to make a distinction between reliability and economic benefits for transmission facilities).

[168] *See* BALDICK ET AL., *supra* note 7, at 24 (noting that economic facilities can raise prices on some consumers); Blumsack et al., *supra* note 13, at 79–80 (explaining that transmission facilities constructed to increase reliability can decrease electricity delivery in other parts of the grid).

[169] *See* BALDICK ET AL., *supra* note 7, at 23–24 (explaining how the increasing interconnectedness of the grid changes beneficiary determinations).

[170] *See* BALDICK ET AL., *supra* note 7, at 31–32 (explaining that one cost allocation solution is to spread the costs of transmission facilities across an entire Regional Transmission Operator ("RTO") or Independent System Operator ("ISO") because they are the functional equivalent of the historic vertically integrated monopoly); Brown & Rossi, *supra* note 9, at 755 (noting that one of the largest barriers to development of a competitive power market is the use of beneficiary-pay methods for cost allocation).

[171] *See generally* BALDICK ET AL., *supra* note 7 (noting that because grids have expanded, beneficiary-pay methods are imprecise and are only temporarily accurate and that socializing costs is just a variant of the beneficiary-pay model in a large grid); PJM, *supra* note 15 (noting that beneficiary-pay models are flawed by timing and circumstance in how they allocate costs to grid users).

[172] *See generally* BALDICK ET AL., *supra* note 7 (arguing that beneficiaries are now generally dispersed across a region, and so socializing costs across a region is just a more accurate form of the beneficiary-pay method for certain transmission projects); PJM, *supra* note 15 (noting that socialized cost allocation may be more accurate because it inherently factors in the changing nature of the grid which will shift who benefits from which transmission facilities).

[173] *See infra* notes 175–187 and accompanying text.

[174] *See infra* notes 188–217 and accompanying text.

A. You Cannot Predict the Future: The Limits of Modeling

Socialized cost allocation should be used for high-voltage interstate transmission facilities because the factors needed for accurate beneficiary-pay modeling are inaccurate.[175] Beneficiary-pay models accurately quantify the benefits of a transmission facility only when three basic factors are somewhat stable over time: load generation, the location of load generation, and load consumption.[176]

For most modern grids, accurately determining each factor in beneficiary-pay models is problematic.[177] First, load generation is increasingly volatile due to both the greater number of generation facilities and the variable production schedules of renewable energy sources.[178] Second, generation facilities are being built further away from consumers to decrease generation facility costs and because renewable energy sources are often far away from most energy consumers.[179] Finally, factors impacting load location and use become more variable and harder to determine in expanded grids.[180] Any change to these assumptions about beneficiaries or generation facilities can completely change a model's outcome.[181]

Beyond the difficulty of determining beneficiaries in a given grid configuration, determinations become even more unreliable as the grid changes over

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[175] *See* BALDICK ET AL., *supra* note 7, at 25 (noting that cost allocation determinations are accurate when load and generation growth are known, but these factors cannot be determined in the complex modern grid); PJM, *supra* note 15, at 18 (acknowledging that the results of beneficiary-pay models in interconnected grids are based on assumptions about timing and circumstances that, if changed, would completely alter the beneficiary determinations).

[176] BALDICK ET AL., *supra* note 7, at 25 (listing load location and load growth as key factors in determining cost allocation); PJM, *supra* note 15, at 17 (stating that the location and levels of load and generation in the grid are important for transmission planning).

[177] *See* BALDICK ET AL., *supra* note 7, at 25 (noting the problems with knowing future market conditions needed for accurate beneficiary-pay models); PJM, *supra* note 15, at 18 (noting that changes to model assumptions result in different beneficiaries being identified).

[178] *See* Norris & Dennis, *supra* note 13, at 5 (noting that the grid is becoming increasingly complex as it connects more existing generation sources and incorporates more renewable energy sources); Rossi, *supra* note 29, at 1042 (describing renewable energy sources as variable).

[179] *See* Erin Dewey, Note, *Sundown and You Better Take Care: Why Sunset Provisions Harm the Renewable Energy Industry and Violate Tax Principles*, 52 B.C. L. REV. 1105, 1112 (2011) (noting the long distances required for transmission facilities to connect wind energy sources to consumers); Osofsky & Wiseman, *supra* note 8, at 790–91 (same).

[180] *See* BALDICK ET AL., *supra* note 7, at 25 (noting that load growth cannot be accurately predicted); PJM, *supra* note 15, at 17 (explaining that studies used to determine load use require knowing prices); Hadsell & Shawky, *supra* note 103, at 158 (noting that pricing in restructured energy markets is more volatile than in traditional energy markets).

[181] *See* BALDICK ET AL., *supra* note 7, at 25 (noting that many assumptions in beneficiary-pay models, if changed, would alter which customers are considered beneficiaries); PJM, *supra* note 15, at 18 (acknowledging that any changes to generation can completely change the outcome of models).

time.[182] Consider, for instance, an interstate transmission facility connecting a renewable energy facility to an interstate grid[183] Changes in how the transmission facility is used for increasing either reliability or economic utility, or changes to population distributions on the grid, can change beneficiaries of that transmission facility periodically.[184]

Furthermore, even though these shifts in benefits occur routinely, cost allocations are final.[185] Consequently, short of periodically adjusting beneficiary determinations, relying on the beneficiary-pay method for assigning the costs of high-voltage interstate transmission facilities does not comply with the just and reasonable rate principle.[186] Accordingly, FERC should not accept beneficiary-pay methods as satisfying the cost allocation principle for high-voltage interstate transmission facilities.[187]

B. Socializing Is Not Socialism: When Everyone Benefits, It Is Just and Reasonable for Everyone to Pay

Cost allocation is not an exact science because electricity usage and flow patterns cannot be accurately predicted over time.[188] Socializing cost allocation for high-voltage interstate transmission facilities accepts this reality in a more consistent and accurate manner than the beneficiary-pay method.[189] Further-

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[182] *See* BALDICK ET AL., *supra* note 7, at 3–4 (explaining that beneficiaries change over time due to changes in economic activity and demographic shifts).

[183] *See* Rossi, *supra* note 29, at 1042 (outlining the difficulties balancing the grid with a large renewable energy source because stable fossil-fuel based generation sources must also be kept on reserve).

[184] *See* BALDICK ET AL., *supra* note 7, at 9 (stating that the benefits of transmission facilities change constantly).

[185] *See id.* at 9 (noting constant shifts); *id.* at 67 (recognizing issues with the current method of cost allocation where initial cost allocations are considered final); PJM, *supra* note 15, at 18 (stating that beneficiary-pay determinations are partly based on timing assumptions).

[186] *See* Ill. Commerce Comm'n v. FERC (*Illinois I*), 576 F.3d 470, 476 (7th Cir. 2009) (holding that FERC is not authorized to assign the costs of a transmission facility to a group of ratepayers that receive benefits that are trivial compared to the costs); BALDICK ET AL., *supra* note 7, at 68 (suggesting periodic review of cost allocation decisions at significant time intervals since there can be deviations from the original basis for assigning costs).

[187] *See* FERC Order 1000, 76 Fed. Reg. at 49,932 (requiring benefits to roughly equal costs to rate-paying consumers); BALDICK ET AL., *supra* note 7, at 25 (noting that calculations of benefits are not accurate).

[188] *See* BALDICK ET AL., *supra* note 7, at 9 (explaining that shifts in benefits occur constantly); Patrick J. McCormick III & Sean B. Cunningham, *The Requirements of the "Just and Reasonable" Standard: Legal Bases for Reform of Electric Transmission Rates*, 21 ENERGY L.J. 389, 400 (2000) (describing ratemaking as more an art than a science); PJM, *supra* note 15, at 18 (noting that beneficiary determinations are based on timing and circumstance); *supra* notes 175–187 and accompanying text (describing how beneficiary-pay models are flawed because of the variability of the essential model inputs such as load generation, load generation location, and load consumption).

[189] *See* BALDICK ET AL., *supra* note 7, at 3 (stating that despite supporting the beneficiary-pay method in some instances, the cost of many transmission investments should be spread across all users in a network since this method does incorporate inaccurate beneficiary considerations).

more, socializing costs may prove more suitable towards furthering federal and state policies in favor of transmission development.[190]

A shift to socialized cost allocation from beneficiary-pay principles for high-voltage interstate transmission facilities does not require changing the cost-causation principle.[191] Rather, it involves recognizing that for high-voltage interstate transmission facilities, cost spreading is a more just and reasonable method.[192] Socialized cost allocation is simply a fairer representation of how consumers benefit from the modern grid.[193]

Socialized cost allocation is not a compromise; it is just another form of the beneficiary-pay principle.[194] Because a transmission facility serves both economic and reliability functions, and changes to the grid shift any given facility's benefits to different beneficiaries, assigning the cost of a new line to specific customers when that facility's characteristics do not generally fit the three basic factors required for accurate economic modeling is problematic.[195] Instead, given that in the modern grid the benefits of specific transmission facilities routinely shift among users, spreading the cost of new facilities across all system users is an acknowledgment that all users in the system benefit from the transmission project.[196]

Moreover, spreading the costs of these transmission facilities across a grid has the potential to further existing state and federal policies.[197] Since the

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[190] *See id.* at 8 (stating that a lack of consensus of how to determine cost allocations has caused underinvestment in the grid); *infra* notes 191–217 and accompanying text (arguing for a consistent method of allocating the costs of high voltage interstate transmission facilities).

[191] *See* PJM, *supra* note 15, at 19 (noting that socialized cost allocation can be considered another form of the beneficiary-pay principle).

[192] *See* Maser, *supra* note 66, at 1832–33 (explaining that FERC already has the recognized power under the Federal Power Act ("FPA") of 1978 to socialize the costs of transmission facilities that provide a regional economic or reliability benefit); PJM, *supra* note 15, at 19 (noting that socialized cost allocation can already be considered a method of the beneficiary-pay method since it considers all users of the grid as beneficiaries).

[193] *See* BALDICK ET AL., *supra* note 7, at 23–24 (explaining that, given the integrated grid, benefits are now more likely to be spread broadly than narrowly identifiable).

[194] *See* PJM, *supra* note 15, at 19 (noting that socialized cost allocation may be considered another form of the beneficiary-pay method because any upgrade to the grid benefits all users, and because eventually all users of the grid will be beneficiaries of multiple projects).

[195] *See* BALDICK ET AL., *supra* note 7, at 14–15 (explaining the dual function of transmission facilities as providing economic and reliability benefits); *id.* at 9 (stating that benefits in the grid shift constantly); *supra* notes 175–187 and accompanying text (noting the difficulty of estimating generation variability, generation location, and load variability—the three major elements of beneficiary-pay modeling).

[196] *See* PJM, *supra* note 15, at 19. Socializing all transmission costs across a Regional Transmission Operator ("RTO") or an Independent System Operator ("ISO") also makes sense from a regulatory perspective, because all capital expenditures for transmission facilities, under the traditional vertical monopoly utility model, were socialized among all ratepayers, and RTOs and ISOs are the modern equivalent. *See* BALDICK ET AL., *supra* note 7, at 31–32.

[197] Klass, *supra* note 12, at 1119–20 (noting the need for greater investment in transmission if state renewable goals are to be met); Moeller, *supra* note 10, at 78 (describing the importance of

1970s, energy policy at the federal has consistently encouraged utilities and non-utilities to sell their power at wholesale.[198] By allowing generators to access the grid and sell electricity on par with incumbent generators, the electric market is being pushed towards becoming a competitive marketplace.[199] Competitive markets are only possible, however, where there are few physical and economic impediments, and limited transmission capacity has increasingly become a significant physical impediment to the transmission system. [200]

At the state level, state-mandated renewable energy standards have driven demand for high-voltage interstate transmission facilities.[201] Large-scale renewable energy sources, however, are often located far from urban centers where electricity is needed most.[202] Thus, there is a need for transmission facilities to span long distances to meet renewable portfolio standards, incentivizing state public utility commissions ("PUCs") to allow transmission facilities to link to out-of-state generation plants.[203]

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transmission facilities to the federal policy of creating competitive electricity markets). *But see* Rossi, *supra* note 29, at 1043 (highlighting well-founded concerns that socialized cost allocation promotes increased energy consumption by focusing on increasing capacity, rather than focusing on methods of increasing the efficiency of current resources and lowering demand).

[198] *See* Brown & Rossi, *supra* note 9, at 728 (highlighting the importance of the federal push towards competitive electricity markets); Dadok, *supra* note 56, at 1011 (stating that since the late 1970s, Congress, the executive branch, and FERC have been pushing the energy market towards competitive pricing).

[199] *See* Brown & Rossi, *supra* note 9, at 728–29 (noting the shift in the electricity market); Bonnifield & Drewnowski, *supra* note 7, at 449–50 (summarizing the importance of reduced barriers to the markets through the example of the sale of electricity over transmission facilities that occurs between wind power from southern California to power heaters in Washington in the winter, and then how in the summer Washington sends inexpensive hydroelectric power to southern California to power air conditioners).

[200] Dadok, *supra* note 56, at 1013. Physical constraints occur where remote generation plants are not near consumers, or where transmission facilities are absent. Brown & Rossi, *supra* note 9, at 729. Economic impediments are caused by inadequate incentives for developing new transmission facilities, where there is congestion in existing transmission lines, or where there are other barriers to entry into the market for non-incumbent generators. *Id.* Currently, the advantage reliability upgrades have in cost allocation over economic upgrades has the potential to disincentivize new generation facilities. BALDICK ET AL., *supra* note 7, at 16. FERC outlined the need for new investment in transmission facilities in its 2009 to 2014 five year plan. *See* Moeller, supra note 10, at 77–78.

[201] *See* Klass, *supra* note 12, at 1119 (outlining state incentives for renewable energy growth); PJM, *supra* note 15, at 10 (stating that the North American Energy Reliability Council estimates that 35% of new transmission facilities above 200 kV in North America are related to accommodating renewable resources compared to 7% of the same sized facilities for traditional generation sources); *supra* notes 60–62 and accompanying text (summarizing state statutes that incentivize the development of renewable energy generation facilities).

[202] *See* Osofsky & Wiseman, *supra* note 8, at 791 (noting that abundant wind energy is often in remote locations far from energy-consuming city centers).

[203] *See* Rossi, *supra* note 29, at 1041 (noting the need for greater high-voltage interstate transmission investment in order to meet renewable energy goals). Socializing the costs of certain transmission facilities may make the more expensive generation facilities that accompany their development more feasible or easier to develop. *See* Maser, *supra* note 66, at 1854–55. For instance, this could make the

Still, state PUCs are often hesitant to impose the cost risks of new transmission facilities on native ratepayers who must then bear the risk of paying for the new facility.[204] When cost allocation is uncertain, however, disagreements over beneficiaries serve as a straw man for the underlying siting disagreement.[205] Therefore, minimizing the costs that might be imposed on ratepayers in a particular state may seek to ease barriers that are artificially imposed by state boundaries, not market boundaries.[206]

FERC can comply with Order 1000 by only allowing socialized cost allocation because spreading the costs of high-voltage interstate transmission facilities is roughly commensurate with the benefits of these facilities.[207] The Order requires that the costs of a facility not be thrust upon users that will likely receive no future benefit from the facility.[208] FERC also notes, however, that to the extent any model considers benefits and costs, this cost allocation principle does not require showing that every transmission facility provide a benefit to every consumer being saddled with its cost.[209] Rather, aggregate costs must be allocated in a manner that is roughly commensurate with aggregate benefits.[210] Therefore, insofar as a transmission facility's characteristics are such that socialized cost allocation can be considered a variant of the beneficiary-pay principle, spreading costs of the transmission facility across a Regional Transmis-

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development of remote on-shore wind facilities more feasible and less expensive to develop than more contentious but more efficient off-shore wind facilities. *Id.*

[204] *See* Brown & Rossi, *supra* note 9, at 725–26 (explaining how PUC and municipality regulators are politically motivated to avoid raising costs on local ratepayers).

[205] *See* BALDICK ET AL., *supra* note 7, at 2 (calling cost allocation a proxy for siting). The cost of each facility is not the issue; rather assigning the costs of who pays is. *Id.* at 30–31 (noting that rather than the actual cost, regulators are concerned about the benefits of the transmission facility to local ratepayers). Recall that siting refers to the process of determining the route for a new transmission line. *See* Maser, *supra* note 66, at 1832; *supra* note 73 and accompanying text.

[206] *See* BALDICK ET AL., *supra* note 7, at 8 (explaining that the mismatch between jurisdictional boundaries and cost allocation determinations is partly to blame for the dearth of transmission investment); Brown & Rossi, *supra* note 9, at 729 (noting that economic barriers must be removed to allow proper transmission development).

[207] *See* FERC Order 1000, 76 Fed. Reg. at 49,932 (stating that cost allocations must roughly equal benefits); PJM, *supra* note 15, at 19 (stating that all users connected to the grid benefit from transmission projects).

[208] *See* FERC Order 1000, 76 Fed. Reg. at 49,932 ("A transmission planning region that receives no benefit from an interregional transmission facility that is located in that region, either at present or in a likely future scenario, must not be involuntarily allocated any of the costs of that facility.").

[209] *See id.* at 49,939 (stating that cost allocation principles do not "require a showing that every individual transmission facility in the group of transmission facilities provides benefits to every beneficiary allocated a share of costs of that group of transmission facilities").

[210] *See id.* FERC states that cost allocations need only be "roughly commensurate with estimate benefits," relying on language from the Seventh Circuit which stated that costs need not be calculated out to "the last million or ten million or perhaps hundred million dollars." *Illinois I*, 576 F.3d at 476–77.

sion Operator ("RTO") or an Independent System Operator ("ISO") is consistent with FERC's principles for cost allocation.[211]

Consequently, courts should accept a FERC determination that high-voltage interstate transmission facilities will only be approved for socialized cost allocation.[212] For cost allocation determinations, courts should continue to require that FERC assess costs and benefits of new high-voltage transmission facilities.[213] Socialized cost allocation does not allow FERC to duck these requirements.[214] Rather, because high-voltage interstate transmission facilities do not comfortably lend themselves to beneficiary-pay principles, socializing costs is the more well-reasoned option.[215] Deciding to socialize the cost allocation for high-voltage interstate transmission facilities is supported by substantial evidence that beneficiary-pay models have too much error to properly ascribe costs to customers on an individualized basis.[216] Therefore, the best way to ensure the reliability and economic efficiency of the grid into the future is to socialize the cost of high-voltage interstate transmission facilities.[217]

CONCLUSION

Cost allocation is a highly contentious topic because states do not want their citizens to pay for projects largely benefitting out-of-state consumers. This narrow view ignores significant changes over the past few decades to the electrical grid making most states reliant on their neighbors. Unfortunately, the prevailing views regarding which cost allocation methodologies are just and

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[211] *See* PJM, *supra* note 15, at 18–19. The D.C. Circuit accepts the rationale that reducing barriers to entry in the wholesale power market is in the public interest, and is therefore a benefit. Entergy Servs., Inc. v. FERC, 319 F.3d 536, 543–44 (D.C. Cir. 2003).

[212] *See* W. Mass. Elec. Co. v. FERC, 165 F.3d 922, 927 (D.C. Cir. 1999) (holding that it is just and reasonable to consistently socialize the costs of transmission investments across an entire grid).

[213] *See Illinois I*, 576 F.3d at 477; Pub. Serv. Comm'n of Wis. v. FERC, 545 F.3d 1058, 1061–62 (D.C. Cir. 2008).

[214] *See Entergy*, 319 F.3d at 543–44 (siding with FERC on the notion that a less cabined definition of benefit comports with the public interest); PJM, *supra* note 15, at 18 (noting that socialization is a form of the beneficiary-pay model).

[215] *See* BALDICK ET AL., *supra* note 7, at 31–32 (noting the logic of extending cost allocations across an entire RTO); Brown & Rossi, *supra* note 9, at 763 (explaining that, in order to incentivize transmission development, cost allocation decisions must be made beyond state regulators); Rossi, *supra* note 29, at 1029 (explaining that high-voltage interstate transmission facilities are required to encourage the development of renewable energy sources).

[216] *See Illinois I*, 576 F.3d at 477 (conceding that there are benefits to all consumers when any transmission project is built on a network to which the consumer is connected); Town of Norwood v. FERC, 962 F.2d 20, 22 (D.C. Cir. 1992) (giving great deference to decisions made by FERC); BALDICK ET AL., *supra* note 7, at 23–24 (explaining that the integrated nature of the grid is such that the allocation of costs should be moved more towards socialization).

[217] *See* BALDICK ET AL., *supra* note 7, at 26 (noting that spurring transmission development can spur economic development in new generation facilities); Brown & Rossi, *supra* note 9, at 755 (noting that beneficiary-pay methods of cost allocation are barriers to development of an efficient and reliable grid).

reasonable have not yet caught up with the reality of the modern electric grid. The currently accepted beneficiary-pay model, although effective for determining cost allocation in certain situations, has become increasingly flawed when assigning the costs of high-voltage interstate transmission facilities in large interconnected grids. Instead, socialized cost allocation is the best method of allocating the costs of these facilities because it most closely matches how consumers on an interconnected grid use and benefit from grid improvements over time. Therefore, FERC should use, and the courts should allow, socialized cost allocation to satisfy the cost-causation principle for these transmission facilities. Only through socialized cost allocation can the United States reap the full benefits of a capitalistic energy market.

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