

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Building for the Future Through Electric
Regional Transmission Planning and
Cost Allocation and Generator
Interconnection

Docket No. RM21-17-000

Affidavit of Dr. Carl R. Peterson

September 19, 2022

I. Introduction

1. My name is Carl R. Peterson. I am an Executive Advisor to Concentric Energy Advisors, Inc., (“Concentric”) an energy consulting firm headquartered at 293 Boston Post Road West, Suite 500, Marlborough, MA 01752.
2. I have been asked by the DATA Coalition: Ameren Services Company, Eversource Energy, Exelon Corp, ITC Holdings Corp., National Grid USA, PSE&G, and Xcel Energy to provide comments on the Federal Energy Regulatory Commission (“Commission” or “FERC”) Notice of Proposed Rulemaking (“NOPR”) in Docket No. RM21-17-000 which proposes to reform the *pro forma* Open Access Transmission Tariff (“OATT”) and the *pro forma* Large Generator Interconnection Agreement. Among other proposed reforms, the NOPR proposes to conditionally reinstate the Federal Right of First Refusal (“ROFR”) for incumbent transmission providers under certain circumstances.¹ My comments relate to the use of competitive bidding as a policy choice for those projects covered by Order No. 1000.² Fundamentally, the Commission must grapple with whether transmission competition leads to superior outcomes as compared to the alternative. As detailed in this Affidavit, my opinion is that a holistic comparison of different approaches is required. When the merits and demerits of each are evaluated, using competition, at least as it has been implemented to date under Order No. 1000, is unlikely to lead to superior outcomes and may in fact lead to inferior results.

II. Qualifications of Dr. Peterson

3. My curriculum vitae, attached as Attachment 1 to this Affidavit, contains a more detailed description of my qualifications. Briefly, I began working in the field of public utility regulation in 1993 and, from 1994 –2000, I was on staff of the Illinois Commerce Commission (“ICC”) where I provided expert testimony and advice to the ICC on electric, gas, and water rate design and cost of service issues. For part of that time, I was also a commissioner’s advisor for energy policy. In 2000, I took a position with NERA Economic Consulting and over the years have provided expert opinion, as both a testifying witness and a consulting expert, on policy issues relating to the regulation of public utilities, revenue requirements, rate design and cost of service for many clients, including electric, gas, and water utilities, state agencies, and other

¹ The Federal ROFR was removed by FERC in 2011 for certain transmission projects. *See* Order No. 1000, Final Rule in Docket RM10-23-000, July 11, 2011 (“Order No. 1000”). This NOPR proposes that future OATT filings are presumptively reasonable, and not unduly discriminatory, if offering ROFR for facilities that are selected in regional plans for the purposes of cost allocation *conditioned* on the incumbent transmission provider establishing joint ownership with an unaffiliated entity or projects are “right-sized” in-kind replacements (i.e., modifying a replacement facility to increase transfer capability) and included in the regional plan for purposes of cost allocation. (NOPR, ¶¶ 365, 403, 409).

² Other commentors have addressed this issue including: Affidavit of Dr. John R. Morris, ¶16, Attachment A to *Initial Comments of NextEra Energy, Inc.* (“Morris Affidavit”). Comments of LS Power Grid, LLC. All filed in Docket No. RM21-17-000

governments and not-for-profit entities. In 2017, I changed my affiliation to Concentric where I am currently an executive advisor.

4. In addition, since 2008 I have been on the full-time faculty of the University of Illinois Springfield where I teach economics and statistics to undergraduate and graduate students. Through the university, I work on research in public utility regulation, provide regulatory training, and conduct outreach programs for the Illinois and broader regulatory environment. For nearly twenty years, I have also been on the faculty of the Institute of Public Utilities at Michigan State University where I teach cost of service and rate design for energy utilities at both the introductory and advanced levels. I also teach at the American Gas Association's annual Introductory Rates School and Advanced Rate School. I have been an invited expert on cost of service and pricing at numerous training sessions, both domestically and internationally, over the past 20 years.
5. I have provided expert testimony and other reports before regulatory agencies in Wisconsin, Illinois, Maine, Alaska, and Bermuda as well as before civil courts in Illinois and Missouri. My testimony has addressed the creation and implementation of Open Access Transmission Tariffs for the state of Alaska's largest electric transmission provider as well as providing advice on the organization of transmission planning and operations in the state. As both a consulting and expert witness, I have addressed natural gas and electricity retail rate design and cost of service, cost of capital, electric transmission pricing, wholesale electric markets, and the operation of coal markets in the US. I received a BA and MS in economics from Illinois State University and a Ph.D. in economics from the University of Illinois at Chicago.

III. Summary Of Findings

6. The traditional regulated monopoly model has provided benefits to consumers and the nation through investment in the electric transmission grid.
7. The traditional regulated monopoly model accounts for a wide range of factors that must be accommodated, such as long-term reliability, public impacts, public preference for types and how energy is delivered, in addition to cost and other economic factors.
8. The competitive solicitation policy in Order No. 1000, whether implemented under the sponsorship model or the procurement model, is not direct competition of the kind ordinarily understood to be beneficial to society.³ It is, rather, a form of "competition

³ Order No. 1000 introduced a competitive solicitation policy though left the implementation of the policy up to the OATT review process. I generally refer to the competitive solicitation policy when referring to the Order No. 1000 decision to remove the Federal ROFR from certain transmission projects as defined in that order. The processes developed because of the removal of the Federal ROFR in Order No 1000 differ among planning entities. In general, these competitive processes either solicits proposals to a discrete transmission project (e.g., the process used by the Midcontinent Independent System Operation ("MISO") or the Southwest Power Pool "SPP") or to a need (e.g., the process used by PJM). The former might be

for the market” which results in winning bidders becoming a regulated monopoly.⁴ The processes can lead to costly oversight and underperformance under the resulting contract, due to the incentives inherent in the contracting process (i.e., the competitive solicitation process), rendering the result substantially similar to traditional regulation and, potentially, inferior due to (1) high administrative costs and delay from added process; (2) the potential to distract the planning entities from their core mission; and (3) the loss of collaboration needed to develop the support for these types of large infrastructure investments.

9. The competitive solicitation processes, as implemented because of the competitive solicitation policy in Order No. 1000, has led to administrative costs and project delays. This can only be expected to increase if the process is expanded to encompass a larger number of transmission projects, whether from expanding the types of projects subject to a competitive requirement or to the growth in the number of projects to which current competitive requirements apply.
10. Because of these factors, the competitive procurement processes deployed following the issuance of Order No. 1000 have not led to the identification of better regional transmission outcomes, which might be expected from traditional competition theory.
11. As the transmission system becomes larger and more complex, largely due to the uncertainties inherent in the transition to more intermittent resources dispersed geographically, the competitive procurement processes are likely to suffer from more costly design, implementation, and enforcement challenges. In addition, the competitive process likely conflicts with the necessary cooperative approach to planning and adaptation needed by transmission developers and planners to effectively address new uncertainties and address system needs when arising on the integrated transmission grid.
12. In summation, it is my opinion that evaluating different policy options requires a clearheaded review of the costs and benefits of each option. It is not sufficient to rely on generalities and hypotheticals. When viewed as a comparative choice between the traditional cost-of-service model and Order No. 1000’s competitive procurement processes, the reliance on bid-based contracting is unlikely to bring sustained benefits to consumers over time and may hinder the public policy goals of the Commission, and state regulators, over the coming years as the transmission system adapts to changes in the supply and demand conditions of the electricity sector.

referred to as a *procurement* approach with the latter often called the *sponsorship model*. In general, the issues discussed in this Affidavit apply equally to both types of models, though there are some differences that are identified where appropriate.

⁴ This is true whether the winner is an incumbent or non-incumbent.

IV. Outline of Affidavit

13. In Section V, I address the benefits, both to public policy and to the electricity consuming public, of the traditional regulatory model and why that model, above nearly every other regulatory construct devised since the nineteenth century in the United States, has remained while others have been replaced, usually by introducing greater levels of competition.
14. Section VI summarizes the form of the analysis of the Order No. 1000 competitive solicitation policy that I provide in this Affidavit based on *transaction costs economics*. This section will introduce the analysis of contract as an economic concept and concludes that merely claiming competition improves outcomes for society is not sufficient. One must evaluate the merits and demerits of differing *governance* structures to draw a conclusion. This standard economic method of analysis focuses on the issues related to the cost of contracting, the foundation of any economic relationship, which explains the conditions under which some transactions are better suited for certain governance structures. Before turning to the details of this analysis, Section VII addresses why Order No. 1000 did not create a textbook version of competition which requires the more nuanced economic analysis of contract found in Section VIII.

V. The Regulated Public Utility Model Has Advantages that Can Work to the Benefit of Consumers

15. The *traditional regulation* of the monopoly electricity provider, especially for the delivery and transport function, has remained in place a remarkably long time suggesting its efficacy at producing benefits, whatever its shortcomings, remain positive relative to other possible structures.⁵ This is a crucial fact since regulation of other industries has given way to liberalization.⁶ Traditional regulation, generally applied to the electric sector, has passed the test of time, and even coevolved with more liberalized elements of the sector. Industries and commodities, such as trucking, airlines, railroads, telecommunications, gas and electricity commodity, and to a certain extent natural gas transport and storage services, among many others, have been, to one degree or another, liberalized. All these regulatory structures were either altered to introduce more competition or scrapped altogether to allow for the operation of

⁵ In this affidavit I refer to *traditional regulation* to mean rate-of-return, cost of service regulation applied to a franchise utility (I will also refer to this model as cost-of-service regulation). In general, this is operationalized through the revenue requirement which applies the allowed opportunity cost of capital, both debt and equity, to the utility's prudently incurred invested capital and supports the recovery of reasonable expenses subject to administrative scrutiny. The opportunity cost of capital is set such that the utility "under efficient and economical management" can obtain the necessary capital to discharge its public service duties. That is the utility is provided the *opportunity* to earn a fair return but not a *guarantee*. See *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia* (262 U.S. 679, 1923).

⁶ This may refer to relaxing entry restrictions, pricing conduct, line of business restrictions or other aspects of the regulation of business by government.

private interests to regulate the market prices. On balance, observers of these liberalization reforms are likely to agree that, despite well-known problems with unregulated markets and the uneven gains from liberalization between consumers, the outcomes for society were generally improved, at least in the long run, by these regulatory reforms.⁷ Electric transmission is not like these other industries, and traditional regulation has proven and continues to be shown to result in the best outcomes for society.

16. Competition appears a better answer for these other industries because the commodity nature of the product and/or the fact that the industry is not expected to evolve into a natural monopoly. Stated simply, the natural monopoly condition results in least cost production occurring with one firm producing compared to allowing more than one provider to enter the market. If natural monopoly conditions do not hold, or technological change breaks down the natural monopoly, then entry by more than one firm (resulting in competition) is the more natural outcome.
17. The innate nature of electric transmission as a monopoly has born itself out over time. Competition, in must be noted, *was* the initial model of the nascent electricity sector in the early years of the industry, yet it became clear, after some time, that competition was untenable because the electric system exhibits natural monopoly conditions.⁸ Regulation by contract—often via a franchise agreement granted by a state or municipal government— was attempted in many areas, overseen by either a local regulator, or perhaps a city council, or even the courts. For a variety of reasons, the contract approach to regulation broke down and a kind of regulatory bargain was instituted through public regulation of prices and entry in exchange for prices based on reasonable costs, including a fair profit.⁹ This was the beginning of state level regulation.
18. A key problem of the contract regulation regime, causing its ultimate replacement by public regulation, is the potential for the failure of the contract to produce outcomes that are seen as fair by both sides. Assets required to provide electric utility service tend to have long lives and ordinarily only provide service in a specific, geographically localized area. Under these conditions, long term contracting is difficult since creating a fully specified contract is impossible. This led to the inevitable bickering over the

⁷ See e.g., C. Winston, “U.S. Industry Adjustment to Economic Deregulation,” *Journal of Economic Perspectives*, 12(3), 89-110, 1998.

⁸ See e.g., E. Jones, and T.C. Bigham, *Principles of Public Utilities*, Macmillan, New York, NY,

⁹ Many attribute this proposal to Samuel Insull in his 1892 speech to the National Electric Light Association, yet Insull often used the UK as an example of this proposed regulatory bargain. For example, in 1860 competition was formally eliminated and prices fixed for gas companies operating in London. (Massachusetts Legislature, “Report of the Special Committee on the London Sliding Scale of Prices and Dividends as Applied to Gas Companies,” Wright & Potter, Boston, MA, 1906, pp. 8-9). Sir George Livesey had, by 1874, noted that the exclusive monopoly for the provision of necessary services was the accepted model in Great Britain. (Quoted in *Id.* p. 59). Others had also concluded that competition was not the correct path, rather some form of government control of pricing over private monopolies was appropriate. See e.g., C. W. Baker, *Monopolies and the People*, G.P. Putnam’s Sons, Knickerbocker Press, New York, NY. 1889).

contract terms after the fact.¹⁰ Public utility regulation, then, provided a mechanism to adjudicate the unavoidable clashes between producers and consumers.

19. Traditional regulation, it is often said, represents a *substitute for the market*. Yet, due to the problems of using contract regulation, one of the regulator's key roles is to provide an adaption mechanism for the *contract* over time that is seen as fair by all sides.
20. With respect to the delivery of the electricity commodity, whether in wholesale context (generally, referring to interstate commerce, the purview of the FERC), or in retail context (generally, referring to intrastate commerce, the purview of state regulatory authorities) traditional cost-of-service regulation has remained, largely as it has been, at least since the 1950s.¹¹
21. That regulation of the private investor-owned ("IOU") natural monopoly electric utilities has benefited US consumers should almost go without saying. Electricity powered the US expansion for most of the twentieth century and led the world in providing power to the greatest number of consumers at, for the most part, declining real costs.¹²
22. The regulated natural monopoly model has produced the capital necessary to develop a robust transmission grid just when public policies demanded that the grid change. From the 1970s through 1998, transmission investment fell in real dollars.¹³ By the early 1990s, with the passage of the Energy Policy Act of 1992 and the movement toward a competitive wholesale generation market, the transmission grid needed to expand to create larger, and therefore more competitive, generation markets. Indeed, that is what happened. Beginning in the late 1990s, just after the landmark FERC Order No. 888 and its follow up orders that created the Open Access transmission regime still in place today, transmission investment began to grow. This investment fundamentally altered a grid that was originally planned and developed to connect local generation to nearby load centers and support reliability by interconnecting neighboring utilities. This new grid was asked to support the public policy goals of

¹⁰ Contract regulation was also, generally, implemented by local governments, some who had an interest in competing with private utilities. Economists have argued over the *exact* reasons for the movement toward state regulation, at least since the 1960s, with contracting issues one of the plausible explanations. A recent review of the literature is found in: C. Knittel, "The Adoption of State Electric Regulation," *Journal of Industrial Economics*, 54(2), 201-222, 2006.

¹¹ Indeed, many of the hallmarks of cost-of-service regulation still in use today can be found in the first substantial public utilities law in the state of Wisconsin passed in 1907. *See e.g.*, E. Jones, and T.C. Bigham, note 8, 174-188, 1931.

¹² While over any short time period, real costs of electricity can ebb and flow, over the long-run real prices have fallen. <https://www.txenergypoverty.org/2019/10/7702/>

¹³ EEI Survey of Transmission Investment: Historical and Planned Capital Expenditures (1999-2008), May 2005, Edison Electric Institute, Washington, DC.

increasing competition in the generation market and undertaking the necessary real-time operation of the grid.

23. Traditional regulation also provides for more flexibility in meeting the overall societal goal of creating a robust, and most importantly, reliable system. Achieving this societal goal has significant economic benefit to consumers . Some regulators even note that the use of the natural monopoly model supports public policy goals, importantly, the goal of safe and reliable service by promoting investment.¹⁴
24. Other policy goals are achieved through an incentive mechanism and as part of traditional utility regulation. Indeed, FERC used incentive mechanisms for transmission owners to build transmission after Order 888, including incentives for joining regional transmission entities.¹⁵ Other policies, such as renewable portfolio standards that increased the use of renewable resources, have had a positive, though surely not solitary, effect on the growth of renewable energy. In some cases, that was accomplished directly via the regulated natural monopoly model by allowing utilities to expand generation portfolios of renewable power projects.¹⁶
25. While the regulated natural monopoly model has its well-known weaknesses, the Commission should undertake the standard economic analysis and compare the costs and benefits of the traditional cost-of-service model for transmission regulation with the model of competitive procurement which has resulted from Order No. 1000.¹⁷ Only by undertaking a comparative analysis of the different models, which is both a *quantitative* analysis of the operation of the systems and a *qualitative* analysis of the compatibility of the two systems within the transition occurring in the sector, can a rational decision result.

¹⁴ For example, *see* Public Service Commission of Wisconsin, *Wisconsin's Strategic Energy Assessment: Energy 2010*, Docket No. 05-ES-102, Final Report, September, Madison, WI, 2004, p. 107 indicating that the Wisconsin Commission's policy of ensuring financially healthy utilities through maintaining profit levels benefits customers, by ensuring reliability, at a relatively low cost.

¹⁵ Some commenters seem to accept that that traditional model can be used by regulators to increase investment. *See e.g.*, Morris Affidavit, ¶16, p 6.

¹⁶ Iowa first implemented a renewable portfolio standard for IOUs in 1983. MidAmerican Energy recently filed with the Iowa Utilities Board to add over 2,000 MW of renewable generation and claims to have spent nearly \$14B since 2004 on renewable projects in Iowa. <https://www.midamericanenergy.com/newsroom/2022-wind-prime-announcement> MidAmerican is proposing this plan under a version of traditional cost-of-service regulation that includes a cost cap proposal requiring the company to prove reasonableness of any cost overruns. Other traditionally regulated utilities depend on the natural monopoly model as well. For example, NextEra announced an ambitious plan to decarbonize its own electric utility (Florida Power and Light) and “execute the largest renewables build out by an electric utility” which is predicated on “constructive government policies and incentives and...investments...acceptable to...regulators.” NextEra presentation to Investor Conference 2022, June 14, 2022. https://www.investor.nexteraenergy.com/~media/Files/N/NEE-IR/news-and-events/events-and-presentations/2022/06-14-2022/June%202022%20Investor%20Presentation_Consolidated_vF_.pdf

¹⁷ Traditional regulation has been criticized on many grounds, though most often for failing to provide incentives to produce at least cost.

26. The Commission is clearly concerned that the changing resource mix and changing demands are not appropriately being considered in transmission planning.¹⁸ The Commission seems concerned that these longer-term, more integrated, and complex planning questions are not likely to be addressed organically. I take no position on that part of the NOPR. However, to the extent the complexities of long-term planning, including integration of new and operationally different generation resources, increase as a result of the changing supply and demand conditions, the planning process will need to become more coordinated. For example, increasingly uncertain congestion patterns are likely to emerge in the future due to the incorporation of intermittent resources, which in turn will create difficulty in planning for those patterns.¹⁹ Traditional regulation is more appropriate and will more effectively achieve economic outcomes under these conditions. Regional Transmission Organizations (“RTOs”), and other transmission planning entities and their staffs will be challenged to perform their basic function of planning for a reliable grid. Adding the additional complexity of producing project designs while evaluating and choosing winning bidders, especially in a more uncertain environment, is likely to create more delays and potentially harm customers.²⁰
27. Traditional regulation has, over time, produced transmission rates that have been found to be just and reasonable, as evidenced by the FERC’s acceptance of those rates, while deploying new transmission investment needed during a transitional landscape period. There is every reason to believe that this institutional structure can do the same in the future. In the late 1990s, traditional regulation of electric transmission resulted in expanding the system to facilitate competitive generation markets. The competitive solicitation policy under Order No. 1000 has not led to massive expansion of the system, as discussed below, and, for reasons discussed in this Affidavit, may impede this expansion in the future. There is no reason to expect the Order No. 1000 competitive solicitation policy to achieve a different result than produced over the last ten years.²¹ Traditional regulation has proven itself. The Commission should consider that it may, by staying the course with its Order No. 1000 policy, sacrifice incorporating the changing generation portfolio in a reliable and effective manner for the *theoretical benefit* of reducing the cost of a portion of the delivery system.

¹⁸ NOPR, ¶¶64-67

¹⁹ See e.g., Comments of Potomac Economics LTD, Docket No. RM21-17-000.

²⁰ The loss of collaboration can arise from the incentive to keep information private in a competitive environment as well as the inevitable separation from incumbent transmission providers that the planning entity must undertake in order to remain neutral in a competitive environment.

²¹ See e.g., Attachment A, “Competitive Transmission: Experience to Date Shows Order No. 1000 Solicitations Fail to Show Benefits” Comments of Developers Advocating Transmission Advancement, Docket No. RM21-17-000 (“2022 Concentric Report”); E. Nicholson, M. Stone, and D. Powers, *Building New Transmission: Experience to-Date Does not Support Expanding Solicitations*, Concentric Energy Advisors, Inc. (“2019 Concentric Report”), June 2019.

VI. Summary of the Approach to Evaluation of Order No. 1000's Competitive Solicitation Policy for Certain Transmission Projects

28. The fundamental focus of analysis of the introduction of a competitive solicitation policy to certain transmission projects under Order No. 1000 is the contract.
29. A contract is a governance structure of a transaction. The contract governs the rights and responsibilities of the parties and, importantly, dictates the terms and conditions of service, including the price, and the actions parties can take over the life of the contract.
30. Contracts, however, cannot be fully specified *ex ante*. Certain conditions, namely uncertainty over the term of the contract and large sunk investments to support the contract, can lead to maladaptation of the contract over time as parties utilize the incompleteness of the contract to their advantage.
31. Maladaptation refers, generally, to the changes in the value of the contract *ex post* (i.e., over the contract life). This occurs most directly from renegotiation of the contract price determined *ex ante*. These changes in the value of the contract cause the cost of *contracting* to increase.
32. Both the economic costs of creating the contract *ex ante* and the economic costs of the adaptation of the contract over time are termed *transaction costs* to distinguish these costs from the technical costs which are ordinarily the focus of the analysis of natural monopoly.²²
33. Even if large numbers of competitors exist in *ex ante* bidding, once the contract is awarded, the process is reduced to a monopoly. In this structure, there is a concern that the monopolist has enough leverage to increase the contract price after the fact (referred to herein as the “*ex post* small numbers problem”). An extreme example might be a competitive transmission developer threatened by bankruptcy requiring some form of *public* financing by increasing rates since allowing the asset to be removed from service risks losing the societal benefits of the transmission project.²³ When regulators are faced with renegotiating the contract or decreasing electric reliability, there will be a concerted effort to renegotiate. Due to this nature of the industry, this type of competition differs from the textbook versions taught in college economics classes and, in general, is at least part of the reason for administrative

²² Transactions costs are, to economists, as friction is to physicists. Often one can obtain significant insight using a frictionless model, though in some cases friction is introduced to the model to understand the full nature of the problem. *See e.g.*, O.E. Williamson, *The Economic Institutions of Capitalism*, The Free Press, New York, NY, 1985.

²³ In this context *public financing* refers to any financial support provided to the entity via the administrative process (e.g., raising the contract price to allow the entity to remain in business).

regulation to oversee the smooth operation of the adaption of the pricing terms over time.

34. Regulation of public utilities through the traditional cost-of-service method is an alternative governance structure to competitive commercial contracting, which uses a third party—the regulator—to determine the *ex ante* contract terms—normally through a revenue requirement analysis with a prudence review—and govern the adaption of the contract terms over time with the intention to minimize the costs of contracting by determining reasonable and prudent costs. Since the projects and economic environment are the same, similar concerns are raised with this governance structure. Most of the concerns raised by economists and others boil down to one issue: an incumbent public utility has better information than the regulatory body and the stakeholders and, it is claimed, can use that informational advantage to increase the cost of projects. Without the pressure of a competitive *ex ante* process, costs, it is claimed, will increase, perhaps materially.
35. The relevant analysis, then, is a comparative analysis between the two alternative governance structures to assess the likely benefits of shifting from the traditional cost of service structure to an alternative structure which utilizes some form of competitive process in the *ex ante* formation of the contract. This requires a clear-eyed view of what aspects differ between the two alternatives and which characteristics are similar. I conclude that the implementation of the Order No. 1000 competitive solicitation policy appears to operate very much like cost-of-service regulation, but with added costs that come with overseeing the administration of the bidding process and the economic costs related to the *ex post* small numbers problem. Expanding the competitive solicitation policy to a larger universe of projects is not likely to change the economics of the contracting process.
36. A related issue of import to this analysis is the incentives under the two alternative governance structures. I conclude that it is unlikely to materially change the incentives since most projects under the implementation of Order No. 1000 competitive solicitation policy retain the cost-plus nature of traditional cost of service regulation.
37. This analysis concludes that the contract governance structure implemented through the competitive solicitation policy is unlikely to produce a **superior** *actual* governance structure, rather than a superior *hypothetical* governance structure, for the expansion and maintenance of the transmission system in the United States going forward. To the extent other factors are important in the build out of the transmission system, such as cooperation, meeting public policy goals, and assurance of reliable service, the contract governance structure implemented through the competitive solicitation policy of Order No. 1000 is an **inferior** governance structure relative to the traditional cost-of-service approach.

VII. Order No. 1000 Does not Create Textbook Competition and Does not Fundamentally Alter the Transmission Market

38. While many proponents of Order No. 1000's removal of the Federal ROFR refer to that process as "competition," that form of competition is not what is ordinarily thought of as competition in the common parlance. Such competition includes large numbers of small firms, free to enter and exit the market at will, competing to sell a well-defined homogeneous product to consumers who know exactly what product they want. As such, much of the *folk* wisdom concerning competition does not apply in this case. That does not mean that competition could never be beneficial in this limited form, it only means that the analysis of the competitive solicitation policy under Order No. 1000 must take the situation as it is, and not idealize it. Some highlights of the processes that were implemented because of Order No. 1000's competitive solicitation policy are instructive:

- The "competition" is for the right to be regulated under cost-of-service regulation. This is a version of what is termed "competition for the market" and effectively swaps out one regulated monopoly for another. This is most certainly not the same as competition in the generation market which some proponents seem to suggest.²⁴
- Each process uses a complex administrative procedure to create an opportunity for the competitive procurement on some transmission projects.²⁵
- An administrative process is used to determine a winning bidder.
- The winning bidder becomes a FERC regulated transmission entity with standard cost of service treatment going forward.

39. The basic textbook view of competition assumes that competitive forces—the influence of large numbers of competitors, entering and exiting the market as they see fit due to no entry barriers, selling similar products—dictates that firms with the lowest costs reveal themselves to the world through a single metric, the price.²⁶ Regulators, anti-trust authorities, and the larger world need not enquire as to the inner

²⁴ One commentor seems to suggest that transmission scale can be duplicated in the same manner as "competitive generation." Morris Affidavit, *supra* note 2, ¶60, pp. 22-23.

²⁵ See *supra* note 1. Those projects were defined in Order No. 1000.

²⁶ In eco-speak, the neoclassical model of the firm and the market suggests that when firms operate in a perfectly competitive market structure with free entry based solely on a comparison of the price received by the firm compared to its (private) average total cost, the firms that remain in the industry can only do so if they operate in a technologically efficient manner. In other words, the profit-maximizing firm will always seek to minimize its own costs and, at least in the case of perfect competition, this leads to the optimal outcome for all involved (costs are minimized as are prices due to the assumption of costless entry). Neo-classical approaches assume, generally, zero transactions costs.

workings of the firm since the outcome is predetermined from the assumption of the model. This model seems to describe, at least in broad brush strokes, many industries. Even those industries that it does not describe, like those with non-zero barriers to entry, still might create firms that operate, at least from a technological perspective, efficiently since (unconstrained) profit maximization rewards the firm for doing so.²⁷

40. Since traditional regulation is claimed to have certain drawbacks resulting from asymmetric information and input choice distortion leading to overcapitalization which may lead to sub-optimal cost minimization, competition might be a good alternative to regulation. That is, if it can be implemented in a manner that reduces the maladies of regulation when not introducing other, perhaps more complicated and costly, problems.²⁸

A. Competitive Solicitation in Transmission Should not Be Expected to Radically Alter the Transmission Market By Breaking Down Barriers to Entry and Creating Innovative Transmission Projects

41. The competitive solicitation policy under Order No. 1000 does not change the fundamental economics of the electric transmission industry which is, generally, a natural monopoly. That is, we should not expect competitive bidding to lead to the creation of wholly new entrants who are able to break down the barriers to entry. The reason is simple. Transmission developers are highly specialized firms that either operate as incumbent transmission operators or otherwise have acquired the competencies to develop and operate sophisticated infrastructure.²⁹ These highly specialized firms have natural advantages, often created over decades, and, at least for incumbent firms, have existing networks that have natural economies with expansion projects. These firms also tend to have large capitalization and access to specialized human capital. The electric industry is characterized by significant economies of scale, implying high barriers to entry. The notion that competitive bidding will change these characteristics of the industry is highly dubious.
42. We should also not expect radically new technologies or management techniques as a result of the competitive solicitation policy of Order No. 1000. Since the universe of firms that have the expertise to operate in this market is small, the likelihood that some

²⁷ This does not mean the firm operates at the minimum average cost, rather that the firm operates on the efficient (average) cost curve which implies the firms choose the optimal combinations of inputs and technology.

²⁸ A discussion of information asymmetries is found in: J-J Laffont and J. Tirole, *A Theory of Incentives in Procurement and Regulation*, MIT Press, 1998 (3rd Printing), The overcapitalization hypothesis is also called the A-J effect. H. Averch, and L.L. Johnson, (1962). "Behavior of the Firm Under Regulatory Constraint," *American Economic Review*, 52(5), 1052–69. Two other critical features of regulation, which do not exist in unregulated markets, are the requirements to meet administratively set reliability standards and provide universal service.

²⁹ The number of discrete transmission developers in any transmission planning region is relatively small ranging between three and six and that has not changed materially since the implementation of Order No. 1000. See Attachment A, *supra* note 21, p. 9.

firms have access to better technology or more prescient managers is also small.³⁰ In some markets, spillover effects, disruptive technologies, and other dynamic innovations may well enter the market and competition between firms, either in the industry or from outside the industry, is likely to reveal those innovations. For example, in the electric generation market, innovations from the aerospace industry allowed the creation of relatively low-cost generation technologies. In addition, innovations in information technology and digital control systems allowed for the greater integration of decentralized players into the electricity generation market.³¹ The Commission need only look to the experience of the PJM Interconnection (“PJM”), which utilizes the sponsorship model of competitive procurement, a model that many agree is most likely to elicit innovation since bidders are bidding to address a general transmission need, not to develop a specific transmission project. In the factual portion of its initial comments to the NOPR, PJM noted that non-incumbent developers do not appear to have any special advantage over incumbents. Indeed, quite the opposite is likely the case.³² From an economist’s perspective, I find PJM’s empirical conclusions compelling and consistent with my expectations that the type of dynamic gains from innovation often associated with competition are unlikely to emerge as a result of the Order No. 1000 competitive solicitation policy.

43. Competition may elicit a wider range of proposals, depending on the cost of providing a proposal. If proposal submission is low cost, entities may throw everything they can think of at the wall to see what sticks. It is not surprising that entities do not provide alternatives if there is not a clear competitive (private) advantage. In cases where the cost to the bidder is low (such as in SPP), many proposals are submitted, though whether any are more innovative, cost effective, or efficient relative to incumbent proposals is impossible to tell, at least from my position outside the planning entity. While many proposals may sound better, that is not necessarily the case for the following reasons:

- a. *Technological or other innovations may stray too far from the ordinary.* Disruptive technologies may create reliability problems, or simply not work as envisioned. While such experiments are extremely useful in more competitive markets where consumers can move freely between providers and the loss of service affects only a small number of consumers, in the transmission market, these proposals can also add additional risk.

³⁰ This does not mean that non-incumbents cannot offer robust designs, given the high barriers to entry, we would expect that, if a firm is qualified, these firms could provide competent and robust engineering proposals.

³¹ Prior to the development of digital control systems (e.g., automatic generation control), generation competition was likely either infeasible or, at least, less feasible even if the economies of scale in the generation technologies had fallen by the wayside.

³² Initial Comments of PJM Interconnection, L.L.C, Docket No. RM21-17-000, (“PJM Comments”) beginning at p. 33.

b. *Innovative proposals create administrative burdens.* Since the competitive procurement processes depend on administrative decision-making, it is reasonable to enquire as to potential problems. The textbook version of competition assumes that the evaluation of the winner is relatively straightforward: consumers know what they prefer and choose the products that best meet those preferences at a price they are willing to pay. There is no centralized decision-maker who determines what products consumers are allowed to buy or how the producers create their products. Competition among firms, and the resulting price signals, determine what products are produced and how.³³ That is not the case with transmission projects under the competitive procurement processes. An administrative process creates the opportunity for the project, develops a detailed bidding sheet, evaluates bids, and finally chooses the winning bidders. This, of course, is not costless either in terms of the planning entity's staff time or the normal issues that arise with administrative determinations. In general, a centralized planning entity, like an RTO, is asked, unfairly in some sense, to opine on the innovativeness of a proposed project based on bids.³⁴ Bids are not simply a quantity and a price, as in the textbook version of competition, rather a complex set of solutions, perhaps even multiple solutions, that the planning entity's staff, and eventually the management, in some way, must choose from. This almost certainly places these administrators in a difficult position that requires judgment concerning the costs and innovativeness of the project and the trade-offs inherent in those decisions.³⁵ We should not expect this administrative process to operate more efficiently under a competitive bidding regime relative to a more cooperative planning and development process.³⁶

³³ Competition is completely absent from informing the transmission planning process. *See* Comments of the Midcontinent Independent System Operator, Inc., Docket No. RM21-17-000, ("MISO Comments") beginning at p. 73. This fact makes the competitive procurement of transmission projects fundamentally different than the merchant generation model which relies on decentralized players to determine the timing and type of investment.

³⁴ It was noted above that innovative projects produce risk, and that is what we expect in a truly competitive environment, however, since planning entities overriding goal is maintaining the integrity of the transmission system, the process of administratively determining which proposals to approve almost certainly focuses primarily on working within good utility practices and complying with applicable industry and regulatory standards, as we should expect. Whether those administrative guidelines can, and should, produce truly novel solutions, under any form of transmission procurement, is subject to debate.

³⁵ *See e.g.*, Affidavit of Jarred J. Cooley, Comments of Developers Advocating Transmission Advancement, Docket No. RM21-17-000, pp. 3-5.

³⁶ Other uncertainties related to state-level policies might exacerbate the decision-making problems for some planning entities. (MISO Comments, beginning at 75).

B. Competitive Solicitation in Transmission Does Not Create More Investment

44. Competitive procurement of certain transmission projects, does not, in and of itself, create investment opportunities and no analysis has been provided to suggest that Order No. 1000's removal of the Federal ROFR led to the expansion of investment.
- a. While transmission investment has increased since 2014, that trend began in the early part of this century.³⁷ Order No. 1000 may well have had an impact, though it is impossible to claim that the removal of the Federal ROFR caused this increase given other factors of considerable significance, such as the planning reforms simultaneously advanced in Order No. 1000, the ability for regional planners to propose projects, as well as issues such as the cyclical nature of investment in electric transmission assets, and the change in load and generation over time. Indeed, even the proponents of competitive solicitation policy admit that the amount of investment related to the policy is paltry.³⁸
 - b. The fact that some projects have been awarded to non-incumbent providers does not indicate the project would not have been funded had Order No. 1000 not removed the ROFR. Indeed, one would expect that the planning process would have identified those projects in the normal course of operation and an incumbent utility would fund the project.
 - c. The number of non-incumbent winners is exceedingly small, with only 25 total projects developed or under development since the implementation of the competitive solicitation policy. Moreover, none of the competitive transmission projects are inter-regional.³⁹
 - d. The total number of projects appears to have been concentrated in California (roughly half) and about half were solicited in 2016 or earlier.⁴⁰

³⁷ See EIA "Utilities continue to increase spending on the electric transmission system," March 26, 2021. <https://www.eia.gov/todayinenergy/detail.php?id=47316#:~:text=Annual%20spending%20by%20major%20U.S.,maintenance%20of%20existing%20transmission%20systems> Also see *EI supra* note 13

³⁸ Ironically, Dr. Morris proclaims the success of the experiment in the same sentence that he admits to basing this conclusion on a small sample size. (Morris Affidavit, ¶9, p. 4). One might as easily suggest that any cost savings, if indeed there were cost savings, from this tiny sample size is as likely to result from pure chance, rather than the process itself.

³⁹ See e.g., 2022 Concentric Report, pp. 9-10.

⁴⁰ See e.g., 2019 and 2022 Concentric Reports.

C. Competitive Solicitation in Transmission Does Not Substantially Alter Market Power Concerns

45. The competitive solicitation policy under Order No. 1000 does not lessen the market power of any participant, it merely replaces one monopoly with another.⁴¹ To the extent that market power is a concern under monopoly constructs, it is already mitigated for electric transmission under traditional regulation. Prices are subject to cost-based regulation, and output, i.e., the amount of transfer capability, is addressed through the transparent, regional planning mechanism. If the regulator believes that strategic behavior on the part of incumbent transmission operators is hindering transmission expansion, it has far more direct methods to address the issue, such as addressing the planning questions through rulemakings or investigations.
46. The concern with monopolies exercising transmission market power to advantage generation assets is not removed as a *necessary* outcome of the Order No. 1000 competitive solicitation policy. Indeed, since the competitive processes resulting from Order No. 1000 replaces one monopoly with another, the evaluation of any residual transmission market power in the generation market would need to be evaluated for all “non-incumbent” transmission developers as well.⁴²
47. In many cases, however, incumbent utilities have an economic incentive to invest in transmission and expand the system. In the 1990s, the Commission was concerned that incumbent utilities did not want to expand the system to advantage their local generation and prevent competition for the electric commodity. In today’s world, where many incumbent utilities have carbon reduction goals, expanding transmission advantages incumbent utilities because transmission expansion is needed to interconnect and deliver renewable generation that tends to be located distant from load. Also, increasing transmission improves geographic diversity which both increases reliability—a goal of incumbent utilities that affects the ability to earn a return—and increases the capacity value of renewable generation.

D. Competitive Solicitation in Transmission Does Negatively Affect the Incentive for Cooperation in Planning the Transmission Grid

48. Finally, textbook versions of competition do not take into account the necessary cooperation that comes along with complex infrastructure projects. The planning process for transmission is time consuming and subject to continual updating as new information becomes available, information that is often localized and in the

⁴¹ See e.g., Morris Affidavit, ¶26, p. 11 suggesting that increasing transmission capacity does reduce market power in both transmission and generation markets. Whether this is true or not, one must first show that the Order No. 1000 solicitation policy *caused* increased transmission capacity which has not been done in this docket.

⁴² Two of the largest “non-incumbent” transmission developers, NextEra and LS Power are also among the largest generation owners in the country. (See Comments *supra* Notes 2, 49).

possession of incumbents.⁴³ This process, rightly so, is a massive collaboration of stakeholders. To the extent that layering on a burdensome administrative process of competitive bidding distracts, or even inhibits, planning entity staff from their primary mission, that will negatively influence the output of the process and lead to less robust solutions, rather than the hoped-for innovations from the competitive bidding process.⁴⁴ The competitive solicitation policy is not likely to further the necessary cooperative planning and implementation approaches that are likely to be more necessary in the future. Sharing data, revising planning and cost estimates, and other interactive discussions are less likely to occur in a competitive environment which almost certainly will lead to inefficient use of resources of both the planning entity and stakeholders; not to mention the inherent incentive, whether intended or not as a result of Order No. 1000, for less open information exchange since information becomes a commodity that can be monetized through the competitive process. This fundamentally alters the system planning process that otherwise inherently requires and benefits from close coordination.

VIII. The Competitive Solicitation Processes Implemented as a Consequence of Order No. 1000 Do Not Operate Like the Textbook Version of Competition and Should be Analyzed Accordingly

49. The obligation of the analyst, and the Commission in this case, requires not just a general conclusion supporting one mode of governance. Instead, it requires specific analysis of the alternative to determine if that structure faces similar, or distinct, maladies that render it either functionally equivalent, or potentially costlier, than the traditional regulation model.
50. Some have argued that the franchise could be auctioned through competitive bids and managed via a long-term commercial incentive contract, presumably enforced by the courts. The argument runs along the lines of the following: Using competitive bidding for the right to run the monopoly (i.e., “competition *for* the market”) may result in “large numbers” competition, and the well-known benefits from that type of competition, despite a single firm providing the service (“small numbers”).⁴⁵ In other words, we can have our cake and eat it too. Competition for the franchise ensures competitive prices and allowing only a single firm in the market ensures the benefits

⁴³ Modeling efforts represent an example. Incumbents have a much better understanding of their own systems and the interplay of generation on that system. Promoting more collaboration, rather than inhibiting such interaction due to competitive concerns, will reduce the quality of the modeling and perhaps lead to misspecification of planning options.

⁴⁴ PJM notes that the administration of competitive bidding has, in effect, distracted its Staff from the overriding mission of the entity. (PJM Comments.)

⁴⁵ See e.g., H. Demsetz, “Why Regulate Utilities?” *Journal of Law and Economics*, 11(1), 55-65, 1968. For an alternative view see O.E. Williamson, “Franchise Bidding for Natural Monopolies-in General and with Respect to CATV,” *The Bell Journal of Economics*, 7(1), 73-104, 1976.

of production at scale. In effect, this is the story of competitive bidding in Order No. 1000, at least on a limited scale.

51. The major problems with this competitive bidding process surround the details of the contractual arrangements and the costs associated with creating the contract. Most economists, and others, explicitly recognize that contracting is inherently incomplete; that is, contracts cannot be fully specified.⁴⁶ If economic actors have limited ability to understand all possible outcomes in a transaction and these same actors act in their own self-interest, then we might expect that actors will exploit advantages created by the incompleteness of contracting. In many transactions, these problems are inconsequential since actors maintain a large degree of flexibility to negotiate, or not. Furthermore, once a transaction is complete, which often occurs immediately or over a short future, few obligations exist on either side of the transaction. In the electric industry, however, several factors suggest that contracting is likely to be difficult. First, most assets are long-lived and specific to the transaction. This is especially true for transmission assets. For the most part, a transmission project is a set of sunk costs that the owner cannot ordinarily deploy in another endeavor and are in place, ordinarily, for decades. Second, uncertainty in the investment environment abounds. Future demand and supply conditions can change rapidly and cause asset values to change over time. Large infrastructure projects, like transmission projects, are subject to cost uncertainties. Given the long life of the assets in question, this suggests that uncertainty is especially problematic for contracting in this industry. For example, actual and projected inflation may differ, regulatory and local siting issues often arise and cause delays, and project rerouting can also cause delays. All these costs may be *force majeure* from the perspective of a winning bidder; however, these costs can dramatically alter final project costs. Finally, the product provided by the electric industry is not solely a matter of price. For example, transmission projects must meet basic reliability requirements, quality of service standards, and, often, must be relevant to public goals.⁴⁷ Given these problems, contracting, in a commercial sense, can be extremely costly, perhaps costly enough to suggest an alternative governance structure such as traditional regulation is more appropriate.
52. These problems have led many to argue that a *relational contract* administered by a third-party regulator is optimal.⁴⁸ In the context of transmission regulation, a relational contract covers the long-term activities of the parties and is implemented

⁴⁶ See e.g., O.E. Williamson, *The Mechanisms of Governance*, Oxford University Press, 1996. For a discussion specific to public utility regulation, see K.J. Crocker and S.E. Masten, "Regulation and Administered Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation," *Journal of Regulatory Economics*, 9(1), 5-39, 1996.

⁴⁷ While explicit public policy, such as renewable generation standards, is explicitly considered in the planning process. The overarching public policy goal of creating a grid capable of integrating a transitioning generation portfolio, including the integration of more localized generation as well as more intermittent generation, remains a concern for the Commission. Choosing the right governance structure can further that goal, though choosing a less appropriate governance structure can hinder the goal.

⁴⁸ See e.g., V. Goldberg, V. (1976). "Regulation and Administered Contracts," *Bell Journal of Economics*, 7(2), 426-48.

via the cost-of-service framework overseen by an independent regulator. But why is this the case? Why not use competitive bidding with a regulator overseeing the implementation of the bidding?

53. The answer lies in understanding that, in the presence of these contractual hazards, *ex ante* large numbers (i.e., many competitors competing *for* the market) may still fail to constrain behavior when *ex post* small numbers prevail (i.e., only the winner is left) and contractual ambiguities can be exploited.

- a. *Ex post opportunism lessens the value of competitive procurement.* Ostensibly, the purpose of bidding is to extract information from the bidders that traditional regulatory processes cannot extract. Largely, this refers to the private information that firms have about their own ability to perform under the contract. Since regulation uses an administrative process—first the planning process, then the prudence standard to determine what investment is allowed in rates—one challenge of the process is to discover the true nature of the firm (i.e., is it an efficient firm?). The problem is addressed in the competitive procurement processes by requiring bidders to reveal that information through their bid. Yet, once the bidding process is over, the environment changes from one of large numbers to one of small numbers. The winner has an incentive to attempt to renegotiate the contract. This can be done through clever, or even not so clever, use of cost caps which allow firms to increase the contract prices after the fact.⁴⁹ Moreover, due to the long nature of the assets involved this process unfolds over years, even decades, long after a project is awarded and completed.
- b. *Ex ante competition can lead to strategic bidding that is difficult to evaluate and implement.* Competitors in the bidding stage may choose to create bids that are relatively difficult to evaluate both from an engineering perspective and an economic perspective. While one advantage of a competitive procurement process is the *potential* for innovative projects, the administrative determination of what is innovative may be difficult and may lead to projects being discounted that should be approved (or the opposite). In addition, bidders may underbid projects or propose over aggressive incentive mechanism that are difficult to govern. For example, cost caps may contain re-openers which allow for renegotiation of the contract for costs that are

⁴⁹ One party has explicitly recognized this problem. LS Power claimed that its cost cap for the Artificial Island project in PJM shifted the risk of *foreseeable* events to the producer. (Affidavit of Paul Thessen, Comments of LS Power Grid LLC, Docket No. RM21-17-000, p. 9.) Yet if the events are *foreseeable*, then one expects a rational bidder would include those (expected) costs in the bid and a rational incumbent would include those expected costs in their project estimates. This also points out the inherent trade-off in costs caps. If LS Power is taking substantial risks of cost overruns, then it *must* earn a higher return to compensate its investors for the risks. Either these risks are not as substantial as LS Power claims, or the profit level embedded in the bid compensates for those risks (whether those risks are directly born by the primary contractor or a sub-contractor). There is simply no *free lunch*. Moreover, this implies that the risk of *unforeseeable* events, however defined, and later interpreted in an administrative setting, remains with customers.

unforeseeable even if initial bids appear reasonable or even low.⁵⁰ Whether and what is an unforeseeable cost and whether a non-incumbent can address that cost better than an incumbent is open to question. Since the only mechanism available to adapt the contract to these changes in the environment is cost of service regulation, what is gained by creating the procurement method? Competitive bidding does not address other issues with strategic bidding, such as attempts to influence generation markets, requiring state or federal regulators to continue overseeing the evolution of the market, though that oversight may be more difficult with commercial contracts in place.

- c. *Actual results are highly dependent on the form of the contract.* A cost cap, in theory, operates like a fixed-price contract which should shift risk of cost overruns to the producer. In practice, not all cost caps are created equal. A fixed-price contract has a final price determined in the contracting phase which then governs the price of the contract over its life. Cost caps in the competitive transmission procurement process generally have exclusions, and many of these exclusions are critical to final project costs. For example, cost caps may be based on engineering and construction costs, operations and maintenance costs, return on equity, yet are often less stringent on issues such as project routing, which, of course, often plays a significant role in final project costs and such exclusions mitigate developer risk.⁵¹ Moreover, due to the complexities of transmission rate setting, capping one input cost may be offset by another. This may make the rate appear better upon initial review but ultimately may result in higher rates over the life of the asset. While some argue that cost caps are more common today than in the early years of the implementation of Order No. 1000, and we might expect that to continue due to competition among developers, that observation, while speculative, is of limited import if developers are simply becoming better at creating or using exclusions from the cost caps. These are complicated economic issues that planning entities are not in the best position to address.
- d. Evaluation of bids with cost caps is inherently a process of trade-offs. PJM has stated the problem this way:

Some may urge the Commission to adopt a rule effectively saying “developer, you live by your accepted cost cap no matter what”. But we would be kidding ourselves if we think this would be cost-free. Such a rule

⁵⁰ This is highlighted in the NextEra Energy Transmission New York, Inc. (NEETNY) filing in March 2022 concerning the Empire State Line. In response to the NY Transmission owners, NEETNY identified roughly \$74m of “unforeseen” costs in addition to the allowance for unforeseen costs included in the cost cap. <https://www.nyiso.com/documents/20142/27732105/NEETNY-2021-2022AnnPrjctn-RspnsNYTODataRqst.pdf/553f58f1-f54f-2519-28d7-bd058cb9e3a0>

⁵¹ See e.g., 2022 Concentric Report, pp. 15-18.

may just invite a cost cap proposal where the stated exceptions swallow the commitment provisions themselves. Or if they don't, they would impose a heavy risk premium on all submitted proposals --- a risk premium that may be driven as much by the regulator's insistence on making the cost cap "binding" as anything else.⁵²

54. The main problem with these concerns is not that the regulatory regime will fail to address the issues rather, it is that using a competitive procurement process does not necessarily shield customers from the risks of development. In fact, the alleged benefit from cost caps is likely to be *less* effective in the future for two reasons:

- a. *Competition is likely to create an incentive for bidders to propose even more elaborate and aggressive cost caps.*⁵³ This raises two questions. First, how enforceable are these costs caps? When push comes to shove, it may be in the best interest of consumers to allow increases in the project costs to assure the project is completed as envisioned. Second, the more elaborate the cost caps, the more difficult it becomes to evaluate the value of the caps. Is a hard cap on construction costs worth two fewer years of an expense cap? And who should make that decision? Under the current competitive solicitation policy, the RTO, or other planning entity, makes that decision. Yet these entities are decidedly not economic regulators. Furthermore, we might expect that when administrative entities are asked to make judgements outside their area of expertise, they will make mistakes.
- b. Cost caps may become less effective if the uncertainty of projects increases over time from the changing supply and demand conditions e.g., due to the increased intermittency of the generation portfolio.⁵⁴ With more uncertainty the cost caps become more difficult to judge causing the evaluators to, reasonably, place less weight on those aspects of a bid.

55. The exclusions, design, and importance of costs caps in the selection process is of critical value in evaluating the incentive nature of the competitive procurement processes. As noted above, the relevant analysis is comparing traditional regulation to competitive procurement. Therefore, we need to dig into the details to see if there is any real difference between the two processes.

- a. *The costs to which the cost caps apply matter for the evaluation of the process.* For example, costs that are *unforeseen* are generally excluded from cost caps

⁵² Testimony of Craig Glazer, V.P. of Federal Government Policy, PJM Interconnection, LLC, June 22, 2016. FERC Competitive Transmission Development Technical Conference.

⁵³ See e.g., Morris Affidavit, ¶34, p. 14.

⁵⁴ One possible reason for the increased uncertainty is the changing congestion patterns related to greater penetration of intermittent resources. See Comments *supra* note 19

which may include items such as project rerouting, regulatory delays, and unexpected inflation, all of which tend to have significant effects on final project costs for large infrastructure projects.⁵⁵ These *unforeseen* costs are, presumably, *unforeseeable*, which means incumbents are likely to face these same cost pressures. Moreover, this places the burden on parties to challenge what is an *unforeseen* cost and what is not an *unforeseen* cost. This merely moves the discussion from an overall evaluation of the prudence of utility operations—a well-understood analysis—to an argument over what should or should not have been foreseeable, a less well understood analysis.

- b. *The costs caps represent a small part of the overall evaluation of bids.* For example, SPP, in its evaluation of Minco-Pleasant Valley-Draper 345kV Competitive Upgrade assigned roughly nine (9) percent of the total points for the evaluation of the proposals to the cost cap conditions.⁵⁶ Not surprisingly, the majority of the evaluation related to the engineering design and overall bid price. While other planning entities mention cost caps as an evaluation criterion, and in some cases undertake comparative analysis of the caps, or the related commitments under the caps, this factor is only one of dozens of factors that enter into the decision-making process.
- c. *Cost caps require judgment on the part of the planning entity.* For example, in the evaluation of the Artificial Island Project, PJM Staff noted that its decision on the value of the cost containment provisions of different bids hinged on its conclusion that the winning bidder had less *potential* of increased cost relative to the runner up.⁵⁷ This may have been a perfectly reasonable conclusion given the facts at the time, though it does not remove the administrative judgment from the competitive procurement processes.
- d. *The length of the cost cap affects its effectiveness.* Many cost caps apply to only a portion of the project's operational life. This creates an incentive, whether acted on or not, for developers to lower bids and reduce costs during the cap period, deferring necessary maintenance until such time as the contract can

⁵⁵ Commercial contracts that are truly fixed price often allocate the risk of *unforeseen*, as opposed to truly *force majeure*, events, to the contractor. For example, a contract dispute in 2008 between Progress Energy Florida, Inc. and a contractor building a power plant hinged on whether the unusual number of hurricanes during 2004—four major storms, an event that had *never* occurred before—which caused disruption in labor markets and delays in construction causing the contractor's costs to escalate beyond those allowed in the contract, constituted an event for which the contract price should be adjusted *ex post*. The court determined that the contract should not be adjusted. S&B/BIBB HINES PB3 JOINT VENTURE and S&B ENGINEERS AND CONSTRUCTORS, LTD., v. PROGRESS ENERGY FLORIDIA, INC., Case No. 8:80-cv-439-JDW-MAP, United States District Court for the Middle of Florida, Tampa Division.

⁵⁶ *Industry Panel Transmission Provider Public Report: RFP-000005*, April 12, 2022. <https://spp.org/documents/66929/minco-pleasant%20valley-draper%20rfp%20iep%20public%20report.pdf>

⁵⁷ <https://www.pjm.com/-/media/committees-groups/committees/teac/postings/artificial-island-project-recommendation.ashx>

be renegotiated. The implications of such a strategy are problematic for obvious reasons.

- e. *Who evaluates the cost caps matters to the overall results.* Incentive design is fundamentally a regulatory duty. Yet, contracts under this competitive procurement process are entered into by the regional transmission entity, despite the role of FERC to set annual revenue requirements. In addition to the difficult process of evaluating proposals, which the transmission entity is probably in a better position than the regulator to undertake, the entity is tasked with evaluating potentially complex economic questions concerning incentives and future enforceability of cost caps, which that entity is likely not in the best position to evaluate.
 - f. *The default governance mechanism suggests costs caps are less effective than otherwise would be the case.* As the competitive procurement process is implemented currently, bidders are simply incorporated as another transmission utility with the standard cost of service approach. This reduces the benefits from the cost cap mechanism turning the competitive process, largely, into a cost-of-service exercise. Indeed, cost caps have been, and can be, applied in traditional regulation. Traditional regulation can have the same result as the cost caps being proposed under the Order No. 1000 process without the administrative and other costs noted above.
56. In this case, neither the theory nor the evidence suggests that a *necessary* outcome of the competitive solicitation policy under Order No. 1000 is greater certainty or improved outcomes, cost or otherwise, for consumers. Expanding the scope of the Order No. 1000 competitive bidding is likely to exacerbate the concerns and shortcomings described in this Affidavit. Yet, even if that does not occur, it is certain that competitive procurement processes will be more difficult for the planning entities to review in the future likely leading to greater delays, more litigation, and a distraction of the planning entities from their foundational mission.
57. Some might argue that the limited scale of Order No. 1000 and the fact that the regulator already exists providing for the “fair” implementation of the contract, and the backstop of the traditional regulatory model if anything goes seriously wrong, effectively limits the potential costs of incomplete contracting. This view may well have merit to some extent. Order No. 1000 does not attempt to reconfigure the entire franchise or even some large portion of the franchise for any incumbent transmission provider. Indeed, the Order No. 1000 competitive bidding accounts for a relatively small fraction of all transmission projects. Even if several of the projects fail due to the contractual concerns, this is hardly a catastrophe, one might argue, for the US transmission system. Yet, this argument begs the question of why undertake a policy that either has negligible effect since few projects fall under the policy or effectively reverts to traditional regulation? The process to date does not appear to have created innovative transmission projects and lower costs, though some controversy exists

concerning those results.⁵⁸ Claims that competition will massively reduce the cost of transmission expansion in the US over the coming years, are, to say the least, controversial, despite the *assumption* that such results are true. And, in any event, those benefits, whatever the actual value, must be offset by the potential costs of the process, which I have described herein and may be considerable.

⁵⁸ Compare, for example, Pfeifenberger, J., Chang, J., Sheilendranath, A., Hagerty, J., Levin, S., and Jian, W., *Cost Savings Offered by Competition in Electric Transmission*, The Brattle Group, April 2019 and 2019 Concentric Report.

Attachment 1: Qualifications of Carl R. Peterson

Professional Experience

- 2017- **Concentric Energy Advisors**
Executive Advisor (Affiliate)
Primary area of interest: public utility regulation
- 2008-2017 **NERA Economic Consulting**
Academic Affiliate
Primary area of interest: public utility regulation
- 2006-2008 Senior Consultant
- 2000-2006 Consultant
- 1999-2000 **Advanced Engineering Associates International**
Consultant (Contract)
Provided economic and regulatory advisory services to Romanian electric sector on reform and restructuring of commercial activities. Work included reviewing commercial codes of conduct, unbundling of metering, and reviewing wholesale market trading arrangements.
- 1996-2000 **Illinois Commerce Commission**
Senior Policy Advisor for Energy
- 1994-1996 Rates Analyst (Energy/Water)
- 1993-1994 **The Center for Regulatory Studies, Illinois State University**
Staff Economist
Analyzed economic and regulatory issues relating to public utility regulation and the environment. Authored reports on resource optioning for least-cost planning, economic and statistical modeling of electricity demand, state's regulatory responses to competition in the electric industry and provided economic analysis for Regulatory Initiatives Task Force report on regulatory options to address electric industry restructuring in Illinois.
- 1991-1993 **Illinois State University**
Graduate Assistant
Provided research assistance relating to intellectual property rights, economics of technological change, and cigarette and liquor demand. Duties included data collection and handling, SAS programming and written analysis. Assisted teaching undergraduate microeconomics and graduate-level mathematical economics.

Teaching Experience

- University of Illinois Springfield**
2017- Instructor Economics
2011-2016 Lecturer in Economics
2008-2011 Visiting Assistant Professor of Accountancy
- Courses taught: Graduate: Fundamentals of Business-Decision Making (MBA Program), Advanced Public Utilities Pricing (Certificate in Regulation), Economics for Administration. Undergraduate: Introduction to Macroeconomics, Introduction to Microeconomics, Business Law, Statistics for Economics and Business
- Maastricht School of Management, The Netherlands**
2012-2013 Visiting Lecturer, Maastricht MBA Vietnam – Ho Chi Minh City University of Technology, Ho Chi Minh City, Vietnam
- Course taught: Managerial Economics (graduate)
- Michigan State University**
2003- Invited Lecturer, Institute for Public Utilities
- Annual Lecture: Regulatory Studies Program (“Camp NARUC”) topics: Wholesale gas markets and retail rate design for gas utilities
- Annual Lecture: Advanced Regulatory Studies Program, topic: Cost of service and pricing for energy and water utilities
- Eureka College**
1993 Adjunct Faculty
Course taught: microeconomic theory.
- Illinois Central College**
1992-93 Adjunct Faculty
Courses taught: macroeconomic theory; applied economics for business students.

Education

University of Illinois, Chicago, Illinois
Ph.D., Economics, 2007

Illinois State University, Normal, Illinois
M.S., Economics, 1993
B.S., Economics, 1991

Representative Project Experience

Professional Activities: Consulting and Testifying Expert

Provided policy analysis support for multiple water rate cases for a large investor-owned water utility. Work included researching and analyzing regulator agency policy toward revenue recovery issues, decoupling and future test-year, pricing issues, lead service replacement and cloud computing, among other issues.

Conduct cost of service analysis on electric smart grid for purposes of pricing new services (on-going).

Cost of service, revenue requirement, and pricing reports for Bermuda Electric Company. (2015, 2019, 2020-21, 2022-2023)

Gas cost of service and rate design (ENSTAR Gas Alaska).

Developed electric transmission tariff for Chugach Electric in Alaska.

Evaluation of Options Regarding the Creation of an Independent System Operator or Similar Structure for Electric Utilities in the Railbelt (Alaska)

Pricing of retail standby service for a Chugach Electric in Alaska.

Evaluation of damages from loss of Wolf Creek nuclear power plant.

Evaluation of SILCO transactions for large electric generation company.

Evaluate impact of new transmission line on competitiveness of Illinois wholesale electric market for DC transmission line.

Evaluate impact of new transmission line on competitiveness of Illinois wholesale electric market for American Transmission Company

Evaluation of regulatory financial conditions for electric generation investment in Alaska.

Evaluation of cost trackers for fuel and purchase power expenses for large Western US electric utility.

Evaluation of reasonableness of administrative and general costs for two major Midwestern electric utilities.

Evaluation of incentive regulation for large Midwestern electric utility. (2008)

Evaluation of prudence of certain distribution investments and O&M costs for Commonwealth Edison.

Rate design and cost of service advice for several gas and electric utilities

Market structure and electric pricing for electric sector of the Republic of Macedonia.

Evaluation of POLR responsibility in state of Illinois for Commonwealth Edison.

Evaluation of market structure options and development of tariff model for Macedonian electric sector.

Evaluation of future options for the reform of the Albanian electric sector.

Evaluation of electric industry structure and potential incentives mechanisms for building power plants for WEPCO.

Estimation of potential energy efficiency gains for Wisconsin Electric Company (WEPCO) and Wisconsin Public Service in support of power plant construction.

Evaluation of tariff options for Otter Tail Power Company.

Evaluation of performance-based regulation of gas procurement, electric bundled service, and electric unbundled services.

Evaluation of competitiveness of wholesale electric market in Midwest for Northern Indiana Public Service Company.

Evaluation of options for unbundled distribution rates and policies toward small-use customer choice for Illinois Power.

Review of gas rate design for peaking service and evaluated electric generation siting decisions in California for Southern California Gas Company.

Evaluation of the results of small customer electric choice and the role of the demand-side of the market in restructured electric market in Illinois for Illinois Commerce Commission and Department of Commerce and Community Affairs.

Illinois Commerce Commission

Involved in implementation of Illinois' electric industry restructuring law, including unbundling of general service tariffs and delivery services tariffs, writing and designing rules governing utility affiliate relations, and functional separation.

Lead staff member on ICC electric policy committee investigation into distributed resources' impact on a restructured electricity market including standby and backup rate design.

Advised Commission on incentive rate making for gas LDCs, contract and tariff issues for gas, water and electric utilities and merger issues for telecommunications industry.

Performed analyses of relevant academic and industry literature, in addition to tracking trends in the electric, natural gas and coal industries for the ICC. Also provided detailed regulatory policy analyses in support of the Commissioner's opinions and Commission Orders involving such issues as telecommunications and energy mergers, market power issues concerning electric utility energy services affiliates, economic aspects of incentive rate making for the natural gas industry, methodologies for recovering fuel costs in Illinois, and regulatory policy concerning eminent domain as it relates to both common carriers by pipeline and regulated public utilities.

Served as an economic and rates analyst, providing expert testimony before the Commission on such issues as cost of service studies and rate design for gas, electric, and water utilities. Reviewed and evaluated gas and electric utility-sponsored tariffs and riders, analyzed technical aspects of rate design-related issues, and provided technical expertise on real-time pricing of electric utility service for Commissioners.

Other Professional Experience

Illinois Smart Grid Initiative (ISGI): The ISGI was a statewide policy forum for addressing issues related to the modernization of the electric grid run in the Summer/Fall 2008. The ISGI was sponsored by the Galvin Electricity Initiative and organized by the Center for Neighborhood Technologies. Duties included providing written analysis of policy issues, moderating policy forums, creating meeting agendas, and coordinating meetings.

University of Illinois Springfield

Conduct introductory and advanced seminars on cost of service and pricing for water, gas, and electric utilities. Seminars are conducted several times a year for a variety of entities including gas, water, and electric utilities, state and federal regulatory agencies, international organizations as well as seminars open to the industries.

Co-organized *Frameworks For Regulation of Public Utilities in the 21st Century*, a monograph series exploring regulatory reform in the midst of technological and economic changes in the industries. 2017

Co-organizer Illinois Smart Grid Policy Forum convened to address on-going policy issues in deployment of smart grid for Illinois electric utilities. 2013

Instructor for seminars on cost-of-service regulation for public utility regulatory bodies (Federal Energy Regulatory Commission, New Mexico, Connecticut, Arkansas, California, New Jersey, South Carolina, Republic of South Africa)

Evaluation of public policies for implementation of a smart grid in Illinois; co-author of first smart grid report in Illinois. 2008-09

Evaluation of cost recovery mechanism for smart grid related investments. 2010

Faculty member annual and advanced gas rates schools. 2008-

Faculty member Michigan State University Institute for Public Utilities. 2008-

Host of Illinois Statewide Smart Grid Collaborative workshops. 2009-2010

Supervise student research assistance and advising on Master's thesis completion

Expert Testimony/Reports

Expert report on gas storage rates and cost of service. Filed with the Regulatory Commission of Alaska, (Docket No. U-21-058), February 2022.

Expert report on electric embedded cost of service study. Filed with the Regulatory Authority of Bermuda, November 2021.

Expert Testimony on Marginal Cost of Service, Maine Public Utilities Commission, (Docket No. 2021-00024), 2021.

Expert testimony on formula rates. Regulatory Commission of Alaska, (Docket No. U-20-012), November 2020.

Expert report on pricing Bermuda Electric Company's Retail and Wholesale electricity tariffs. Filed with the Regulatory Authority of Bermuda, April 2019.

Expert testimony on revenue requirement and gas storage, Regulatory Commission of Alaska, (Docket No. U-18-043), February 2019.

Expert testimony on Gas LDC cost allocation, Regulatory Commission of Alaska, (Docket No. U-16-066), February 2017.

Expert testimony on electric transmission pricing and policy issues, Regulatory Commission of Alaska, (Case U-15-081), December 2015.

Expert Report on the Cost of Capital for Bermuda Electric Light Company, Bermuda Energy Commission, June 2015 (co-author).

Expert Report, "Evaluation of Options Regarding the Creation of an Independent System Operator or Similar Structure for Electric Utilities in the Railbelt," submitted in Regulatory Commission of Alaska Docket I-15-011, June 2015 (co-author).

Expert Testimony of Gas LDC cost allocation, Regulatory Commission of Alaska, (Case U-14-11), May 2015.

Circuit court of Jackson County Missouri, Kansas City Power and Light Company, Kansas Gas and Electric Company, Kansas Electric Power Cooperative, and Wolf Creek Nuclear Operating Corporation v. ABB Inc., et. al. Case No. 1316-CV09206. Expert report and testimony on behalf of Kansas City Power and Light Company calculating the damages from the forced outage of Wolf Creek Nuclear power station, November 2014.

Expert opinion on barriers to entry to local coal reclamation rights market. Rector et. al v. White County Coal et. al., Docket No. 06 L 15 in the Circuit Court for the Second Judicial Circuit, White County, Illinois, Fall 2009.

Energy Efficiency and Power Plant Expansion. Wisconsin Electric Company plant construction proposal before the Public Service Commission of Wisconsin (PSCW Docket Nos. 05-AE-109, 05-CE-117, 05-CE-130, 6650-CG-211, and 137-CE-104).

Rate design and revenue allocation issues. Northern Illinois Gas Company general rate case before the Illinois Commerce Commission (ICC Docket No. 95-0219).

Cost of service. Illinois-American Water Company general rate case before the Illinois Commerce Commission (ICC Docket No. 95-0076).

Merger-related rate design and cost of service issues. Merger of Union Electric and Central Illinois Public Service before the Illinois Commerce Commission (ICC Docket No. 95-0551).

Merger-related rate design and costs of service issues. Merger of United Cities Gas Company and Monarch Gas Company before the Illinois Commerce Commission (ICC Docket No. 95-0349).

Reports

Review of the Graduated Facilities Charge, prepared for the Bermuda Electric Company, Limited, November 2015 (with S. Collins, R. Fishbein and G. Maguire) (Report is currently confidential and proprietary.)

Evaluation of Options Regarding the Creation of an Independent System Operator or Similar Structure for Electric Utilities in the Railbelt,” report prepared for Chugach Electric Association, Inc, filed with the Alaska Regulatory Commission in Docket I-15-001, June 2015 (with H. Fraser)

The Cost of Capital for Bermuda Electric Company,” filed with the Bermuda Energy Commission, June 2015, (with G. Maguire and S. Gainger).

Empowering Consumers Through a Modern Electric Grid, Report of the Illinois Smart Grid Initiative, April 2009, Center for Neighborhood Technologies, Chicago, IL (co-author).

Innovation in Retail Electric Markets: The Overlooked Benefit, Prepared for COMPETE, Constellation New Energy, Direct Energy, Green Mountain Energy, Hess Corporation, Integrys Energy Services, Reliant, Strategic Energy, and Suez Energy, Chicago, IL, March 2008 (with K. McDermott).

Design of Buyback Tariffs for Customer-Owned Renewable Generation, prepared for We Energies, Milwaukee, WI, 2007 (with R. Hemphill). (Report is confidential and proprietary)

Summary of Findings and User Guide: Tariff Model for the Macedonian Electric Sector, prepared for the Ministry of Economy, Republic of Macedonia, under contract with United States Agency for International Development, 2003 (with K. McDermott and R. Zarumba).

“Weather Adjustment in Gas Incentive Plans,” prepared for Michigan Consolidated Gas Company, Detroit, MI, September 2003 (with K. McDermott).

“Provider of Last Resort Services: A Survey of US States,” prepared for Commonwealth Edison Company, Chicago, IL, June 2003 (with K. McDermott).

Distributed Resource Investment in Albania: Regulatory Options for Introducing Commercial Incentives and Promoting Solutions to Meeting Electricity Demand, prepared for the law firm of Pierce Atwood under contract with United States Agency for International Development, January 2003 (with K. McDermott).

Restructuring Options for the Electric Sector in Macedonia, Report 1 and 2; prepared for the law firm of Pierce Atwood under contract with United States Agency for International Development, 2002 (with K. McDermott and R. Zarumba).

Introducing Competition into the Albanian Electric Sector, prepared for the law firm of Pierce Atwood under contract with United States Agency for International Development, 2001 (with K. McDermott).

The Indiana Electric Market: A Description of the Competitive Process, prepared for Northern Indiana Public Service Company, Merrillville, Indiana, 2001 (with K. McDermott and W. Olson; report is proprietary).

“Community Based Energy Program: A Study of Load Aggregation and Peak Demand Reduction,” prepared for Illinois Department of Commerce and Community Affairs and the Illinois Commerce Commission, Springfield, IL, 2001 (contributing author).

“Electric Distribution Rates: A Primer,” prepared for Illinois Power, Decatur, Illinois, 2001. (with K. McDermott; report is proprietary).

“Unbundling of the Metering Function: Concepts and Applications,” prepared for Electric Sector Restructuring Group-Romania, 2000.

“The Romanian Electric Sector Commercial Code: Review and Comments,” prepared for Electric Sector Restructuring Group-Romania, 2000.

“Reforging the Compact: An Examination of Illinois’ Electric Industry and Its Regulatory Framework,” Report of the Illinois Regulatory Initiatives Task Force, 1995 (contributing author).

“Resource Optioning: Competition in the Electric Industry and Implications for Flexibility within the IRP Process,” white paper, Center for Regulatory Studies, prepared for the Illinois Department of Energy and Natural Resources, Office of Strategic Planning, 1994 (with M.J. Morey).

“Response of the IRP Process to Competition in the Electric Industry: A Survey of US States,” white paper, Center for Regulatory Studies, prepared for the Illinois Department of Energy and Natural Resources, Office of Strategic Planning, 1994.

“Preliminary Estimates of Price Sensitivity for Customers on NMPC’s SC-3 and SC-3A Tariffs,” Center for Regulatory Studies, report prepared for Niagara Mohawk Power Corporation, 1994 (with M.J. Morey).

“Greenhouse Gas Emissions: An Inventory for Illinois,” Illinois Department of Energy and Natural Resources, 1994 (contributing author).

Publications

“Testing Alternative Theories of Capital Structure in the US Electric Industry,” *Advances in Business Research*, 101-111, 9(1), 2019. (with K. McDermott)

“Regulatory Decision-Making: An Event Study of a Capital Structure Decision,” *Journal of Accounting and Finance*, 18(9), 180-196, 2018. (with K. McDermott)

“The Future of the Electric Grid and its Regulation: Some Considerations,” *The Electricity Journal*, 31(3), 18-25, 2018. (with A. Ros)

“The Illinois Commerce Commission’s Pro Forma Adjustment Rule: An Event Study of Regulatory Decision-Making,” *Advances in Business Research*, 3(1), 53-62, 2012. (with K. McDermott)

“Mergers and Acquisitions in the US Electric Industry: State Regulatory Policies for Reviewing Today’s Deals,” *The Electricity Journal*, 20(1), pp. 8-25, 2007 reprinted in *The Line in the Sand: The Shifting Boundary Between Markets and Regulation in Network Industries*, S. Voll and M. King (eds), 2007. (with K. McDermott).

“Rethinking the Implementation of the Prudent Cost Standard,” in *The Line in the Sand: The Shifting Boundary Between Markets and Regulation in Network Industries*, S. Voll and M. King (eds), 2007. (with K. McDermott and R. Hemphill).

“Critical Issues in the Regulation of Electric Utilities in Wisconsin,” *Wisconsin Policy Research Institute Report*, 19(3), pp. 1-69, 2006 (with K. McDermott and R. Hemphill).

“The Anatomy of Institutional and Organizational Failure,” in *Obtaining the Best from Regulation and Competition*, M. Crew and M. Spiegel (eds.), Kluwer Academic Publishers, London, UK, 2005, pp. 65-92 (with K. McDermott).

“Performance-Based-Rates Upward Trend to Continue,” in *Natural Gas and Electricity*, 20(6), 2004 (with K. McDermott).

“Is There a Rational Path to Salvaging Competition?” *The Electricity Journal*, 15(2), pp. 15-30, 2002 (with K. McDermott).

“Further State Electric Deregulation can be Guided by Gas Experience,” in *Natural Gas and Electric Power Industries Analysis*, R.E. Willett (ed), Financial Communications Company, Houston, TX, 2002, pp. 343-372 (with K. McDermott).

“The Essential Role of Earnings Sharing in the Design of Successful Performance-base Regulation Programs,” in *Electricity Pricing in Transition*, A. Faruqui and K. Eakin (eds.), Kluwer Academic Publishers, London, UK, 2002, pp. 315-328 (with K. McDermott).

“The Efficacy of Interruptible Rate Design as a Tool for Resource Planning,” in *Proceedings of the Ninth NARUC Biennial Regulatory Information Conference*, 1994 (with T. Harvill and J. Webber).