Teaching an Old Dog New Tricks: Adapting Public Utility Commissions to Meet Twenty-First Century Climate Challenges

TEACHING AN OLD DOG NEW TRICKS: ADAPTING PUBLIC UTILITY COMMISSIONS TO MEET TWENTY-FIRST CENTURY CLIMATE CHALLENGES

*Inara Scott**

Climate change and efforts to address it have put the electric utility system under increasing pressure to adapt and evolve. Key to the success of these efforts will be the support of public utility commissions, the state agencies that oversee retail electric utilities. In an effort to determine how these commissions will make decisions, this Article explores the history, enabling legislation, and jurisdiction of commissions. It concludes that the authority and purpose of commissions has been narrowly defined to focus almost exclusively on short-term rate impacts to current utility customers. As a result, efforts to reduce greenhouse gas emissions, modernize or transform the electric grid, or expand the path for new technologies such as electric vehicles, will not come from commissions and in fact may be blocked by the same. Accordingly, this Article offers options for modernization, ultimately recommending a melding of economic and environmental goals through a long-term planning process that balances cost and risk, yet remains squarely within the jurisdiction and historical purpose of the regulatory commission.

INTRODUCTION

In recent years, the United States' electric system has taken on increasing political and popular prominence as concerns about climate change—a process

* Assistant Professor, College of Business, Oregon State University; J.D., Lewis & Clark Law School. Professor Scott practiced energy law for more than a decade before joining the faculty at Oregon State University. Professor Scott would like to thank the reviewers and participants in the ALSB Invited Scholars Colloquium for their helpful feedback and advice on this Article, and Bryan Thompson for his research assistance.

that is now widely recognized by scientists around the globe[1]—and attendant environmental damage have escalated.[2] Global warming affects the U.S. electrical system in a number of ways. First, fossil fuel electric generating facilities are the leading contributor to the greenhouse gasses ("GHGs") that cause global warming,[3] which means that addressing GHG emissions on a significant scale will require attention to the future of these facilities. Second, deadly heat waves and the gradual increase of summer peak loads caused by global warming will put pressure on already strained electric grids.[4] At the same time, while scientists cannot conclusively blame global warming for Superstorm Sandy, they have warned that the occurrence of similar massive storms is likely to increase in the future,[5] a possibility which has the potential to cause major

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[1] The Intergovernmental Panel on Climate Change ("IPCC") is the international body generally acknowledged to be the leading scientific organization in the field of global warming. For information about the IPCC and copies of publications, see *Intergovernmental Panel on Climate Change Home*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, http://perma.cc/BEE5-XDHQ. For the IPCC's most recent summaries of global data, research, and policy related to climate change, see INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS (2013), *available at* http://perma.cc/AYR8-7GNU. The U.S. Environmental Protection Agency's ("EPA") website also presents a straightforward summary of climate change science. *See Climate Change Science*, EPA.GOV, http://perma.cc/SD2M-GPWP.

[2] After significant controversy, in 2009, EPA concluded that "elevated concentrations of the well-mixed greenhouse gases and associated climate change affect public health" because they are associated with, *inter alia*, "changes in air quality, increases in temperatures, changes in extreme weather events, increases in food- and water-borne pathogens, and changes in aeroallergens." Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,497 (Dec. 15, 2009). This finding was upheld in Coal. for Resp. Reg. v. EPA, 684 F.3d 102, 121–23 (D.C. Cir. 2012), *cert. granted*, 134 S. Ct. 468, 187 L. Ed. 2d 278 (2013).

[3] *See* EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990 – 2010, No. 430-R-12-001, ES-12 (2012), *available at* http://perma.cc/YGY6-PGRS ("Energy-related activities, primarily fossil fuel combustion, accounted for the vast majority of U.S. CO_2 emissions for the period of 1990 through 2010 . . . . Overall, emission sources in the Energy chapter account for a combined 87.0 percent of total U.S. greenhouse gas emissions in 2010."). Electricity generation accounts for forty-two percent of all CO_2 emissions in the United States. *Id.* at 3–11.

[4] *See* NATIONAL CLIMATE ASSESSMENT DEVELOPMENT ADVISORY COMMITTEE, DRAFT CLIMATE ASSESSMENT, ES-1 (2013), *available at* http://perma.cc/A3V9-2MGH (noting, "[c]ertain types of weather events have become more frequent and/or intense, including heat waves, heavy downpours, and, in some regions, floods and droughts"); Ning Lu et al., *Climate Change Impacts on Residential and Commercial Loads in the Western U.S. Grid*, 25 POWER SYSTEMS, IEEE TRANSACTIONS ON POWER SYSTEMS 480, 486–87 (2010) (assessing the climate-change impacts on the Western electrical system and concluding that the grid will experience increasing summer peak loads, as a result of increasing summer temperatures and concomitant indoor air-conditioning load); *see also* James A. Holtkamp & Mark A. Davidson, 46 IDAHO L. REV. 379, 380 (2010) (noting significant need for transmission system expansion and upgrade in the Western United States); Robert E. Livezey & Philip Q. Hanswer, *Redefining Normal Temperatures*, PUB. UTIL. FORT. 28, 28–33 (May 2013) (describing the need for utility resource planning to account for significant changes to "normal" weather temperatures).

[5] *See* Coral Davenport, *The Scary Truth About How Much Climate Change is Costing You*, NAT'L J., Feb. 7, 2013, http://perma.cc/8PX9-6J63. A recent study suggests that some extreme climate events *can* be linked to global climate change. *See* EXPLAINING EXTREME EVENTS OF 2012 FROM A CLIMATE PERSPECTIVE (T. C. Peterson et al. eds., 2013), *in* BULL. AMER. METEOR. SOC., Sept. 2013 (special supplement), *available at* http://perma.cc/GQ9V-WU9B.

power outages and billions of dollars in damage to utility infrastructure.[6] Finally, the desire to address GHG emissions has spurred interest in transitioning the transportation sector away from conventional gasoline-powered cars to electric vehicles ("EVs").[7] EVs could put a strain on the electric grid, if charging occurs during peak load windows, or could serve as a net benefit, if EV batteries can function as a form of distributed storage.[8] Either way, EVs stand to increase overall load on electric utility systems. One final area of concern that has not received much publicity is the potential unreliability of new thermal power plants, which require enormous amounts of water to operate, in times of drought or in areas already experiencing water shortages.[9]

A number of policy initiatives have sprung up to address these pressures on the utility system, each of which creates its own challenges and policy tradeoffs.[10] One such proposal is an attempt to transition a significant portion of utility portfolios to renewable resources.[11] While an important step in reducing fossil fuel use and limiting GHG emissions, penetration of solar, wave energy, and new biofuels still requires a willingness to pay above-market costs, which may put long-term pressure on rates to utility customers, a particular challenge in tight economic times.[12] Integration of new renewable resources, particularly distributed resources, also requires a commitment to new transmission and dis-

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[6] *See* THOMAS J. WILBANKS ET AL., EFFECTS OF CLIMATE CHANGE ON ENERGY PRODUCTION AND USE IN THE UNITED STATES 38, 45 (2008), *available at* http://perma.cc/XNX6-6Q8D; *see also* Rosemary Lyster, *Smart Grids: Opportunities for Climate Change Mitigation and Adaptation*, 36 MONASH U. L. REV. 173 (2010) (describing threats to electric infrastructure from climate change, and impacts that smart grids could have on adaptation and mitigation in the electric transmission system); Lesley K. McAllister, *Adaptive Mitigation in the Electric Power Sector*, 6 B.Y.U. L. REV. 2115, 2126–27 (2011) (identifying impacts of climate change on the electric power industry, including extreme weather events).

[7] *See* A.B. Boulanger, *Vehicle Electrification: Status and Issues*, 99 PROCEEDINGS OF THE IEEE 1116 (2011) (analyzing barriers to adoption of EVs and offering strategies for achieving greater market penetration); Jake Seligman, *Electric Vehicles and Time-of-Use-Rates: The Impending Role of the New York State Public Service Commission in Regulating our Transportation Future*, 28 PACE ENVTL. L. REV. 568, 568–71 (2011) (discussing "fuel inflexibility" caused by the transportation sector's reliance on oil, and the way that EVs would help solve this problem).

[8] *See* Seligman, *supra* note 7, at 571; Matthew Hutton & Thomas Hutton, *Legal and Regulatory Impediments to Vehicle-to-Grid Aggregation*, 36 WM. & MARY ENVTL. POL'Y REV. 337, 338, 342–44 (2012) (describing transmission constraints and a method of aggregating EV batteries to help, rather than undermine, grid stability).

[9] *See* Benjamin K. Sovacool & Kelly E. Sovacool, *Preventing National Electricity-Water Crisis Areas in the United States*, 34 COLUM. J. ENVTL. L. 333, 335 (2009) (noting the "electric-water nexus" and the potential for "forced shutdowns . . . due to lack of water"). Many of the solutions commonly posited in response to the climate change crisis, including increased energy efficiency and adoption of renewable resources, could also address water shortage concerns. *Id.*

[10] *See* JOSEPH P. TOMAIN, ENDING DIRTY ENERGY POLICY: PRELUDE TO CLIMATE CHANGE 163 (2011) (providing a list of new policy changes necessary to transform the traditional utility model to the utility of the future).

[11] *See generally* DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD 528–52 (2011) (describing the history of and the resurgence of interest in renewable energy and current efforts to develop renewable technologies).

[12] *See* Matthew L. Wald, *Cost Works Against Alternative and Renewable Energy Sources in Time of Recession*, N.Y. TIMES, March 28, 2009, http://perma.cc/9DZQ-EZN7; NAT'L RENEWABLE ENERGY LAB., RENEWABLE ELECTRICITY FUTURES STUDY, 5-1–5-2 (M. M. Hand et al. eds., Vol. I 2012) (NREL/TP-6A20-52409), *available at* http://perma.cc/L7UM-A5V7.

tribution infrastructure.[13] One key technology that will facilitate the integration of new resources while increasing efficiency and improving outage response is the so-called "smart grid," a collection of technologies that allows for two-way communication between end users and the utility, and a two-way exchange of power between distributed resources and the grid.[14] Needless to say, the smart grid is not simple or free, and its adoption will require time and resources from utilities, as well as a financial commitment from customers and regulators.[15] Finally, even fossil fuels are not immune from the need for change. Emissions from fossil fuel generation facilities (particularly coal-fired generating plants) have been targeted by new EPA regulations, raising the question about the long-term efficacy of new plants.[16]

The utility industry includes a variety of participants, from small power producers, to federal power agencies, to power marketers. Within the retail market, however, customers are served primarily by investor-owned utilities ("IOUs"), cooperatives, and publicly-owned utilities ("publics").[17] Approximately seventy percent of retail customers are served by IOUs,[18] which are

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[13] *See id.* at 2–9.

[14] This, of course, is an overly simplified description of an extremely complex collection of technological processes. "In reality, the smart grid is anything but simple, and doesn't lend itself to politicians' sound bites. It's a multifaceted technological conversion, comprised of enabling technologies such as advanced metering infrastructure and meter data management; integration of new renewable generation and storage methods; consumer applications such as home area networks and smart appliances that further enable demand response; and perhaps most significantly, massive and long-term investment in upgrading distribution technology." Steven Anderson, *Saving the Smart Grid: Hype, Hysteria, and Strategic Planning*, PUB. UTILITIES FORTNIGHTLY, Jan. 2011, http://perma.cc/JU9G-4K5Q. For a straightforward description of the smart grid and its potential effects on the utility system, *see* PETER FOX-PENNER, SMART POWER: CLIMATE CHANGE, THE SMART GRID, AND THE FUTURE OF ELECTRIC UTILITIES 34-38 (2010).

[15] Although smart grid installations clearly require a significant upfront investment, the question of whether the technology will ultimately result in net costs or net benefits remains hotly contested. The case of Baltimore Gas & Electric Company's request for approval of a smart grid project is instructive: There, the Maryland Public Service Commission concluded that the net benefits of the project were not adequately demonstrated. *See infra* notes 146–149 and accompanying text. Most analysts conclude that smart grid applications will benefit the utility system in the long run, but short-term benefits may be hard to deliver. "Everybody who knows anything knows it's only going to slow the acceleration of cost. It's not about lowering cost." Anderson, *supra* note 14 (quoting Chris Hickman, President of Innovari Energy and former executive at PNM, a New Mexico-based electric utility).

[16] *See* Arnold W. Reitze, Jr., *Federal Regulation of Coal-Fired Electric Power Plants to Reduce Greenhouse Gas Emissions*, 32 UTAH ENVTL. L. REV. 391, 396–401, 402–05, 412–27 (2012) (discussing the impact of CO_2 reports, New Source Performance Standards, National Ambient Air Quality Standards, and the Prevention of Significant Deterioration construction permit program on coal-fired electric generation facilities); *see also* Alice Kaswan, *Climate Change, the Clean Air Act, and Industrial Pollution*, 30 UCLA J. ENVTL. L & POL'Y. 51, 82–89 (2012) (describing current EPA initiatives to be applied to coal plants and the potential for greater regulation under a co-pollutant scheme that would look at various pollutants in combination with each other).

[17] *See* ELEC. ENERGY MKT. COMPETITION TASK FORCE, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY (2007), *available at* http://perma.cc/YBP2-2X9H (providing data showing that, as of 2004, publics, cooperatives, and IOUs served 95.3% of retail customers).

[18] *See id.*

primarily regulated by state public utility commissions.[19] These commissions have the authority to approve (or disapprove) of the recovery of costs related to new generation facilities, new communications and meter reading infrastructure, and distribution system improvements. IOUs are not likely to acquire new resources—whether they are EV charging stations, smart grid technologies, or renewable generation facilities—if they run a significant risk of not being able to recover the costs of such investments. As a result, regulatory commissions have significant power to determine how and when the electric utility grid will evolve, the types of generation facilities that will be constructed, and the amount of money and capital investment that will be expended toward various resource options, including renewables and energy efficiency. The significant authority exercised by these regulatory bodies raises important questions: What types of decisions will public utility commissions make in the future? What criteria will they use to make such decisions? Will public utility commissions prioritize technological advances, environmental policy goals, or rate impacts when considering whether to approve the costs of new investments?

The short answer is that, unless legislation specifically requires public utility commissions to consider environmental, technological, or policy matters, they will focus—almost exclusively—on rate impacts to current customers.[20] As a regulatory agency, a public utility commission must make decisions within the framework of its applicable enabling legislation and related rules and regulations.[21] Unlike environmental law, which has focused primarily on the containment of environmental harm without regard for cost,[22] energy law[23]—including law governing public utility commissions—has consistently focused on cost containment and net economic benefits[24]. As will be demonstrated herein, utility enabling statutes and judicial precedent interpreting those statutes

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[19] Generally, state public utility commissions regulate retail sales and distribution of electricity, while the Federal Energy Regulatory Commission ("FERC") regulates wholesale transactions and transmission. *See* New York v. Fed. Energy Reg. Comm'n, 535 U.S. 1, 5–7 (2002) (describing history of state and federal regulation of public utilities).

[20] *See* Part I, *infra*.

[21] *See* Lars Noah, *Interpreting Agency Enabling Acts: Misplaced Metaphors in Administrative Law*, 41 Wm & Mary L. Rev. 1463, 1493 (2000) (describing the "once dominant" rule-of-law ideal, which strictly limits agency authority according to enabling statutes, and noting that, while other paradigms now compete with this rule, none have replaced it).

[22] *See, e.g.*, Coal. for Resp. Reg. v. EPA, 684 F.3d 102, 126–27 (D.C. Cir. 2012), *cert. granted*, 134 S. Ct. 468, 187 L. Ed. 2d 278 (2013) (holding that EPA has a non-discretionary duty to regulate air pollutants, regardless of the cost of regulation); *see also* Lincoln Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 Idaho L. Rev. 473, 475–76 (2010) (describing key differences between environmental and energy law). The commitment to action—even in the face of scientific uncertainty—in order to prevent significant harm is generally known as the "Precautionary Principle." *See* Nicholas A. Ashford & Charles C. Caldart, Environmental Law, Policy and Economics 175–78 (2008) (describing the theory and application of the precautionary principle in U.S. environmental law).

[23] The term "energy law" can be slippery and difficult to define. Citing a number of sources, Professor Lincoln Davies notes the "blurry" boundaries of energy law, and suggests a definition encompassing both substantive "hard" law and "soft" policy, both of which affect the rights of individuals and governments with regard to energy resources. *See* Davies, *supra* note 22, at 478–79 (2010).

[24] *Id.* at 480.

direct commissions to prioritize low rates and safe and reliable service.[25] Environmental impacts and other related issues are considered only to the extent they cause direct, measurable, and near-term financial impacts on ratepayers.[26]

This Article illustrates that the strict economic focus of public utility commissions will direct future decisions in two predictable ways: First, environmental impacts will be considered only to the extent that they directly impact rates paid by the affected utility's customers in the near term. Second, risky investments without near-term economic benefits will not be pursued.[27] If this is an acceptable future (and for some, it will be) no new policies need be enacted. However, if the public and policymakers want to see the system evolve and transform—whether to achieve significant declines in GHG emissions or to add significant new energy efficiency and renewable resources—structural change at the public utility commission level will be required.

The purpose of this Article is not to convince the reader that anthropogenic climate change is real, or that our electricity system is in dire need of significant change, from infrastructure improvements to long-term transitions to renewable resources. A number of excellent treatises and articles do just that.[28] Rather, the purpose here is to demonstrate that, given the history and development of the current regulatory structure, public utility commissions are unlikely to support significant evolution or change within the utility industry, and may in fact create impediments to the evolutionary process. For those who want to see the utility system become significantly greener, more efficient, and less reliant on fossil fuels, it will become evident that this regulatory structure must be changed. Accordingly, this Article will offer options for modifying the regulatory structure to allow for and support change in the industry.

Part I of this Article describes the growth of the electric industry and the development of public utility commissions. This part presents the foundation of public utility commission jurisprudence and the resulting applied economic mission of utility commissions. Part II illustrates how, based on this foundation, courts and commissions alike have rejected calls for a more expansive interpretation of commission jurisdiction to consider environmental policy issues. This Part also demonstrates how the economic foundation of utility regulation drives decisions from smart grid investments to rules related to EV charging stations, and ultimately slows progress toward a new, twenty-first century electric industry.

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[25] *See* Part I.C., *infra*

[26] *See* Part II, *infra*.

[27] *Id.*

[28] *See* Joshua P. Fershee, *Misguided Energy: Why Recent Legislative, Regulatory, and Market Initiatives are Insufficient to Improve the U.S. Energy Infrastructure*, 44 HARV. J. ON LEGIS. 327, 333 (2007) (arguing that "a coherent and comprehensive federal energy program is needed" to solve critical needs for major infrastructure improvement); TOMAIN, *supra* note 10, at 45–46 (arguing that traditional energy policy, based on "set economic and policy assumptions" cannot address significant environmental concerns and also noting the current regulatory model stifles policy development); Garrick B. Pursley & Hannah J. Wiseman, *Local Energy*, 60 EMORY L. J. 877, 889–900 (2011) (describing the need for a transition to distributed renewable generation).

Part III of this Article offers three options for modifying the current regulatory structure to support more rapid evolution within the industry. While recognizing that comprehensive energy policy—in which federal, state, and local governments work together to address future transmission planning, infrastructure development, climate change, and transitions away from fossil fuels—is the best option, history and politics lead to the inexorable conclusion that this option is, unfortunately, purely theoretical.[29] Given the current intractable legislative process, which is often at the mercy of highly vocal and influential interest groups,[30] it is highly unlikely that we will see any kind of comprehensive planning, let alone energy planning that includes climate change legislation.[31] The options considered in greater depth, therefore, are three options for change that appear practical and realistic.

The first option is to pass targeted legislation that goes above the heads of commissions and mandates specific policy initiatives, as many states have done by passing renewable portfolio standards ("RPS") or feed-in tariffs.[32] While tempting in its directness, and almost certainly necessary in order to move forward with specific policy initiatives, passing discrete policy mandates creates a potential for inconsistent or unintended results. This option also bypasses the wealth of experience, knowledge, and wisdom within the current agency system. The creativity and practical know-how of the country's regulatory commissions could offer significant and important input on how change might be achieved at reasonable cost. But these skills cannot be utilized if commissions have little input or discretion on the implementation of policy measures.

A second option is to embed general environmental policy considerations into utility commission enabling legislation. While this option could potentially unleash the creativity of commissions, without some policy limits or guidance, it could result in little change from the status quo, or be so vague that it would be considered an impermissible delegation of legislative authority.[33]

The third option is to reconcile environmental and economic considerations within a resource planning process that focuses on long-term planning and

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[29] *See* Pursley & Wiseman, *supra* note 28, at 883, 931–36 (proposing a new, cooperative model focusing on federal and local governments to encourage entrepreneurship and hasten the transition to distributed renewable generation); Deborah Behles, *An Integrated Green Urban Electrical Grid*, 36 Wm. & Mary Envtl. L. & Pol'y Rev. 671, 672 (2012); *see also* John M. Deutch, The Crisis in Energy Policy 7, 13–21 (2011) (describing four primary reasons for the United States' failure to "formulate and sustain an effective energy policy"); *infra*, note 181.

[30] *See* James M. Griffin, A Smart Energy Policy 1, 12–15 (2009) (describing the flawed nature of current policy and tying policy failures to a process that is guided primarily by vocal interests groups); Kelly Sims Gallagher, *Acting in Time on Energy Policy*, *in* Acting in Time on Energy Policy 1–11, 9 (Kelly Sims Gallagher ed., 2009) (concluding, "it is clear that the U.S. government is not presently structured in a way that would allow it to forcefully confront our current energy challenges").

[31] Even with an aggressive commitment to addressing global warming in his second term, President Obama has said little about seeking comprehensive legislation to limit GHG emissions. *See, e.g.*, Juliet Eilperin, *A Vow to Confront Warming*, Wash. Post, Feb. 13, 2013, at A12.

[32] *See* Part III.A, *infra*.

[33] *See* Part III.B, *infra*.

risk mitigation.[34] This final option could utilize existing planning processes, commonly known as "integrated resource plans," to address long-term systemic risks. When used to minimize economic and physical risks suffered by current customers, such planning processes sit squarely within the traditional function of the regulatory commission and would take little, if any, legislative action. For broader impact, legislatures could also direct public utility commissions to engage in long-term planning processes to address specific goals, such as the reduction of GHG emissions. The scope and planning horizon of the process would drive its potential for achieving results. This option retains the potential to engage the wisdom and experience of public utility commissions, minimize the potential for unintended effects, and allow for thoughtful, incremental progress forward.

I. Foundation of the Utility Regulatory System

In order to understand the decision-making processes and limitations (perceived and actual) on the authority of public utility commissions, it is necessary to trace the history of these organizations and the purposes for which they were created. In doing so, we discover that the prototypical public utility commission was given a broad grant of authority to ensure that utilities only charged "just and reasonable" rates, but that the definition of just and reasonable was narrowly interpreted to serve the primary goal of keeping rates low and extending service as broadly as possible. As a result, it is not surprising that later attempts to add an environmental component to commissions' authority were rebuffed, and that commissions could not pursue long-term technological or environmental goals where those goals negatively affected short-term rates.

A. Building the Foundation

The first public utility commissions were established in the 1840s and 50s, primarily to oversee railroads.[35] These commissions generally had little authority to prescribe mandatory rates or conditions of service and were essentially oversight or reporting agencies.[36] Illinois, Iowa, Minnesota, and Wisconsin established commissions with prescriptive powers in the early 1870s; however, electric utilities did not begin to come widely under the authority of these regulatory commissions until the early twentieth century.[37]

In 1907, in an attempt to address the growing monopoly power wielded by utilities and corruption throughout local governments,[38] New York and Wisconsin passed landmark legislation giving state regulatory commissions prescrip-

[34] *See* Part III.C, *infra*.
[35] William E. Mosher & Finla G. Crawford, Public Utility Regulation 17 (1933).
[36] *Id.* at 16.
[37] *See* Charles F. Phillips, The Regulation of Public Utilities 122 (1988).
[38] Some scholars have suggested that utility executives themselves favored increased regulation in exchange for limited monopolies, in order to reassure investors and increase their ability to acquire financing for necessary capital investments. *See* William J. Hausman & John L. Neufeld, *The*

tive control over gas and electric company rates and terms of service.[39] These state laws were generally thought of as models for the rest of the nation, and the foundation they established can still be seen in most public utility commission enabling legislation today.[40]

The 1907 Wisconsin law prohibited utilities from charging rates that were "unjust, unreasonable, discriminatory, or preferential."[41] Unlike previous regulatory schemes, including local franchise agreements, these new schemes gave public utility commissions the authority to ensure that rates were "reasonable"—not simply to ensure the rates stayed below some limit.[42] The regulatory focus on reasonable rates was duplicated across the country, although some complained about the lack of specific standards or guidelines for making this determination.[43]

Today, the requirement that utility rates be "just and reasonable" is ubiquitous across public utility commission enabling statutes, at both the federal and state level.[44] For example, the Federal Power Act provides, "[a]ll rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy . . . and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable."[45] Similarly, New Hampshire law states, "[a]ll charges made or demanded by any public utility for any service rendered by it . . . shall be just and reasonable."[46]

The authority of public utility commissions to set and regulate rates was upheld against significant judicial challenge, beginning in the late nineteenth century. In *Munn v. Illinois*,[47] a case involving the regulation of grain elevators by the state of Illinois, the Supreme Court upheld states' authority to regulate rates charged by businesses affected with a public interest.[48] In *J.W. Hampton, Jr. & Co. v. U.S.*,[49] the Court made clear that while this legislative function

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Market for Capital and the Origins of State Regulation of Electric Utilities in the United States, 62 J. ECON. HIST. 1050, 1051 (2002).

[39] *See* PHILLIPS, *supra* note 37, at 123; *see also* MOSHER & CRAWFORD, *supra* note 35, at 23–25.

[40] *See* JOHN AUGUSTUS LAPP, PUBLIC SERVICE COMMISSION LAWS 6 (1911).

[41] Ari Peskoe, *A Challenge for Federalism: Achieving National Goals in the Electricity Industry*, 18 MO. ENVTL. L. & POL'Y REV. 209, 214 (2011).

[42] *Id.*

[43] As John Bauer wrote in 1930, "[t]he New York law, like virtually all regulatory statutes of other states merely imposes upon the Public Utility Commission the duty to fix reasonable rates." John Bauer, *New York Survey of Public Utility Regulation*, 20 AM. ECON. REV. 381, 384 (1930).

[44] *See, e.g.*, OR. REV. STAT. § 756.040 (2012) ("[T]he commission shall make use of the jurisdiction and powers of the office to protect such customers, and the public generally, from unjust and unreasonable exactions and practices and to obtain for them adequate service at fair and reasonable rates."); FLA. STAT. § 366.06 (2014) ("[T]he commission shall have the authority to determine and fix fair, just, and reasonable rates that may be requested, demanded, charged, or collected by any public utility for its service").

[45] 16 U.S.C. § 824d (2006).

[46] N.H. REV. ANN. NEW HAMPSHIRE § 374:2 (2012).

[47] 94 U.S. 113, 135 (1877).

[48] *Id.* at 126. Ultimately, the Court determined that the grain storage elevators provided a key service and were operated as a monopoly, and the public interest therefore required their regulation. *Id*. at 131, 133.

[49] 276 U.S. 394, 406–07 (1928).

could not be delegated in its entirety, a state legislature could appropriately charge a regulatory commission with carrying out a rate-setting function, provided that the legislature had established "intelligible principle[s] to which the person or body authorized to fix rates is directed to conform."[50]

While the authority to set rates became clear, the limits of that authority were not. Were public utility commissions required to set rates in a particular fashion, or to achieve a particular result? It would take decades for the Supreme Court and public utility commissions to answer that question.

B. The Evolution of Utility Ratemaking

In *Smyth v. Ames*,[51] the Supreme Court considered the constitutional limits on commission ratemaking in the context of railroad rates. In 1893, Nebraska passed legislation establishing a Board of Transportation with the authority to set rates for the railroads.[52] The railroads challenged the manner of rate setting by the Board, which they argued would have unlawfully deprived their stockholders and bondholders of their right to just compensation for their services.[53] Though the specifics of the decision would create confusion for years to come,[54] the Court was clear in its conclusion that commissions must base their rates on a valuation of utility property. "The basis of all calculations as to the reasonableness of rates . . . must be the fair value of the property being used by it for the convenience of the public."[55]

In *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*,[56] the Supreme Court clarified the precise nature of that valuation process. In a passage that is often quoted today as the foundation for constitutional analysis of public utility ratemaking, the Court held:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same

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[50] *Id.* at 409. The appropriate standard of judicial review of commission decisions would remain a matter of developing law for many years to come. *See generally* Ray A. Brown, *The Function of Courts and Commissions in Public Utility Rate Regulation*, 38 HARV. L. REV. 141 (1924).
[51] 169 U.S. 466, 470 (1898).
[52] *Id.*
[53] *Id.* at 528.
[54] In an unfortunate attempt to provide a roadmap for making a valuation determination, the Court cited a laundry list of potential factors to be considered, several of which were incompatible. For example, the Court stated,

> [I]n order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case.

Id. at 546–47.
[55] *Id.* at 546.
[56] 262 U.S. 679, 692 (1923).

> time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, [sic] risks and uncertainties.[57]

Notably, *Bluefield* shifted constitutional review from considering the process used to set rates (as in *Smyth*) to the outcome resulting from that process. Elaborating on this shift in *Federal Power Commission v. Hope Natural Gas*,[58] the Court made clear that the language in *Bluefield* did not require commissions to use any particular method of valuation.

In *Hope*, the Court reviewed an appellate decision overturning an order of the Federal Power Commission ("FPC"), the predecessor to the Federal Energy Regulatory Commission ("FERC").[59] The appellate court had held that the rates for the Hope Natural Gas Company must be set with reference to the "present fair value" of the company's capital investment, and found that certain costs should have been included in that calculation.[60] The Supreme Court, in overturning the appellate decision, held that the FPC was not required to use any particular formula in calculating rates,[61] thereby rendering years of litigation over *Smyth* and its progeny null. Instead, the Court held, "It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end."[62]

The Court went on to define a fair and reasonable rate setting process:

> The rate-making process . . . involves a balancing of the investor and the consumer interests . . . [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[63]

Thus, when it comes to rate setting, commission authority is extensive. As long as equity owners can attract and retain capital, have access to credit, and provide returns in line with similar businesses, constitutional boundaries will not be breached.

While *Hope* and the subsequent Supreme Court decision *Duquesne Light Co. v. Barasch*[64] confirmed the authority of state commissions to devise unique systems for setting rates,[65] the rate-setting process today is in fact largely standardized across state commissions. Under the generally accepted "rate of re-

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[57] *Id.*
[58] 320 U.S. 591, 600–01 (1944).
[59] *Id.* at 593–94.
[60] *Id.* at 599–600.
[61] *Id.* at 602.
[62] *Id.*
[63] *Id.* at 603.
[64] 488 U.S. 299 (1989).
[65] "The Constitution within broad limits leaves the States free to decide what ratesetting methodology best meets their needs in balancing the interests of the utility and the public." *Id.* at 300.

turn" ratemaking, the regulatory commission considers the annual expenses of the utility, capital investments the utility has made, and a range of returns achieved by utilities and other businesses with similar risk profiles.[66] The commission then sets rates at a level to cover expenses and afford the utility a fair rate of return ("ROR") on its invested capital ("rate base").[67] Rate base is calculated based on actual utility investments less depreciation; however, investments are included in rate base only if deemed prudent by utility regulators.[68]

This is a key point which underlies the operation and potential evolution of the electric utility system. Utilities cannot recover the cost of a capital investment, let alone earn a return on that investment, unless the investment is approved by the regulatory commission. When utility investments were limited to generation, transmission, or distribution systems necessary to serve a growing customer base, and as rates declined—as was the case until the 1970s—commission scrutiny of utility rates was limited.[69] Commissions were not likely to call into question utility investment decisions that resulted in lower rates and more widely available service. But today, in an era of rising rates and complex technologies that may or may not be directly necessary to provide utility ser-

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[66] *See* MICHAEL A. CREW & PAUL R. KLEINDORFER, THE ECONOMICS OF PUBLIC UTILITY REGULATION 98 (1986). Utility ratemaking is a complex process that is beyond the scope of this Article. For a detailed discussion of cost of service ratemaking and the process of setting a utility's rate of return, see PHILLIPS, *supra* note 37, at 168–72, 243–443; *see also* LEONARD S. HYMAN, AMERICA'S ELECTRIC UTILITIES: PAST, PRESENT, AND FUTURE 135–85 (1985). Although it may appear self-evident, it is worth noting that utility rates do not have to be based on cost or return on investment, but could be based on other standards, such as perceived value or ability to pay. *See* J. Robert Maiko & Philip R. Swensen, *Pricing and the Electric Utility Industry, in* PUBLIC UTILITY REGULATION 35, 39 (Kenneth Nowotny et al. eds., 1989) (noting that cost-based standards, rather than noncost standards, such as value of service or ability to pay, should be the primary basis for establishing electric rates).

[67] *See* P.R. Tel. Co., Inc. v. Telecomm. Reg. Bd. of P.R., 665 F.3d 309, 316 (1st Cir. 2011) (describing the evolution of general ratemaking standards). "The constant underlying those standards was the idea that calculating the utility's cost and then allowing a fair rate of return on it was a sensible way to identify a range of rates that would be just and reasonable to investors and ratepayers." *Id.* (quotations omitted).

[68] Utility prudence is a complex issue. The Supreme Court touched upon the issue in *Sw. Bell v. Pub. Serv. Comm'n of Mo.*, where it held, "[t]he term 'prudent investment' is not used in a critical sense. There should not be excluded from the finding of the base investments which, under ordinary circumstances, would be deemed reasonable." 262 U.S. 276, 312 (1923). Considered an analog to negligence, the prudence standard now generally requires that the utility (or utility personnel) acted reasonably considering the information that was known at the time. *See, e.g.*, Gulf States Utils. Co. v. La. Pub. Serv. Comm'n, 689 So. 2d 1337, 1346 (La. 1997) ("the proper standard for determining whether a utility was imprudent is whether objectively that utility acted reasonably under the circumstances"); Fitchburg Gas and Elec. Light Co. v. Dept. of Pub. Utils., 956 N.E.2d 213, 216 (Mass. 1997) ("When conducting a prudence review, the Utilities department determines whether a utility's actions, based on all that it knew or should have known at the time, were reasonable and prudent in light of the circumstances which then existed."). For a discussion of the prudence standard applied to utility investments, see Dr. Jonathan Kahn, *Keep Hope Alive: Updating the Prudent Investment Standard for Allocating Nuclear Plant Cancellation Costs*, 22 FORDHAM ENVTL. L. REV. 43, 49–54 (2010).

[69] *See infra* notes 88–91 and accompanying text.

vice, this burden sits far more heavily on utilities, many of which now seek pre-approval of significant new capital investments.[70]

Utilities may consider pre-approval an essential precondition to committing to multi-million dollar investments because of concerns regarding prudence, and because utility rates are set on a prospective basis and are not changed to reflect current conditions, even if operating expenses increase or decrease significantly.[71] This is a key aspect of utility rates: Contrary to popular belief, regulation does not guarantee profits.[72] If actual expenses are higher than forecast, the utility will likely earn less than the authorized rate of return. If actual expenses are less than forecast, the utility can earn more than the authorized rate of return. This rate-setting formula, which ties utility profits to invested capital,[73] creates an incentive for utilities to make investments, but also makes utilities wary of any investment—and certainly a significant one—that may not be deemed prudent when reviewed by a regulator.[74]

C. Limits on Commission Authority

Although the authority of state regulatory commissions to regulate rates is extensive, public utility commissions were not granted the blanket authority to operate or manage utilities as they saw fit. While most states' utility codes include general authority clauses, extending the authority of the commissions to

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[70] *See* Mark Wiranowski, *Competitive Smart Grid Pilots: A Means to Overcome Incentive and Informational Problems*, 10 J. ON TELECOMM. & HIGH TECH. L. 361, 376 (2012) (noting an increasing tendency of utilities to seek preapproval, often through legislative action, for costly capital investments).

[71] This concept is generally known as a bar against "retroactive ratemaking." *See* Stefan H. Krieger, *The Ghost of Regulation Past: Current Applications of the Rule Against Retroactive Ratemaking in Public Utility Proceedings*, 1991 U. ILL. L. REV. 983, 984 (1991) (summarizing general rule and noting, "[f]rom the early days of state public utility regulation commissions, courts have recognized a rule against retroactive ratemaking"); *see also* L.A. Gas Co. v. R.R. Comm'n, 289 U.S. 287, 313 (1933) (agencies cannot use past profits to support confiscatory rates on a future basis); In re Application of Columbus S. Power Co. et al., 947 N.E.2d 655, 661 (Ohio 2011) ("The requirement to continue existing rates is mandatory . . . statutory and case law concerning retroactive ratemaking spans nearly 50 years.").

[72] Many commentators make the mistake of confusing the ratemaking process with a guarantee of profits. *See, e.g.*, David B. Spence, *The Political Barriers to a National RPS*, 42 CONN. L. REV. 1451, 1457 (2010) ("When electric utilities were vertically integrated operations . . . . investors could count on a guaranteed return on investment . . . "). This has never been the case. Cost-of-service ratemaking offers utilities the opportunity to earn an authorized rate of return based on a hypothetical set of expenses and forecasted load; variances in the utility's actual sales and expenses between rate cases will almost always result in returns above or below levels authorized in a rate case.

[73] *See* Kenneth Nowotny, *The Economics of Public Utility Regulation: An Overview, in* PUBLIC UTILITY REGULATION, *supra* note 66, at 21 ("[R]ate-of-return regulation [specifies] an allowable *rate* of profit to be applied to a utility firm's equity capital.").

[74] A widely cited study by Averch & Johnson argues that rate of return regulation has resulted in the overcapitalization of the utility industry, a phenomenon now known as the "Averch-Johnson effect." *See* Harvey Averch & Leland J. Johnson, *Behavior of the Firm under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962). Authors Douglas, Garrett, and Rhine have argued that the regulatory disallowance of imprudent investments enhances this effect. *See* Stratford Douglas et al., *Disallowances and Overcapitalization in the U.S. Electric Utility Industry*, FED. RES. BANK ST. LOUIS REV. 23 (2009).

all acts necessary to carry out their statutory authority,[75] that authority, as will be seen in Part II, has been largely interpreted to be limited to overseeing utility rates and ensuring that utilities provide safe and adequate service. Significant judicial precedent prohibits regulatory commissions from interfering with the management of utilities.[76] While a business's status as a public utility gives the state the constitutional authority to set rates for its services,[77] it does not give the state unlimited authority to manage the utility's business.

In fact, both the constitutional authority and political will to grant commissions extensive regulatory authority over utility rates stemmed from the belief that utilities constituted a "natural monopoly"[78] and were limited by the same. Commission authority extended to those issues deemed threatened by monopoly conditions—concerns about price, discrimination, and availability of service to all comers—and was directly tied to the "regulatory compact" utilities were deemed to have entered.

A natural monopoly exists where the extension of service requires a significant investment of capital, making it difficult for multiple service providers to actively compete within the same market area. In such a situation, granting a utility an exclusive service territory (a regulated monopoly) allows the utility to achieve economies of scale and ultimately lower rates for customers.[79] How-

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[75] *See, e.g.*, N.H. REV. STAT. Ann. § 374:3 (2012) ("The public utilities commission shall have the general supervision of all public utilities and the plants owned, operated or controlled by the same so far as necessary to carry into effect the provisions of this title."); PA. CONS. STAT. § 66.501(a) ("In addition to any powers expressly enumerated in this part, the commission shall have full power and authority, and it shall be its duty to enforce, execute and carry out, by its regulations, orders, or otherwise, all and singular, the provisions of this part, and the full intent thereof . . . .").

[76] *See* W. Ohio Gas Co. v. Pub. Util. Comm'n of Ohio, 294 U.S. 63, 72 (1935) (citing Sw. Bell Tel. Co. v. Pub. Serv. Comm'n of Mo., 262 U.S. 276, 288, 289, and citing Banton v. Belt Line Ry. Corp., 268 U.S. 413, 421) ("Good faith is to be presumed on the part of the managers of a business . . . . In the absence of a showing of inefficiency or improvidence, a court will not substitute its judgment for theirs as to the measure of a prudent outlay."); Pa. Pub. Util. Comm'n v. Phila. Elec. Co., 460 A.2d 734, 737 (Pa. 1983) (mandating that, absent express legislative authority, public utility commission is powerless to interfere with the general management decisions of public utility companies); Ala. Power Co. v. Ala. Pub. Serv. Comm'n, 359 So.2d 776, 780 (Ala. 1978) (mandating that public service commission should not be allowed to interfere with proper operation of utility as a business concern by usurping managerial prerogatives).

[77] *See, e.g.*, Munn v. Illinois, 94 U.S. 113 (1876) (holding that grain storage elevators provided a key service and were operated as a monopoly, and that the public interest therefore required their regulation); German Alliance Ins. Co. v. Lewis, 233 U.S. 389 (1914) (noting that electric service was, without question, a public utility, and therefore subject to price regulation). "We do not hesitate at [the] regulation [of electric utilities] or at the fixing of the prices which may be charged for their service." *Id.* at 407.

[78] *See* James K. Hall, *Regulation of Public Utilities*, 206 ANNALS AM. ACAD. POL. & SOC. SCI. 92, 93–94 (1939) (describing monopolistic characteristics of public utilities); *see also* JAMES C. BONBRIGHT, PRINCIPLES OF PUBLIC UTILITY RATES 10–13 (1961) (recognizing the natural monopoly assumption underlying utility regulation, but calling into question whether utilities *in fact* constitute a natural monopoly); Munn v. Illinois, 94 U.S. 113 (1876) (holding that grain storage elevators provided a key service and were operated as a monopoly, and the public interest therefore required their regulation).

[79] *See* MOSHER & CRAWFORD, *supra* note 35, at 10 ("Where competition fails to service the public, a regulated monopoly may take its place, for the well-being of the public is the paramount consideration of the sovereign state."). Samuel Insull, an early pioneer of the electric industry, directly furthered this theory by building a utility empire on a platform of expanding monopoly

ever, in exchange for being granted a monopoly, utilities were required to enter into a "regulatory compact," or bargain with the state.[80] This concept was summarized in a 1937 opinion by the Minnesota District Court:

> The determination by the corporation to engage in the industry affected with a public interest is of course voluntary on its part. But, having engaged in such industry, the corporation is obligated to serve all persons who apply for service without partiality or discrimination . . . to render reasonably adequate service, to employ reasonably adequate facilities and to charge fair and reasonable rates. In return, the utility . . . is generally protected against unfair or unreasonable competition . . . and it is practically assured a fair return upon the fair value of its property used in the public service.[81]

In a sense, the 1907 laws in Wisconsin and New York, and the ones that followed, represented a growing recognition that competition was insufficient to keep prices at reasonable levels, and that the public interest therefore required centralized regulation.[82]

Based on the regulatory compact, regulation of electric utilities by state public utility commissions developed in the early twentieth century with a multi-faceted purpose: (1) to ensure that customers had access to safe, reliable service; (2) to prevent discrimination against certain classes of customers; and (3) to ensure that the cost for service rendered under monopoly conditions remained reasonable.[83] Stated another way, electric companies, as public utilities, were seen to have certain obligations: the obligation to serve all who requested service, to provide adequate service, and to charge only just and reasonable rates.[84] It was seen as the job of "the various commissions and the courts to

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control, investing in generation capacity, and lowering rates to customers. *See* Hon. Richard D. Cudahy & William D. Henderson, *From Insull to Enron: Corporate (Re)Regulation after the Rise and Fall of Two Energy Icons*, 26 ENERGY L. J. 35, 42–45 (2005) (describing Insull's efforts at Chicago Edison to expand the utility and lower rates).

[80] *See* Lincoln L. Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1339, 1346–47 (2010); G. BRUCE DOERN & MONICA GATTINGER, POWER SWITCH: ENERGY REGULATION GOVERNANCE IN THE TWENTY-FIRST CENTURY 47 (2003); *see also* Hall, *supra* note 78, at 92–93 (describing the responsibilities and special privileges afforded public utilities as "offsetting compensation").

[81] Minn. v. Tri-State Tel. & Tel., Court File No. 221210, Dist. Ct. Minn. (1937), *excerpted in* FLOYD R. SIMPSON & EMERSON P. SCHMIDT EDS., LEADING JUDICIAL INTERPRETATIONS OF PUBLIC UTILITY REGULATION 96–97 (1940) (citations omitted).

[82] *See* William L. Crow, *Legislative Control of Public Utilities in Wisconsin*, 18 MARQUETTE L. REV. 80, 81 (1934) (arguing that with the passage of the 1907 Public Utility Law in Wisconsin "there was a legislative decision that as a general proposition the theory of public utility competition was wrong and that regulated monopoly was right"); MOSHER & CRAWFORD, *supra* note 35, at 30 ("Since the creation of the first public service commission in 1907, the trend has been toward a constantly expanding jurisdiction.").

[83] *See* Hall, *supra* note 78, at 92. As late as 1944, a survey of regulatory practices in the electric industry revealed that state utility commissions remained reluctant to actively intervene in the rate-setting process unless customers complained. *See* EDWARD EYRE HUNT ED., THE POWER INDUSTRY AND THE PUBLIC INTEREST 42–43 (1944).

[84] PHILLIPS, *supra* note 37, at 109–10.

interpret this duty."[85] Regulation was considered a substitute for competition, in a field in which monopolies were granted and protected by the government.[86] The attention paid to the different aspects of the regulatory mission, however, was not equally balanced. As one commentator of the early twentieth century opined, "[h]istorically, the strongest force for regulation was undoubtedly the demand for reasonable rates."[87] Certainly the focus of the courts—and the utilities—was on deciding what constituted a reasonable rate.

While the level of oversight and the nature of rate regulation changed over the decades to come, the essential purpose of regulation did not. Public utility commissions existed primarily to counteract the lack of competition within the natural monopoly of the electric industry, to promote widely available utility service, and to ensure that reasonable rates were charged to the public.[88] Luckily for the industry, technological advances and growing economies of scale led to a steady decline in the price of electricity from 1882 to 1969,[89] which in turn allowed regulators to assume a relatively light hand on the setting of rates.[90] It was not until 1970s, when rising prices and declining demand put pressure on

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[85] *Id.* at 110. Other commentators have focused on equity and fairness as the primary aim of the regulatory system. *See* CREW & KLEINDORFER, *supra* note 66, at 96 (tracing the early impetus for rate regulation to a desire to ensure "equity" within the system).

> All this emphasis on 'fair and reasonable' rates seems to be much more closely related to equity than it does to efficiency. It seems to be the deviation between price and average cost that occurs as a result of monopoly that is of concern to regulators rather than the price-marginal cost divergence, that is the concern in economics. This provides some basis for [the] argument that regulation's prime concern is with "economic justice."

Id. at 100 (citations omitted).

[86] *See* HUNT, *supra* note 83, at 17. This conclusion would not be challenged until the deregulation movement of the 1990s. *See* Jacqueline Lang Weaver, *Can Energy Markets be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets*, 4 HOUS. BUS. & TAX L. J. 1, 11–20 (2004) (describing the rise of electric and natural gas deregulation). Today, wholesale markets overseen by FERC have been largely deregulated, but the majority of retail markets remain under the regulated monopoly/regulatory compact model. Twenty-three states initiated deregulation/restructuring activities in the late 1990s or early 2000s, but many suspended deregulation efforts in the wake of the Enron scandal and rising prices. FOX-PENNER, *supra* note 14, at 10. Currently, only fifteen states have active deregulation at the retail level. *Status of Electricity Restructuring By State*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/cneaf/electricity/page/restructuring/restructure_elect.html (updated Sept. 2010); *see also* Peter Fox-Penner & Heidi Bishop, *Mission, Structure, and Governance in Future Electric Markets: Some Observations*, 89 OR. L. REV. 1107, 1107 (2011) (noting the "sporadic" nature of deregulation at the retail level).

[87] JOHN BAUER, EFFECTIVE REGULATION OF PUBLIC UTILITIES 12 (1925).

[88] *See* Gary D. Allison, *Imprudent Power Construction Projects: The Malaise of Traditional Public Utility Policies*, 13 HOFSTRA L. REV. 507, 512 (1985) ("The goal of government regulation of public utilities is to provide society with utility services in larger amounts, at lower costs, and under more stable conditions than would result from operation of these industries in the free market.").

[89] *See* HYMAN, *supra* note 66, at 117.

[90] *See* Charles G. Stalon & Reinier H. J. Lock, *State-Federal Relations in the Economic Regulation of Energy*, 7 YALE J. ON REG. 427, 445–46 (1990) (describing the positive cycle of increasing growth and declining rates throughout the 1950s and 60s, and resulting lenient regulatory oversight).

utility rates, that new attention would be drawn to the role and authority of the public utility commissions.[91]

C. Conservation and Utility Regulation

After decades of declining utility rates and relatively light regulation, in the 1970s, the United States experienced a series of oil embargos, price spikes, and what appeared to be the tipping point toward the ultimate decline of natural gas and energy supply resources.[92] As President Jimmy Carter stated in a 1977 televised address,

> The oil and natural gas we rely on for 75 percent of our energy are running out. In spite of increased effort, domestic production has been dropping steadily at about six percent a year. Imports have doubled in the last five years . . . . Unless profound changes are made to lower oil consumption, we now believe that early in the 1980s the world will be demanding more oil tha[n] it can produce.[93]

As fuel costs rose and demand declined, consumers experienced rising electricity prices for the first time.[94] A number of utilities found that they had overbuilt in response to anticipated demand that never materialized. At the same time, other utilities that had invested in nuclear facilities had to cancel or decommission those units, costing ratepayers and utilities millions of dollars. A number of utilities went bankrupt, particularly in the northeastern United States.[95] Customers began to demand greater oversight by regulators, particularly when it came to matters of resource planning and capital investment.[96] Politicians and regulators began a drumbeat for conservation and turned their attention to ways to promote energy efficiency and independence from foreign oil.

These forces coalesced in a demand for a new energy policy. The notable first step in the policy was the Public Utility Regulatory Policies Act ("PURPA") of 1978.[97] PURPA was intended to encourage the development of

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[91] *See* Brad Sherman, *A Time to Act Anew: A Historical Perspective on the Energy Policy Act of 2005 and Changing Electrical Energy Market*, 31 WM. & MARY ENVTL. L. & POL'Y REV. 211, 214–15 (2006).

[92] *See* YERGIN, *supra* note 11, at 235; TOMAIN, *supra* note 10, at 24–25.

[93] This speech may be best remembered for describing the new energy policy as the "moral equivalent of war." President Jimmy Carter, Televised Speech (April 18, 1977), *available at Primary Resources: Proposed Energy Policy*, AMERICAN EXPERIENCE, http://perma.cc/YF5S-JCL5; *see also* TOMAIN, *supra* note 10, at 27 (describing the speech and President Carter's energy policy).

[94] *See* HYMAN, *supra* note 66, at 99–100.

[95] *See* RACHEL WILSON & PAUL PETERSON, SYNAPSE ENERGY ECONOMICS, INC., A BRIEF SURVEY OF STATE INTEGRATED RESOURCE PLANNING RULES AND REQUIREMENTS 212 (2011), *available at* http://perma.cc/9N3G-FQJ2.

[96] *See* Scott F. Bertschi, *Integrated Resource Planning and Demand Side Management in Electric Utility Regulation: Public Utility Panacea or a Waste of Energy?*, 43 EMORY L.J. 815, 815, 823–26 (1994) (describing the early justification for integrated resource planning).

[97] Public Utility Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978) (codified at 16 U.S.C. §§ 2601–45 (2012)).

alternative fuels and increase diversification of energy resources.[98] PURPA required utilities to purchase energy from qualifying facilities ("QFs"), which were defined as certain small producers of renewable energy projects, including cogeneration and hydroelectric facilities.[99] However, utilities only had to offer QFs contracts at "avoided-cost" prices, meaning the cost that the utility avoided by not generating the energy itself.[100] In doing so, PURPA sought to achieve conservation and energy security without additional expense to consumers.

This is an important point: While it exposed a shift in thinking around energy policy, PURPA did not fundamentally change the nature of utility regulation. PURPA required state utility commissions to consider a number of provisions related to conservation, but not at the expense of higher rates.[101] For example, PURPA provisions prohibited "declining block rates"—the popular rate structure created by Insull that lowered rates as usage increased—except in cases where increases in usage could be shown to decrease costs.[102] PURPA's conservation goals were consistently wrapped in utility economics. Conservation would be undertaken so long as it remained consistent with basic cost-benefit analyses. While utility regulation might have shifted away from incenting usage, it had not gone the other direction toward rewarding conservation for its own sake.

In the 1980s, a number of states began following the federal example and developing their own conservation programs. Many states established dedicated public benefits funds, which collected money from utility customers in order to fund energy efficiency programs.[103] The primary objective of these funds was to reduce the need for expensive infrastructure improvements, thereby reducing rates to customers.[104] Thus the state efficiency programs, like federal policy efforts, translated goals for conservation and fuel diversity into the familiar objectives of public utility commissions: minimizing rates for customers. Efficiency funds were specifically directed to cost-effective energy efficiency, or those efficiency programs that could be achieved for an equivalent or lower cost than alternative supply options.[105]

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[98] *See* Stanley A. Martin, *Problems with PURPA: The Need for State Legislation to Encourage Cogeneration and Small Power Production*, 11 B.C. ENVTL. AFF. L. REV. 149, 157 (1983).
[99] *See* Michael D. Hornstein & J.S. Gebhart Stoermer, *The Energy Policy Act of 2005: PURPA Reform, the Amendments, and Their Implications*, 27 ENERGY L.J. 25, 26–30, 32–33 (2006) (comparing the original definition of qualifying facility and amendments adopted as part of the Energy Policy Act of 2005).
[100] *See* ELEC. ENERGY MKT. COMPETITION TASK FORCE, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY 20–21 (2007), *available at* http://perma.cc/U3PJ-7CLL (describing avoided-cost pricing).
[101] *See* 16 U.S.C. § 2621 (2012).
[102] Public Utility Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978) § 111(d)(2) (codified at 16 U.S.C. § 2621).
[103] Sanya Carley, *Energy Demand-Side Management: New Perspectives for a New Era*, 31 J. POL'Y ANALYSIS MGMT. 6, 8–9 (2012).
[104] *See* Fred Sissine, *Energy Efficiency Policy: Budget, Electricity Conservation, and Fuel Conservation Issues, in* ENERGY EFFICIENCY, RECOVERY AND STORAGE 75, 81 (Konrad A. Hofman ed., 2007).
[105] *See infra* notes 195–201 and accompanying text.

While it may be tempting to equate these goals for increased conservation and energy efficiency with what we might now consider an environmental agenda, the way in which these programs were implemented suggests that this was not necessarily the case.[106] Energy conservation was, first and foremost, an economic issue and a response to a supply crisis. Even while calls for conservation and efficiency abounded, few questioned that the goal of the regulation of energy remained the pursuit of low rates and the extension of service as broadly as possible.

The Supreme Court summarized this divided mindset toward utility regulation in two cases decided within a span of four years. In 1976, in *National Association for the Advancement of Colored People v. Federal Power Commission*, the Court considered whether the FPC (the predecessor to FERC) could establish an affirmative action program for its regulatees under the Natural Gas Act or the Federal Power Act.[107] Petitioners argued that the FPC's role in setting just and reasonable rates required a broad consideration of the public interest, and that such interest could include remedying discriminatory employment practices.[108] In rejecting the affirmative action program, the Court held that the definition of "public interest," as applied to the federal gas and power acts, should not be read so broadly. Rather, the Court held that the public interest must be defined in relationship to the purpose of the enabling legislation, which in this case was the encouragement of "the orderly development of plentiful supplies of electricity and natural gas at reasonable prices."[109]

Just a few years later, in *Central Hudson Gas & Electric Corp. v. Public Service Commission of New York*, the Court considered the question of whether a public utility commission could bar all advertising by an electric utility in order to further conservation.[110] As the case involved commercial speech, the Court had to determine if the asserted government interest was "substantial," and if so, if the regulation "directly advance[d]" that interest, and was "not more extensive" than necessary.[111] The public utility commission offered two purposes for the regulations: the first was conservation; the second was inequi-

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[106] At least one commentator has argued that environmental protection and least-cost power have always been a goal of electric regulation. *See* Rudy Perkins, *Electricity Deregulation, Environmental Externalities, and the Limitations of Price*, 39 B.C. L. REV. 993, 997–98 (1998). Perkins argues that the passage of PURPA, along with language in the Public Utility Holding Company Act ("PUHCA") and the Energy Policy Act of 1992, demonstrate a historic goal of environmental protection in utility regulation. *Id.* at 1002–09. While these statutes do reference a national goal of conservation, the cases and historical perspective cited herein suggest that the goal of conservation was rooted not in environmental protection, but in cost-saving, concern for supply management, and energy independence.

[107] 425 U.S. 662 (1976).

[108] *Id.* at 666.

[109] *Id.* at 670; *see* John N. Drobak, *From Turnpike to Nuclear Power: The Constitutional Limit on Utility Rate Regulation*, 65 B.U. L. REV. 65, 95 (1985) ("Since it decided *Hope*, the Supreme Court has repeatedly emphasized that the primary purpose of federal regulation of the natural gas and electric industries has been to protect consumers from unreasonable prices charged by utilities that take advantage of their monopoly or near-monopoly status.").

[110] 447 U.S. 557 (1980).

[111] *Id.* at 566.

table rates.[112] The Court easily found that the commission's interest in conservation, as well as its interest in fair and equitable rates, was substantial:[113]

> We accept without reservation the argument that conservation, as well as the development of alternative energy sources, is an imperative national goal. Administrative bodies empowered to regulate electric utilities have the authority—and indeed the duty—to take appropriate action to further this goal.[114]

The Court also found that a ban on advertising by utilities would directly serve that interest.[115] It was only because the regulation was overly broad that it was ultimately struck down.[116]

Although these two opinions may appear to offer conflicting assessments of the goals of utility regulation—the encouragement of plentiful supplies on the one hand, and the national imperative for conservation on the other—they demonstrate the precise nature of the dilemma now faced by proponents of new technologies, renewable resources, or energy efficiency. Public utility commissions (both federal and state) developed first to oversee the production of an essential public service and ensure that service was available on a broad, nondiscriminatory basis at a reasonable cost. The national movement for efficiency and diversity of supply was simply folded into the existing regulatory framework: Conservation and efficiency could be mandated, but only where they would maximize cost savings, or at a minimum, where they would not add to customer rates. The quest for conservation was simply a new side to the old mission of ensuring that customers had access to plentiful supplies at reasonable prices, and would in no way alter that fundamental purpose.

II. Energy and Environmental Policy Collide

Between 1970 and 1990, environmental advocates passed a series of sweeping new statutes that would fundamentally transform the regulatory landscape. The first of these was the National Environmental Policy Act ("NEPA"),[117] which required a review of the environmental impact of any major federal action. NEPA was followed by the Clean Air Act, the Clean Water Act, the Endangered Species Act, the Resources Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act.[118] Inspired, at least in part, by a series of environmental disasters,[119] the essence of the new environmental laws was to regulate and limit pollu-

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[112] *Id.* at 568.
[113] *Id.* at 568–69.
[114] *Id.* at 571.
[115] *Id.* at 569.
[116] *Id.* at 570.
[117] 42 U.S.C. §§ 4321–47 (2006).
[118] Amy J. Wildermuth, *Is Environmental Law a Barrier to Emerging Alternative Energy Sources?*, 46 Idaho L. Rev. 590, 513–20 (2010).
[119] *Id.* at 514.

tion.[120] Unlike laws related to energy policy, which focused on economic outcomes, these environmental statutes prioritized social goals over economic considerations.[121] Perhaps as a result, throughout this period, energy law remained separated from environmental policy. As Professor Lincoln Davies explains,

> Energy law was born largely from public utility and antitrust law, which emphasize economic analysis, monopolistic presumptions, and market preferences. Environmental law, on the other hand, arose not from the world of economics but from a melding of risk assessment and policy, a search for regulatory tools to prevent mass tort-like harms, the erosion of ecosystems and deterioration of public health, the "tragedy of the commons," and the overexploitation of natural resources.[122]

During a time of significant environmental action, however, utility commissions could not entirely ignore questions about the environmental impacts of electricity generation. Writing in 1985, noted utility scholar Leonard Hyman identified a number of environmental concerns related to the electric industry: aesthetic pollution caused by the prevalence of utility structures on the landscape; water usage; emissions from the combustion of fossil fuels; and surprisingly enough, a recognition of the threat of a "greenhouse effect," related to CO_2 emissions, that could warm the atmosphere.[123] Yet Hyman subsequently ignored these issues in his treatise on utility regulation, mentioning them again only in passing in his conclusion. There, he stated that one of the underlying causes of utility-sponsored environmental degradation was the inability of utilities to accurately price the commodity that they sell.[124] "Less resistance to environmental improvement might have existed if the costs could have been easily passed on to customers."[125]

This is an interesting premise. Certainly, if commissions had seen their duty as including mitigation of environmental damage caused by utilities, then they also would have allowed utilities to recover costs associated with mitigation efforts. In such a scenario, as Hyman notes, utilities almost certainly would have undertaken more efforts at environmental remediation, either voluntarily, or as a result of commission mandates. Indeed, some commissions, as will be discussed here, took that position. But as this Part discusses, the commissions that took that position were largely rebuffed by the courts. The majority of commissions instead adopted a regulatory focus consistent with the history de-

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[120] *See* Amy J. Wildermuth, *The Future of Energy Law*, 31 UTAH ENVTL. L. REV. 369, 369 (2011).
[121] *See* Douglas N. Jones & Richard A. Tybout, *Environmental Regulation and Electric Utility Regulation: Compatibility and Conflict*, 14 B.C. ENVTL. AFF. L. REV. 31, 31–32, 35 (1986) (concluding that the purpose of economic regulation of utilities is "to protect the consumer's pocketbook," while the purpose of social regulation, including environmental laws, is to further social goals "independent of cost").
[122] Davies, *supra* note 22, at 475–76 (citations omitted).
[123] *See* HYMAN, *supra* note 66, at 29–31.
[124] *Id.* at 283.
[125] *Id*.

scribed above—that of keeping rates as low as possible while extending reliable service as broadly as possible. As we will see, this narrow focus on short-term rate impacts has limited potentially transformational activities by utilities, including the adoption of certain smart grid technologies, consideration of environmental externalities in resource decision-making, development of EV charging stations, and the offering of carbon offset programs. While regulatory commissions appear to have broad authority to regulate utilities in the public interest, and some scholars have argued that this authority should extend to consideration of environmental impacts,[126] the authority is in fact limited to consideration of rate impacts on customers.

A. PURPA and Environmental Externalities

Utility regulatory policy and environmental policy first collided with implementation of PURPA.[127] PURPA sought to diversify utility portfolios away from traditional fossil fuels without additional cost to ratepayers, using an avoided-cost mechanism that evaluated the cost the utility would otherwise have incurred to generate the electricity.[128] However, as PUCs began to establish rules to implement PURPA and define methods for calculating avoided cost, they encountered the problem of addressing environmental externalities.

Environmental externalities are "the environmental costs to society of given products that are not reflected in the transaction price for those products, and that therefore may be imposed on parties not involved in the transaction or on society as a whole."[129] As a regulatory matter, environmental externalities can reflect a measurable cost, such as a tax or penalty, or the cost of health care related to smog caused by coal-fired electric generating units. On the other hand, environmental externalities can be difficult or even impossible to measure, such as the aesthetic damage of smog to the Yosemite Valley, or the loss of a species of animal or plant due to a warming climate.

Commissions, when faced with the need to calculate the cost of generating fuel at a traditional fossil fuel facility (as is required to calculate avoided cost), were forced to address environmental externalities. How should they compare the direct cost of a unit of energy generated by a coal plant with the direct cost of a unit of energy generated by a wind turbine, when the former brought with it a host of unaccounted-for externalities that would ultimately be paid for by society that the latter did not? Commissions faced the same issue when examining utilities' long-range plans for acquiring new resources;[130] if they were going

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[126] *See* Jeremy Knee, *Rational Electricity Regulation: Environmental Impacts and the "Public Interest,"* 113 W. VA. L. REV. 739, 744 (2011) (arguing that utility regulators "cannot fulfill their statutory 'public interest' duties without addressing environmental impacts").

[127] Public Utility Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978) (codified at 16 U.S.C. §§ 2601–45 (2012).

[128] *See* Hornstein & Stoermer, *supra* note 99, at 26–30, 32–33 (discussing original definition of qualifying facility and amendments adopted pursuant to the Energy Policy Act of 2005).

[129] Perkins, *supra* note 106, at 994.

[130] For a description of this process, which is generally known as integrated resource planning, see *infra* notes 234–39 and accompanying text.

to compare the cost to customers of a coal plant and a wind turbine, should they consider the impact of externalities in the price of each? If so, how?

In Massachusetts, the environmentally minded Department of Public Utilities ("DPU") established a requirement that utilities engaging in long-term supply planning calculate the financial impact of pollution from fossil fuel generating facilities and include a proxy for that amount when determining which resources would be the lowest cost to customers.[131] In *Massachusetts Electric Co. v. Department of Public Utilities*, the Massachusetts Electric Company ("Mass Electric") and National Coal Association ("National Coal") sued, arguing that in making this rule, the DPU had exceeded its statutory authority.[132] National Coal argued that the DPU had no authority to require utilities to consider the environmental impacts of supply resources.[133] More narrowly, Mass Electric argued that the DPU could consider environmental costs associated with supply resources, but only those costs that directly impacted Massachusetts ratepayers.[134]

The Massachusetts Supreme Judicial Court easily rejected National Coal's argument, but agreed with Mass Electric that the DPU had overstepped its boundaries. The court felt that it was important to note that the environmental externalities the DPU sought to measure were far-ranging and in some cases extremely difficult to value, such as genetic effects, agricultural productivity, and recreational value.[135] While the court noted that the DPU has "broad authority to investigate and rule on the rates, prices, and charges of an electric company,"[136] the DPU did not "have responsibility for the protection of the environment."[137] The DPU's primary function was the regulation of *rates*, and as such, its authority extended only to the consideration of environmental externalities that directly impacted rates charged to customers.[138] The court stated that "[t]he department does not now have delegated authority to consider the overall impact of pollution on society."[139]

At the federal level, FERC imposed similar limits on the California Public Utility Commission's attempt to account for environmental externalities when developing the avoided-cost measure applied to QFs certified under PURPA. In *Southern California Edison Co.*,[140] FERC held that federal law prevented the

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[131] *See* Mass. Elec. Co. v. Dept. of Pub. Utils., 643 N.E.2d 1029, 1030 (Mass. 1994) ("In general terms, the department requires consideration in the selection process of the consequences of the emission of various pollutants by alternative power sources that might be selected."). The proxy was to be based on the "implied valuation method," which determined an economic value based on the "costs of reducing the emission, or the effects of the emission, of the particular pollutant." *Id*. at 1032. Arguably, valuation of the damage directly associated with the pollutant would be more accurate, but the DPU found this method infeasible. *Id.*

[132] *Id*. at 1031.

[133] *Id.*

[134] *Id*.

[135] *Id.* at 1032.

[136] *Id.* at 1033.

[137] *Id.* at 1030.

[138] *Id.* at 1033–34.

[139] *Id.* at 1034.

[140] 71 F.E.R.C. ¶ 61,269 (1995).

CPUC from setting avoided-cost rates based on any measure other than the direct costs incurred by utilities.[141] In response to criticism that this decision would restrict the ability of state commissions to encourage the development of renewable resources, FERC laid out what it considered to be the acceptable state means to achieving that goal:

> The Commission believes that states have numerous ways outside of PURPA to encourage renewable resources. As a general matter, states have broad powers under state law to direct the planning and resource decisions of utilities under their jurisdiction. States may, for example, order utilities to build renewable generators themselves, or deny certification of other types of facilities if state law so permits. They also, assuming state law permits, may order utilities to purchase renewable generation. States also may seek to encourage renewable or other types of resources through their tax structure, or by giving direct subsidies.[142]

This list assumes that the development of renewable resources will require not simply new commission jurisprudence, but new legislation. As *Massachusetts Electric Co.* and *Southern California Edison* illustrate, this reading of utility enabling legislation narrows the scope of commission discretion to the prudence of activities causing direct rate impacts, which in turn restricts the ability of the commission to forward the development of renewable resources or other environmental or technological goals.

B. Smart Grid

The manner in which the focus on direct rate impacts can limit utility options can be seen in the case of the smart grid. The smart grid has been described as an "intelligent, auto-balancing, self-monitoring power grid."[143] It is widely considered to be a crucial step in increasing the efficiency and reliability of the electrical grid, and in transitioning to distributed generation and greater penetration of renewable resources.[144] For this reason, the Energy Independence and Security Act of 2007 ("EISA") states that it is "the policy of the

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[141] 71 F.E.R.C. ¶ 62,280 (1995).

[142] *Id.* Later cases have confirmed that state requirements that utilities purchase electricity from generators with certain characteristics (i.e., renewable, or certain sizes and/or types of combined heat and power facilities) can be considered when setting avoided cost. *See Cal. Pub. Utils. Comm'n Order*, 134 F.E.R.C. ¶ 61044, 61160 (2011). Thus, for example, if a state requires utilities to purchase renewable energy, it need not consider the cost of a fossil-fuel-generating facility when setting avoided costs. *Id.* at ¶ 61161. The state could also calculate avoided cost using an "adder" for certain necessary improvements to distribution or transmission facilities, provided that the adder reflected actual costs, and not simply theoretical externalities. *Id.* at ¶ 61155.

[143] Elias L. Quinn & Adam L. Reed, *Envisioning the Smart Grid: Network Architecture, Information Control, and the Public Policy Balancing Act*, 81 U. COLO. L. REV. 833, 843 (2010); *see also Energy Bar Association Panel Discussing the Smart Grid*, 31 ENERGY L. J. 81, 84 (2010) (speaker Joe Miller describing the differences between the current grid and the smart grid as a "move to a decentralized supply and control model" with a two-way flow of information and power).

[144] *See* Quinn & Reed, *supra* note 143, at 837–39.

United States to support the modernization of the Nation's electricity transmission and distribution system" through the deployment of smart grid technology.[145] In 2009, as part of the American Recovery and Reinvestment Act ("ARRA"), utilities became eligible for significant tax breaks and incentives for developing smart grid programs. In part to capture the savings associated with the legislation, Baltimore Gas and Electric Co. sought to develop a smart grid initiative. In 2009, the utility went to the Public Service Commission of Maryland ("PSC") to receive approval for a smart grid project and funding mechanism that would allow recovery of the cost of the project outside of a traditional rate case.[146]

This was not the first smart grid proposal to reach a public utility commission, and the Maryland PSC was not without guidance from its fellow regulatory commissions in making its determination. In summer 2009, in response to the flood of interest in the smart grid following the passage of ARRA, the National Association of Regulatory Utility Commissioners ("NARUC") passed a resolution to guide commission assessments of smart grid proposals. The resolution firmly rooted any consideration of smart grid proposals in the familiar jurisprudence of regulatory commissions: "Smart grid standards and policies should seek to achieve maximum consumer, reliability, and environmental benefits and to provide opportunities for innovation, consistent with providing utility service to customers at *fair, just, and reasonable rates*."[147]

Relying on this precedent, the Maryland PSC had at its disposal over a hundred years of regulatory decisions defining "just and reasonable" rates. The analysis was, of course, a strictly economic one. Following a well-trodden path, the PSC addressed the question using a standard cost-benefit analysis, comparing the estimated costs of the system with the anticipated financial benefits to ratepayers. The benefits included operational savings from remote meter reading, as well as savings related to the cost of energy and capacity supply-side resources, which would be gained by "fundamental changes in residential customers' energy use and the way most residential customers think about energy pricing."[148]

Ultimately, the Commission rejected the plan, finding that the benefits were "largely indirect, highly contingent and a long way off."[149] While the policy goals represented by the smart grid system were consistent with other programs adopted by the Commission, it could not support a policy initiative that might leave ratepayers saddled with the cost of a system that failed to

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[145] Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492 § 1301 (2007), *available at* http://perma.cc/U4LK-QGW5.

[146] *In the Matter of the Application of Baltimore Gas and Electric Co. for Authorization to Deploy a Smart Grid Initiative and to Establish a Surcharge for the Recovery of Cost*, Case No. 9208, Order No. 83410 (Md. Pub. Svc. Comm. June 22, 2010) [hereinafter Order No. 83410], *available at* http://perma.cc/84XW-9EKL.

[147] Nat'l Ass'n of Regulatory Utility Comm'rs, Resolution Regarding Smart Grid (2009), *available at* http://perma.cc/U7PA-2C26 (emphasis added).

[148] Order No. 83410, *supra* note 146, at 6–7.

[149] *Id*. at 1.

produce the promised benefits.[150] The Commission was particularly concerned that the tracker mechanism that the utility proposed for cost recovery left all of the financial risk on the shoulders of customers. While it rejected the proposal, it invited the utility to come back with a different proposal that allocated a larger share of the costs and risks to the utility.[151]

Not surprisingly, this order was lauded by Scott Hempling, then Executive Director of the National Regulatory Research Institute ("NRRI"), the research arm of the NARUC, as a "pitch-perfect" response.[152] As Hempling explained, "[t]he phrase 'just and reasonable' experiences so much repetition it almost loses its meaning. The Maryland Commission gave the phrase content: 'just' aligns benefits with cost bearers, 'reasonable' requires cost-effectiveness."[153] Or as one analysis put it, "the message the Maryland PUC delivered . . . isn't that they're opposed to the smart grid, but that they'll treat it just like any other infrastructure investment."[154] The problem with this approach is that it does not account for the categorically different profile of an investment like the smart grid, which may not yield short-term benefits—or may yield no economic benefits at all—but may be necessary to modernize and transform the utility system.

A recent analysis of smart grid adoption concludes that state public utility commissions have "resisted approving" smart grid projects because of concerns about quantification of project costs and benefits, dynamic pricing, and other consumer fears related to health and safety.[155] Time-sensitive pricing, including dynamic pricing, allows the rate charged by the utility to fluctuate according to market prices, which generally rise during periods of peak usage, either on a daily, hourly, or seasonal period.[156] Such a pricing scheme is arguably an essential part of the smart grid; it increases efficiency by encouraging consumers to shift usage to non-peak times, mitigates the need for expensive new resources to meet peak loads, and makes markets more flexible in responding to pricing signals.[157] Consumer advocates, however, worry that time-sensi-

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[150] *Id.* at 7. The Commission was also uncomfortable with the utility's proposal to move all customers to a "time of use" rate design and failure to provide for adequate customer education. *Id.* at 5.
[151] *Id.* at 3, 7–8, 47–48.
[152] Scott Hempling, *"Smart Grid" Spending: A Commission's Pitch-Perfect Response to a Utility's Seven Errors*, SCOTTHEMPLINGLAW.COM (July 14, 2010), http://perma.cc/ZD6K-TPL8.
[153] *Id.*
[154] Anderson, *supra* note 14 (parphrasing Kevin Cornish, a smart grid energy consultant).
[155] Joel B. Eisen, *Smart Regulation and Federalism for the Smart Grid*, 37 HARV. ENVTL. L. REV. 1, 17–20 (2013).
[156] *See* Severin Borestein, *Effective and Equitable Adoption of Opt-In Residential Dynamic Electricity Pricing*, 22 REV. INDUS. ORG. 127, 128–29 (2012) (describing different forms of time-sensitive pricing).
[157] *See* Hunt Allcott, *Rethinking Real-Time Electricity Pricing*, 33 RESOURCE & ENERGY ECON. 820, 820–21 (2011) (demonstrating benefits to customers from adopting real-time pricing); Ahmad Faruqui, Ryan Hledik & John Tsoukalis, *The Power of Dynamic Pricing*, 22 ELECTRICITY J. 42, 55–56 (using model of generic California utility to demonstrate peak reduction and significant financial savings from dynamic pricing program).

tive pricing exposes customers to additional financial risk, which they may be in a limited position to mitigate.[158]

Whether commissions limit, modify, or reject smart grid proposals because they are concerned about exposing customers to new financial risks, or because utilities cannot demonstrate near-term economic benefits, the end result is the same: A technology with transformational potential may be sidelined because of an antiquated regulatory structure, not because of its long-term efficiency or necessity.[159]

C. Carbon Offsets

The narrow view of commission authority does not simply require a near-term benefits analysis for utility projects. It can also entirely block utility projects that are not considered within the traditional scope of commission authority. In Washington State, a 2008 case before the Utilities and Transportation Commission ("WUTC") illustrates this problem. NW Natural, a natural gas utility, sought to create a carbon offset program, in which customers would pay an amount each month to offset the emissions associated with their natural gas usage.[160] The program was voluntary, but would have charged a portion of education and start-up costs to all customers.[161] In denying the petition to establish the program, the WUTC held that the legislature had failed to provide it with the authority "to approve any such program or exercise regulatory oversight with respect to carbon emissions."[162]

In reaching its conclusion, the WUTC relied in part on *Okeson v. City of Seattle*.[163] In that case, the court had found that a municipal utility (Seattle City Light) lacked the authority to impose the cost of carbon offsets on utility cus-

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[158] *See* Borestein, *supra* note 156, at 131 (describing barriers to dynamic pricing schemes).

[159] A similar case played out in Virginia with regard to an application by the Appalachian Power Company to build a clean coal electric generating facility. *See* Application of Appalachian Power Company, Case No. PUE-2007-00068 (Va. State Corp. Comm. April 14, 2008) (on file with author). In that case, the utility commission denied the application because it felt that the technology and cost of the facility was too speculative. While the company argued that the technology would provide a benefit in the cost-effective reduction of CO_2, the commission ultimately could not approve the project given the significant risks and uncertain benefits:

> We understand and appreciate . . . APCo's good-faith desire to prepare for what it believes is the likelihood of a federal carbon capture and sequestration mandate for coal-fired plants. Yet neither APCo nor anyone else knows how such a future mandate may be structured, how it will affect existing plants . . . or whether it could be applied cost-effectively through a retrofit to this plant . . . . We cannot ask Virginia ratepayers to bear the enormous risks—and potential huge costs—of these uncertainties . . .

Id. at 16–17.

[160] *In the Matter of the Petition of Northwest Natural Gas Co. for an Accounting Order Authorizing Deferred Accounting Treatment of Certain Costs Associated with the Smart Energy Program*, Dockets UG-080519 & UG-080530 (consolidated), Order No. 4 (Wash. St. Util. and Trans. Comm'n 2008) [hereinafter Smart Energy Order], *available at* http://perma.cc/RCC3-9JL9. For more information about NW Natural's Smart Energy program, see http://perma.cc/VGG3-LUCN.

[161] Smart Energy Order, *supra* note 160, at ¶ 3.

[162] *Id.* at ¶ 18.

[163] *Id.* at ¶ 24 (citing Okeson v. City of Seattle, 150 P.3d 556, 561 (2007)).

tomers.[164] At the outset, the court noted that the authority of a municipal utility was strictly limited to powers "granted in express words, or those necessarily or fairly implied in or incident to the powers expressly granted."[165] In considering the program in question—which entailed the utility purchasing carbon offsets and recovering the cost of those offsets from customers—the court determined that the authority for such a program was not expressly granted in the statute.[166] Further, the court held that the authority could not be considered an implied power, because implied powers had to serve a proprietary function, and here, the program served a general governmental purpose.[167]

> We conclude that City Light's GHG offset contracts are not proprietary because they are not part of the services for which individual customers are billed . . . . While it is true that the program may be viewed as a legitimate part of the utility's production of electricity because its purpose is to prevent City Light's production from causing a net increase in global greenhouse gas emissions, that is not enough to make the program a proprietary function.[168]

Although the *Okeson* case involved a municipal utility, while NW Natural was an investor-owned utility, the WUTC nonetheless found the opinion persuasive by analogy.[169] Despite the fact that case law distinguishes between proprietary and governmental functions and an investor-owned utility does not play a government function, the court found that both municipal utilities and investor-owned utilities were limited to powers "expressly conferred upon [them] by the Legislature or necessarily implied by [their] governing statutes."[170] Because it could find no express authority in the public utility statutes conferring the power to recover the costs for carbon offsets from utility customers, the commission found that it lacked the authority to authorize the Smart Energy program.[171]

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[164] *Okeson*, 150 P.3d at 558.
[165] *Id.* at 561.
[166] *Id.*
[167] *Id.* at 561–63. "[T]he principal test in distinguishing governmental functions from proprietary functions is whether the act performed is for the common good of all, or whether it is for the special benefit or profit of the corporation." *Id.* at 562 (citing Okeson v. City of Seattle, 78 P.3d 1279 (2003)). A strong dissent argued that purchasing GHG offsets *was* a proprietary utility function for a number of reasons. First, Seattle City Light's customers specifically benefitted from the program by knowing that "the electricity they consume is not contributing to anthropogenic climate change." *Id.* at 566. Second, the program helped the utility meet a local requirement that it mitigate GHG emissions. *Id.* at 566–67. Third, the program increased efficiency, which the court had previously determined was a proprietary utility function. *Id.* at 567. Finally, the dissent argued that a strong nexus existed between offsets and the utility's express purpose of providing electricity, so it was reasonable to expect ratepayers to cover the costs associated with power generation. *Id.* at 567.
[168] *Id.* at 563.
[169] Smart Energy Order, *supra* note 160, at ¶ 24.
[170] *Id.*
[171] *Id.* at ¶ 27.

D. Electric Vehicles

A final example of the result of the standard commission interpretation of its regulatory authority lies in the case of EVs. In 2011, the transportation sector accounted for twenty-eight percent of the total energy consumed in the United States.[172] Thirty-two percent of CO_2 emissions from fossil fuel consumption in 2010 could be attributed to the transportation sector, and emissions have been rising steadily over the past decade, due in large part to increased travel and flat vehicle fuel efficiency.[173] The transportation sector's reliance on oil creates ongoing concern both for environmental impacts and national security.[174] A potential panacea for both concerns lies in the form of EVs. While electric generation is by no means carbon-neutral, it at least has the potential to be shifted to renewable resources, or less carbon-intensive, domestically produced natural gas.[175] If electric production shifted to renewable resources, while consumers also shifted to EVs, we could address climate change at the same time we increased energy security.[176]

Public utility commissions will play a significant role in shaping the landscape for EV adoption. Public utility commissions will determine the rates that customers will pay for charging their EVs, and potentially the rates utilities will pay if they want to draw on EV batteries to help stabilize the grid during peak events.[177] Commissions will also determine whether to permit utilities to participate in building charging stations, and how the costs for such stations will be recovered.

Many parties have noted that EVs suffer from the "chicken and egg" syndrome.[178] Without readily available access to charging stations, people will be reluctant to buy EVs. Yet until there is a significant number of EVs on the road, businesses are unlikely to invest in charging stations. The Public Utility Commission of Oregon ("OPUC") recently considered what roles public utilities might play in building charging stations to meet the needs of EVs. While the OPUC did not dismiss the prospect of an IOU owning and operating EV service equipment (including charging stations), the commission sounded much

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[172] U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 37 (2011) ("Figure 2.0: Primary Energy Consumption by Source and Sector"), *available at* http://perma.cc/J2FD-PUMY.
[173] EPA *supra* note 3, at ES-8.
[174] Jake Seligman, *Electric Vehicles and Time-of-Use-Rates: The Impending Role of the New York State Public Service Commission in Regulating our Transportation Future*, 28 PACE ENVTL. L. REV. 568, 568–69 (2011).
[175] *Id.* at 570–71.
[176] *See* TOMAIN, *supra* note 10, at 142, 143–44 (discussing the importance of EVs in transforming energy policy "away from fossil fuels to a low-carbon energy economy").
[177] The rate structures for EV charging could have a significant environmental impact. If customers all charge their vehicles during existing peak-load times, utilities will actually need to build more infrastructure (both generation and transmission) to meet the load, and/or use less efficient, dirtier generation resources (like oil plants), resulting in rising costs and greater environmental damage. *See* Seligman, *supra* note 174, at 572–74.
[178] *See, e.g.*, John Broder, *The Electric Car, Unplugged*, N.Y. TIMES, Mar. 25, 2012, at SR-6 (describing multiple causes for the failure of the electric car industry to take off, including "the chicken and egg problem with the charging infrastructure").

like the Maryland PSC when it discussed the potential for recovery of the cost of a charging station in customer rates. "We expect a utility that requests rate recovery for [EV supply equipment] to make a *compelling* case that the utility's ownership and operation of the [equipment] is beneficial to ratepayers—not just the public generally . . . [P]rudence, in the context of [such an] investment, requires a showing of net benefits to customers."[179]

The cases of environmental externalities, smart grid technologies, carbon offsets, and EVs illustrate the general rule with regard to commission involvement in environmental policy: Unless the environmental duty is specifically provided for in legislation, a commission lacks the authority—or perceives itself to lack the authority—to take regulatory action to further it. If utilities seek to acquire new technologies or develop environmental programs, regulatory commissions will require specific economic benefits to current customers that outweigh present costs. Speculative, far-reaching, or non-economic environmental harms are simply not considered to be within the purview of the regulatory commission.

III. Regulatory Reform: Ways to Drive Change in the Utility System

As Parts I and II demonstrate, the economic foundation of the regulatory structure demands that utilities demonstrate customer-specific economic benefits for programs, the cost of which they intend to recover in their rates to customers. Because of this regulatory necessity, public utility commissions simply cannot be expected to drive energy policy changes, encourage reductions in GHG emissions, or even drive significant technological evolution in the utility system. This in turn means that the utilities themselves will be unable to advance long-term, systemic evolution, because they will be unable to guarantee cost recovery for projects that cannot be shown to have net economic benefits.

The focus on short-term financial benefits to customers may be precisely the opposite of the type of analysis needed to drive substantial change in the industry. As Peter Fox-Penner and Heidi Bishop note in a 2011 article on electric market regulation, "U.S. electricity regulation was designed a century ago to encourage a build-out of the grid for purpose of establishing scale economies and therefore low-cost power . . . . Current regulatory law, regulator core competencies, and many embedded incentives are all wrong for the industry's coming era."[180]

In an ideal world, federal, state, and local governments would each play a role in developing and implementing a comprehensive U.S. energy policy including long and short term goals to: (1) modernize the electrical system; (2)

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[179] *In the Matter of Public Utility Commission of Oregon Investigation of Matters Related to Electric Vehicle Charging*, Case No. UM 1461, Order 12-013 (Or. P.U.C. 2012), *available at* http://perma.cc/F4QH-SBVU.

[180] Fox-Penner & Bishop, *supra* note 86, at 1111–12.

address transmission constraints; and (3) achieve significant reductions in GHG emissions.[181] Academics and policy analysts have repeatedly called for such a policy, even while noting the difficulty of achieving such a task.[182] United States energy policy, they suggest, has trended toward short-term fixes that fail to solve significant, underlying problems.[183] "As a result, many of the fundamental economic, environmental, and security-related challenges arising from patterns of U.S. energy production and consumption have become intractable. Some now approach a point of crisis."[184]

While comprehensive energy policy is clearly desirable, this path remains more of a theoretical goal than a practical one, and has been the subject of a number of previous commentaries.[185] Accordingly, this Part offers more limited, realistic options for modifying the current legal structure to allow for the evolution of the utility system. Option one is to introduce targeted, narrowly defined legislation to address specific initiatives, as has already been done with renewable portfolio standards ("RPSs") and incentives for smart grid initiatives. Option two is to embed environmental policies into commission-enabling legislation. Option three is to focus on expanding and mandating long-term resource planning processes to integrate economic, environmental, and risk analyses already squarely within the purview and jurisdiction of regulatory commissions.

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[181] A significant body of literature addresses the concept of integration of federal, state, and local governments in environmental and energy law, particularly in addressing the multi-faceted challenge of climate change. Professor Osofsky argues for energy and climate policy reform through what he calls "diagonal federalism," a process of integrating "key public and private actors at different levels of government . . . and within each level of government . . . simultaneously in order to create needed crosscutting interactions." Hari M. Osofsky, *Diagonal Federalism and Climate Change Implications for the Obama Administration*, 62 ALA. L. REV. 237, 241 (2011). Professors Pursley and Wiseman propose a federal-local partnership to spur a transition to distributed renewable resources. *See* Pursley & Wiseman, *supra* note 28, at 880–83; *see also* Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW U. L. REV. 1097, 1099 (2009) (arguing that the most innovative responses to climate change "are the results of repeated, sustained, and dynamic lawmaking efforts involving both" state and federal governments); David E. Adelman & Kirsten H. Engel, *Reorienting State Climate Policies to Induce Technological Change*, 50 ARIZ. L. REV. 835, 875 (2008) (noting that state and federal climate change policies should be complementary).

[182] *See* David B. Spence, *Regulation, "Republican Moments," and Energy Policy Reform*, 2011 BYU L. REV. 1561, 1585–93, 1602–15 (2011) (describing recent failed attempts at creating new energy policies to address environmental, security, and reliability concerns, and analyzing reasons for the failure, including the problem that most of the costs of energy reform fall on current customers, while the benefits primarily accrue to future generations); *see also supra* note 28 and accompanying text.

[183] *See* Gallagher, *supra* note 30, at 1.

[184] *Id.* at 1.

[185] *See supra* notes 29 and 30 and accompanying text; *see generally* DEUTCH, *supra* note 29 (offering a policy plan for addressing climate change, energy security, transitioning to renewable resources, and managing technology); JAMES M. GRIFFIN, A SMART ENERGY POLICY: AN ECONOMIST'S RX FOR BALANCING CHEAP, CLEAN, AND SECURE ENERGY 4 (2009) (arguing for more accurate pricing signals and equity in the form of taxation to balance the desire for "cheap, clean, and secure energy").

A. Piecemeal Legislation: Creating Change One Law at a Time

In the 1990s, seeing little hope for significant environmental legislation at the federal level, environmental advocates turned to state and local governments to achieve their goals.[186] The most prominent of the new laws were the RPSs passed by many states in the late 1990s and early 2000s.[187] An RPS sets a hard target for renewable resource acquisition, generally tying a specific resource acquisition goal to a set percentage of a utility's total sales; for example, twenty-five percent of electricity will be generated by renewable resources by 2025.[188] RPSs also typically establish a definition of eligible resources, address the possibility of trading credits that may be used in lieu of actual resource purchases, and set penalties for non-compliance.[189] While RPSs seek to transition utility portfolios away from fossil fuels, they are also intended to grow the market for renewable resources[190] and incubate new technologies so they can be more cost effective in the future.[191] Today, twenty-nine states have mandatory requirements for renewable resource acquisition; another eight have aspirational goals.[192]

Without RPSs, it is difficult to imagine renewable resources establishing much more than a toehold in utility portfolios, for the simple reason that they remain significantly more expensive than alternative fossil fuel resources.[193] Most of the opposition to RPSs has focused on cost increases, and as a result, many of the statutes include some form of cost cap or escape route.[194] However,

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[186] *See* Alexandra B. Klass, *Climate Change and the Convergence of Environmental and Energy Law*, 24 FORDHAM ENVTL. L. REV. 180, 189–202 (2013) (describing major state climate change initiatives that combine energy and environmental law); *see generally* Kirsten Engel, *State and Local Climate Change Initiatives: What Is Motivating State and Local Governments to Address a Global Problem, and What Does this Say About Federalism and Environmental Law?*, 38 URB. LAW. 1015 (2006) (describing numerous state environmental initiatives); Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy from the Bottom-Up? An Assessment of State Sustainable Energy Initiatives*, 7 VT. J. ENVTL. L. 1 (2006) (describing state and regional climate change and clean energy initiatives and their potential to achieve a sustainable U.S. economy).

[187] *See* Benjamin K. Sovacool & Christopher Cooper, *The Hidden Costs of State Renewable Portfolio Standards (RPS)*, 15 BUFF. ENVTL. L.J. 1, 3–4 (2007) (providing a brief history of RPSs).

[188] Twenty-five percent by 2025 is the RPS established in Oregon for large utilities. *See* OR. REV. STAT. § 469A.052 (2011).

[189] *See* Robin J. Lunt, *Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard*, 25 UCLA J. ENVTL. L. & POL'Y 371, 381–82 (2007) (describing basic elements of an RPS).

[190] *Id.* at 375.

[191] *See* Davies, *supra* note 80, at 1358 (arguing that the "core objective" of an RPS is to promote the renewable energy market).

[192] *See Today in Energy*, U.S. ENERGY INFO. ADMIN. (Feb. 3, 2012), http://perma.cc/MC7J-RQPX. For an up-to-date list of states with RPSs, see *Database of State Incentives for Renewables and Efficiency: Renewable Portfolio Standard Policies*, U.S. DEPT. OF ENERGY, http://perma.cc/C28F-86BM (updated Nov. 2012).

[193] *See Levelized Cost of New Generation Resources in the Annual Energy Outlook 2013: Table 1*, U.S. ENERGY INFO. ADMIN, http://perma.cc/B9FW-SX7B. The U.S. Energy Information Administration's latest projection of levelized costs per megawatt hour shows that the cheapest resource is a natural gas-fired conventional combined cycle and advanced combined cycle facility; wind energy is a relatively close second. *Id.*

[194] For example, in Missouri, by 2021 at least fifteen percent of electric utility sales must come from renewable resources; two percent of sales must come from solar energy. MO. REV. STAT.

the legislation does exactly what utility regulation could not: elevates environmental policy goals over economic goals, detaching utility regulation from its traditional task of limiting rates.

Interestingly, energy efficiency[195] receives distinctly different treatment from renewable resources. Regulatory policies to encourage energy efficiency grew out of the energy crises of the 1970s, and were primarily targeted at saving money and increasing energy security, rather than achieving environmental goals.[196] In the 1980s, a number of state regulatory commissions began to mandate utility-operated energy efficiency programs, but—as befits the goals of regulatory commissions—the purpose of these programs was to save utility customers money by avoiding costly new power plants and unnecessary investments, not to protect the environment.[197]

Twenty-six states currently have energy efficiency resource standards ("EERSs"), which set targets for energy efficiency savings, either as the result of commission regulation or state legislation.[198] However, unlike an RPS, which sets a hard target based on somewhat arbitrary environmental goals, an EERS requires the acquisition of cost-effective energy efficiency,[199] i.e., energy efficiency that is cheaper than, or an equivalent price to, supply-side alternatives.[200] In some states, the EERS is even more limited, including rate-impact caps, budget caps, or "exit ramp" procedures whereby utilities can request a lower target based on what the utility considers reasonable or achievable.[201] Energy efficiency, therefore, is treated from the economic, rate-limiting perspective,

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§ 393.1030(1) (2012). A cost cap limits rate increases due to the RPS to one percentage point above a portfolio not including renewable resources. § 393.1030(2).

[195] Energy efficiency is generally defined as a technological improvement or process that enables end-use devices (from steam turbines to household appliances) to provide the same service using less energy. *See, e.g.*, SARA HAYES ET AL., CARROTS FOR UTILITIES: PROVIDING FINANCIAL RETURNS FOR UTILITY INVESTMENTS IN ENERGY EFFICIENCY 2 (Am. Council for an Energy-Efficient Economy Rep. U111, 2011), *available at* http://perma.cc/9DJU-SS3Q.

[196] *See* Fred Sissine, *Energy Efficiency Policy: Budget, Electricity Conservation, and Fuel Conservation Issues, in* ENERGY EFFICIENCY, RECOVERY AND STORAGE 75, 81 (Konrad A. Hofman ed., 2007).

[197] *Id.*

[198] *See* MICHAEL SCIORTINO ET AL., ENERGY EFFICIENCY RESOURCE STANDARDS: A PROGRESS REPORT ON STATE STANDARDS 1–2 (Am. Council for an Energy-Efficient Economy Rep. U112, 2011), *available at* http://perma.cc/D4JZ-LPDT.

[199] *See id.* at 1 (noting "EERS policies maintain strict requirements for cost-effectiveness so that programs are insured to provide overall benefits to customers").

[200] For example, under Massachusetts law, each utility must create a plan for acquiring energy efficiency or demand-side resources that are "cost effective or less expensive than supply." MASS. GEN. LAWS ch. 25 § 21(b)(1) (2012). Arizona regulations set a cumulative energy efficiency standard of twenty-two percent by the year 2020, but that efficiency is to be achieved through "cost-effective DSM energy efficiency programs." ARIZ. ADMIN. CODE § 14-2-2404 (2012).

[201] *See* SCIORTINO ET AL., *supra* note 198, at 13. For an example of an exit ramp, see N.M. STAT. ANN. § 62-17-5 (LexisNexis 2012) (permitting commission to set "lower minimum energy savings requirements for the utility based on the maximum amount of energy efficiency and load management that it determines can be achieved"), and OHIO REV. CODE ANN. § 4928.66 (LexisNexis 2012) ("[t]he commission may amend the benchmarks . . . if . . . the commission determines that the amendment is necessary because the utility cannot reasonably achieve the benchmarks").

while renewable resources are handled from an environmental, non-economic perspective.

Other areas of state legislation have included laws requiring public utility commissions to consider environmental externalities in their assessments of different resource options,[202] and mandating that utility commissions to take into account environmental issues when siting new facilities, conducting state NEPA reviews, and conducting resource planning processes.[203] Meanwhile, some marginal change has been made at the federal level to encourage development of new environmental and technological advances. Revisions to PURPA in the Energy Policy Act of 2005 and EISA[204] addressed energy efficiency, offered incentives for renewable resource development, and required states to consider policies that encourage the development of the smart grid.[205] More recently, to directly encourage the development of smart grid projects, ARRA offered significant tax incentives to utilities for acquiring such technologies.[206]

This piecemeal, incremental approach to environmental energy policy is appealing in its simplicity and certainly easier to achieve than comprehensive reforms. However, research on the effectiveness of such policies is mixed. RPSs, which have been studied in some detail, are instructive. In a 2010 study, Haitao Yin and Nicholas Powers found that certain RPS policies drove a statistically significant increase in in-state renewable generation, but found that other RPS policies could actually yield a negative result.[207] For example, if an RPS allowed existing generation to count toward an overall requirement, the implementation of the policy could cause the ratio of renewable to non-renewable capacity to drop, as new, non-renewable capacity was added, but new renewable capacity was not.[208] Gireesh Shrimali and Joshua Kniefel conducted a similar analysis and found that the impact of RPS requirements on the total renewable capacity ratio (the ratio of renewable to non-renewable capacity) was negative, but concluded, like Professors Yin and Powers, that the design of the RPS drove results.[209] Research by the National Renewable Energy Laboratory ("NREL") found that policy initiatives by states did drive renewable en-

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[202] *See, e.g.*, In the Matter of the Quantification of Envtl. Costs Pursuant to Laws of Minn. 1993, Chapter 356, Section 3, 578 N.W.2d 794, 796 (Minn. Ct. App. 1998) (upholding environmental cost values for electric generation set by public utility commission pursuant to state law).

[203] Michael Dworkin et al., *Revisiting the Environmental Duties of Public Utility Commissions*, 7 VT. J. ENVTL. L. 1, 3–19 (2006).

[204] Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492 §§ 1301–06 (2007) (codified at 42 U.S.C. §§ 17381–86).

[205] *See* Brad Sherman, *A Time to Act Anew: A Historical Perspective on the Energy Policy Act of 2005 and Changing Electrical Energy Market*, 31 WM. & MARY ENVTL. L. & POL'Y REV. 211, 234–35, 237–38, 241–45, 248–52 (2006) (reviewing policies embedded in the Energy Policy Act of 2005 from both a historical and contemporary perspective).

[206] *See* American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 138 (2009).

[207] Haitao Yin & Nicholas Powers, *Do State Renewable Portfolio Standards Promote In-State Renewable Generation?*, 38 ENERGY POL'Y 1140, 1149 (2010).

[208] *Id.* at 1147.

[209] Gireesh Shrimali & Joshua Kniefel, *Are Government Policies Effective in Promoting Deployment of Renewable Electricity Resources?*, 39 ENERGY POL'Y 4726, 4727, 4738 (2011); *see also* Magali A. Delmas & Maria J. Montes-Sancho, *U.S. State Policies for Renewable Energy: Context*

ergy development, but only in conjunction with other variables, such as state population, electricity price, and the number of years a policy had been in place.[210] Surprisingly, NREL researchers found that certain policies, like net metering, did appear to drive increases in renewable energy generation, even in isolation.[211] Studies have also shown that state policies requiring utilities to offer "green power" options to customers have had a positive effect on renewable capacity.[212]

The problem with piecemeal legislation is that it narrows the utility's focus to the acquisition of specific resources, rather than the achievement of system-wide goals. A renewable portfolio standard is not a carbon-reduction standard or a fossil-fuel-reduction standard—though those may be the deeper goals that undergird its existence.[213] The public utility commissions that make the regulations implementing RPSs are likely to have little or no discretion to override or modify RPS requirements in pursuit of the larger goal, or to adjust for unintended consequences like the decrease of renewable capacity resulting from a poorly designed RPS. Similarly, the implementation of legislatively dictated EERS policies with cost-effectiveness limits may result in utilities missing opportunities to decrease transmission loads, reduce outage risks, and limit GHG emissions through energy efficiency programs where those programs are slightly more expensive than alternative fossil fuel options, because commissions have no authority to implement them absent a clear economic benefit to customers.

In the case of smart grid, we have already seen that tax and other financial incentives may be unsuccessful if they conflict with existing commission jurisprudence requiring economic benefits. Alternatively, if legislation requires utilities to adopt specific technologies, we must ask what happens when those technologies become outdated, or better alternatives arise. If coded into legislation, commissions will have their hands tied, and be unable to respond to changing conditions.

Another difficulty with piecemeal policies is that they disregard the extensive knowledge and experience that public utility commissions and their staffs bring to utility regulation. The utility industry is extraordinarily complex, made

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and Effectiveness, 39 ENERGY POL'Y 2273, 2282 (2011) (finding that RPSs had a negative impact on investments in renewable capacity).

[210] *See* ELIZABETH DORIS & RACHEL GELMAN, NAT'L RENEWABLE ENERGY LAB, STATE OF THE STATES 2010: THE ROLE OF POLICY IN CLEAN ENERGY MARKET TRANSFORMATION 18 (2011), *available at* http://perma.cc/4CTH-WN78; *see also* ELIZABETH DORIS ET AL., NAT'L RENEWABLE ENERGY LAB, STATE OF THE STATES 2009: RENEWABLE ENERGY DEVELOPMENT AND THE ROLE OF POLICY, 137–38 (2009), [hereinafter RENEWABLE ENERGY AND THE ROLE OF POLICY] *available at* http://perma.cc/PF3-DQKM (finding no single model of RPS that was correlated with significant increases in development).

[211] *See* RENEWABLE ENERGY AND THE ROLE OF POLICY, *supra* note 210, at xv.

[212] *See* Delmas & Montes-Sancho, *supra* note 209, at 2282; *see also* Shrimali & Kniefel, *supra* note 209, at 4727.

[213] Some commentators have suggested going back to the drawing board when considering RPS and EERS standards for precisely this reason. *See, e.g.*, Sean Casten, *A Better Renewable Portfolio Standard*, 22 ELEC. J. 29, 31 (2009) (calling for the creation of a "fossil energy reduction standard").

up of a dizzying array of interrelated parts. Targeted legislation that removes commission discretion eliminates the possibility that a commission might be able to reach policy goals with more effective—and cheaper—system-wide solutions.

If the object of a policy is the increase in utilization of a specific resource, then a specific policy targeting that resource makes sense. Thus, if the goal is to build solar photovoltaic capacity, a feed-in tariff requiring the purchase of that resource makes sense.[214] But if the goal is a larger, system-wide evolution, as will be necessary to address climate risks and transition away from fossil fuels, such policies will ultimately prove insufficient.

B. Creating Broad Environmental Duties for Commissions

As described in Part I, the limitation on public utility commission authority can be directly tied to the enabling legislation and historical economic purposes of regulatory commissions. It would therefore be tempting to simply broaden the enabling legislation of the regulatory commission to include environmental goals, such as the minimization of GHG emissions or the long-term evolution of the system.

As of 2006, fifteen state commissions had general references to environmental considerations in their enabling legislation.[215] These provisions vary widely. The Maryland PSC—the same commission that considered (and rejected) a smart grid project because it did not provide net benefits to current customers[216]—is directed in its enabling legislation to consider "the conservation of natural resources, and the preservation of environmental quality."[217] In Alaska, the Public Utilities Commission has a non-discretionary legislative mandate that states it "*shall* promote the conservation of resources used in the generation of electric energy."[218]

A number of states with this type of legislation focus purely on conservation, rather than grant general authority to consider environmental quality. For example, the enabling legislation for the West Virginia PSC states that the Commission has the authority and duty to "encourage energy conservation and the effective and efficient management of regulated utility enterprises" and "identify, explore and consider the potential benefits or risks associated with emerging and state-of-the-art concepts in utility management, rate design and conservation."[219] In Mississippi, the PSC has the authority to both "encourage

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[214] *See, e.g.*, Michael Dorsi, *Clean Energy Pricing and Federalism: Legal Obstacles and Options for Feed-In Tariffs*, 35 ENVIRONS ENVTL. L. & POL'Y J. 173, 183–85 (2012) (describing a variety of municipal and state feed-in tariff programs).

[215] Michael Dworkin et al., *Revisiting the Environmental Duties of Public Utility Commissions (2006)*, 7 VT. J. ENVTL. L. 1, 2 (2006). These states are: Alaska, Connecticut, Florida, Illinois, Iowa, Maine, Maryland, Mississippi, New Jersey, New York, North Carolina, Rhode Island, Utah, West Virginia, and Wisconsin. *Id.* at 442 n.44.

[216] *See supra* notes 146–49.

[217] MD. CODE ANN., PUBLIC UTIL. COMP. § 2-113 (2000).

[218] ALASKA STAT. ANN. § 42.05.141(c) (2007) (emphasis added).

[219] W. VA. CODE §§ 24-1-1(5), 24-1-1(6)(c) (2013).

and promote harmony between public utilities, their users and the environment,"[220] and "provide just and reasonable rates and charges . . . consistent with long-term management and conservation of energy resources . . . ."[221]

The problem with this approach is defining precisely what sort of environmental or conservation goals the public utility commission will seek to achieve. A broadly worded duty to "consider" or "promote" energy conservation or the preservation of the environment does not compel any particular result. Nor does it ensure vigor in the examination of environmental impacts, or the prioritization of environmental impacts over low rates. Unless the provision specifically states that it overrules existing definitions of just and reasonable rates, environmental considerations—whether they be related to conservation or environmental quality—are likely to be folded into existing commission jurisprudence prioritizing low rates, just as they have been since the 1970s.

The ineffectiveness of these statutes is illustrated by an examination of data related to carbon emissions and energy efficiency. In the 2012 Energy Efficiency Scorecard released by the American Council for an Energy-Efficient Economy ("ACEEE"), Mississippi, West Virginia, and Alaska were ranked 51st, 49th, and 46th, respectively, for their energy efficiency initiatives.[222] All three lacked basic energy efficiency budgets; none of the three recorded program savings from energy efficiency or offered utilities any kind of fixed-cost recovery for energy efficiency initiatives.[223] In an examination of West Virginia's current lack of energy efficiency options, Professor James Van Nostrand effectively ties the failure of utilities to invest in efficiency to a lack of prescriptive regulatory measures requiring such programs and the failure of the public utility commission to institute recovery methods for lost revenues associated with investments in efficiency.[224]

Just as they do not ensure a commitment to energy efficiency, general grants of authority do not establish any particular preference for renewable energy. When the fifteen states with general environmental considerations are ranked according to their production of renewable energy, seven are in the top fifty percent for the nation, and eight are in the bottom fifty percent,[225] suggesting little correlation between the two variables. Notably, Mississippi ranks 33rd, West Virginia 49th, and Alaska 50th among states for renewable energy production.[226]

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[220] MISS. CODE. ANN. § 77-3-2(1)(e) (2005).
[221] MISS. CODE. ANN. § 77-3-2(1)(d).
[222] BEN FOSTER ET AL., THE 2012 STATE ENERGY EFFICIENCY SCORECARD 26 (Am. Council for an Energy-Efficient Econ. Rep. E12C, 2012), *available at* http://perma.cc/B6PH-MTMR. The report, which considers all fifty states and the District of Columbia, "examines six of the primary policy areas in which states typically pursue energy efficiency: utility and public benefits programs and policies; transportation policies; building energy codes; combined heat and power ("CHP") policies; state-government-led initiatives around energy efficiency; and appliance and equipment standards." *Id.* at vi. The authors then benchmark states and rank them from one to fifty-one.
[223] *See id.* at 23.
[224] *See* James M. Van Nostrand, *An Energy and Sustainability Roadmap for West Virginia*, 115 W. VA. L. REV. 879, 901–10 (2013).
[225] *Renewable Energy Production by State*, U.S. DEP'T OF ENERGY, http://perma.cc/EF89-CN2H.
[226] *Id.*

The above analysis, of course, is an informal assessment of correlation, not causation. In the area of renewable energy production in particular, other factors, such as a state's natural resources, affect these statistics. However, a 2010 study of the impact of certain environmental laws pertaining to public utility commissions confirms the ineffectiveness of environmental statutes in reducing carbon emissions.[227] John Sautter compiled data from sixteen states in which public utility commissions had the authority and/or obligation to "take into account environmental [e]ffects of electricity generation" when making decisions.[228] Contrary to his hypothesis, which was that these states would show lower CO_2 emissions per capita than those states without such laws, when Sautter conducted a regression analysis on data from the period of 1997–2005 to control for other causative factors, he determined that there was no such effect.[229] Similarly, these laws were not useful in predicting a decrease in CO_2 emissions over the period in question.[230] Importantly, however, as will be discussed in the following Subpart, when Sautter analyzed the data with regard to states with statutes requiring integrated resource planning, he reached a significantly different result.[231]

Embedding environmental concerns in public utility commission statutes could provide commissions with a means of withstanding court challenges of decisions that include environmental considerations. However, they do not compel commissions to reach any particular result, and as such, they are likely to be ineffective in forcing any change to the traditional analysis prioritizing low rates above other considerations.

C. Focus on Long-Term Planning and Risk Reduction

The third option for significant change in the utility system is to require utilities to perform periodic long-term, rigorous resource planning processes overseen by public utility commissions. These processes are not unfamiliar to public utility commissions. As described in Part I.D., in the 1970s, as a number of utilities were found to have overbuilt their generation resources in anticipation of demand that did not appear, many public utility commissions began to institute mandatory resource planning, commonly known as integrated resource planning. These planning processes fell out of favor in the 1990s and 2000s, as deregulation supposedly obviated the need for integrated planning processes. Some states repealed or modified their requirements;[232] as of 2011, just over half of the states had integrated resource planning requirements.[233]

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[227] John A. Sautter, *State Environmental Law and Carbon Emissions: Do Public Utility Commissions Use Environmental Statutes to Fight Global Warming?*, 23 ELECTRICITY J. 37, 44 (2010).
[228] *Id.*
[229] *Id.* at 47.
[230] *Id.* at 48.
[231] *Id.* at 47.
[232] *See* WILSON & PETERSON, *supra* note 95, at 4–5, 13.
[233] *See id.* at 5, 16.

In an integrated resource plan ("IRP"), a utility evaluates available resources and forecasted demand over an extended period of time to determine the optimal mix of resources to reliably meet customer load requirements at the lowest reasonable cost.[234] IRPs generally start with a comprehensive model that includes supply- and demand-side resources,[235] transmission, long-term fuel cost and pricing forecasts, and a number of different demand forecasts.[236] Using the model, the utility can then compare the costs and risks associated with a variety of portfolios over an extended period of time.[237] For example, a planner can plug into the model a future built entirely on fossil fuel resources and determine the total cost of the system with or without significant new GHG legislation. One could also model the cost and risk of a portfolio that utilizes varying degrees of renewable resources, or examine the cost of a portfolio including a smart grid application, modeled with or without the occurrence of extreme weather events. The utility, stakeholders, and commission staff can then select the portfolio that they believe has the best balance of cost and risk, given the planning horizon.

While initially, IRPs focused strictly on cost mitigation, in recent years, many have shifted more broadly to focus on risk. Oregon, for example, originally adopted a planning process with the primary goal of selecting a plan that would impose the least cost on the utility and its customers.[238] In 2007, however, the Oregon Public Utility Commission amended its planning requirements to set a primary goal of determining the "best combination of expected costs and associated risks and uncertainties."[239] As used by regulatory commissions today, IRPs provide a means for analyzing an increasingly complex future, one that requires not only a consideration of short-term costs, but also potential long-term regulatory changes, fuel and supply interruptions, and fundamental alterations in load forecasts and peak-load requirements.

The 2013 IRP prepared by Pacificorp, a multi-state utility serving retail customers in six states, is instructive.[240] The IRP considers nineteen different future "core case" scenarios, each with different assumptions about regulation,

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[234] *See, e.g.*, Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2777 § 111(d)(19) (1992) (codified at 16 U.S.C. § 2602(19) (2006)) (defining integrated resource planning as "a planning and selection process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources, in order to provide adequate and reliable service to its electric customers at the lowest system cost").

[235] *See, e.g.*, Bertschi, *supra* note 96, at 830 ("Supply-side measures generally are those measures which meet the increased demand either through construction of new generating facilities or purchasing electricity from other utilities.").

[236] *See id.* at 815, 829–36 (describing the regulatory requirements of integrated resource planning).

[237] For a summary of state regulations, see *id.*; *see also* WILSON & PETERSON, *supra* note 95, at 4–16.

[238] *In the Matter of Public Utility Commission of Oregon Investigation into Integrated Resource Planning*, Docket No. UM 1056, Order No. 07-002, at 1–2 (Or. P.U.C. 2007), *available at* http://perma.cc/D6VR-5E39.

[239] *Id.* at 5, 6.

[240] For information about Pacificorp, see *Company Overview*, PACIFICORP.COM, http://perma.cc/QFV9-R6U6. The company's entire 2013 IRP and related documents are available at *Integrated Resource Plan*, PACIFICORP.COM, http://perma.cc/52TG-7QVG.

transmission upgrades, fuel forecasts, and load profiles.[241] Eleven core cases reflect varying environmental policies, with scenarios related to new Regional Haze requirements, CO_2 prices (implying some form of carbon tax or emission limitation), RPSs, and energy efficiency.[242] Other core cases model fixed resource decisions, including targeted energy efficiency or geothermal power purchases.[243] The company then performs Monte Carlo analyses of the preferred portfolios to assess reliability, cost, and system performance of the portfolio under hundreds of randomly generated scenarios.[244]

Integrated resource planning is a powerful tool that can be used to weigh options for the future of the utility system. Planners can assess the long-term cost and reliability impacts of different transmission paths, distributed generation, renewable resources, and technology like the smart grid. While over half of states have some sort of integrated resource planning process, the comprehensiveness of the plans varies. Some states' planning horizons are only ten years,[245] providing significantly less insight into the cost-effectiveness of longer term resources, and little insight into the potential long-term risks of rising temperatures, shifting load patterns, or new pollution controls. Many states do not consider the cost of decommissioning resources,[246] an issue that will almost certainly become of increasing importance as changing markets, cheap natural gas, and new EPA regulations threaten the closure of a number of aging coal facilities.[247]

The potential environmental benefits of a thorough integrated planning process are numerous. First, and perhaps most importantly, a thorough IRP compares supply-side resources (e.g., a new gas-fired power plant) on an equivalent basis with demand-side resources (e.g., energy efficiency initiatives). As a result, cost-effective energy efficiency resources cannot be ignored in favor of supply-side resources, though the latter may be more attractive to utilities.[248] The integrated resource planning process therefore removes—or at least helps mitigate—a utility bias that would result in higher costs for customers as well as a greater impact on the environment. This change clearly fits within the traditional mission of the public utility commission.

Second, the integrated resource planning process compels an economic analysis of issues that may otherwise be considered purely environmental. For example, to accurately assess the cost of a new coal plant in an IRP, the utility must forecast all of the costs associated with that plant, such as new scrubbers,

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[241] *See* PACIFICORP, 2013 INTEGRATED RESOURCE PLAN 9 (Vol. I, 2013), *available at* http://perma.cc/RBQ9-78P5.
[242] *Id.*
[243] *Id.*
[244] *Id.* at 9–10.
[245] WILSON & PETERSON, *supra* note 95, at 16.
[246] *Id.* at 11.
[247] Anastasia Gnezditskaia, *Anal[ys]ts Debate Potential for New Power Plant Retirements to Boost 2013 Demand*, PLATTS: INSIDE F.E.R.C.'s GAS MKT. REPORT, Nov. 9, 2012.
[248] Inara Scott, *"Dancing Backward in High Heels": Examining and Addressing the Disparate Regulatory Treatment of Energy Efficiency and Renewable Resources*, 43 ENVTL. L. 255, 276–78 (2013) (explaining disincentives to utility investment in energy efficiency).

or technology that would be required to comply with proposed regulations limiting GHG emissions.[249] In addition, the utility should forecast the cost of compliance with any new CO_2 limitations, which would vary depending on the percentage of fossil fuel resources in the utility's portfolio.[250] Finally, the IRP can identify and quantify the economic risks associated with a reliance on volatile commodities (e.g., oil, natural gas, and coal) in contrast with stable costs associated with renewable resources (e.g., wind or solar).[251] These are not externalities that are outside the traditional purview of the public utility commission; they are direct costs that will be borne by utility customers and will impact the rates customers pay for service.

Additionally, the use of these processes would allow commissions to maintain their economic focus while extending their planning horizon to allow for consideration of future generations of customers. Using a best cost/risk analysis over a twenty- or thirty-year horizon could allow significant technological advances, like smart grid, to demonstrate long-term economic benefits. Similarly, when viewed in the context of new pollution controls, carbon cap legislation, or decreasing supply, renewable resources may become comparable to, or even less expensive than, fossil fuel alternatives.

The value of integrated planning processes has been identified in other, similar contexts. Professors Jones and Tybout argue that integrating economic and social regulation in the field of pollution control would result in improved pollution control at a lower cost.[252] In her article on adaptive mitigation in the electric power industry, Lesley McAllister describes the need to implement strategies for both mitigating the impacts of climate change and adapting to it, and suggests that existing resource planning processes could provide an excellent starting place for developing such strategies.[253]

Integrated resource planning is not without weaknesses. Extensive modeling is only as reliable as the inputs used, and long-term projections of demand

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[249] For example, EPA released a new proposal to limit GHG emissions from new coal- and gas-fired power plants on September 20, 2013. *See* Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources, 79 Fed. Reg. 1429, 1429 (Jan. 8, 2014). Any utility proposing to build a new coal- or gas-fired facility should take such regulations into account when assessing the total cost of the facility.

[250] *See* Karl Bokenkamp et al., *Hedging Carbon Risk: Protecting Customers and Shareholders from the Financial Risk Associated with Carbon Dioxide Emissions*, 18 ELEC. J. 11, 14–15 (2005) (describing the magnitude of carbon risk associated with different resources); Galen Barbose Goldman, et al., *Managing Carbon Regulatory Risk in Utility Resource Planning: Current Practices in the Western United States*, 36 ENERGY POL'Y 3300, 3301–03 (2008) (modeling the impact of a carbon tax or cap-and-trade system on the relative cost of certain utility portfolios). The Oregon Public Utility Commission requires utilities conducting integrated resource planning processes to model scenarios with a range of proxies for CO_2 costs. *See* Bokenkamp et. al., *supra*, at 17.

[251] *See* Shimon Awerbuch, *Portfolio-Based Electricity Generation Planning: Policy Implications for Renewables and Energy Security*, 11 MITIGATION & ADAPTATION STRATEGIES FOR GLOBAL CHANGE 693, 696 (2006). Through portfolio simulations, Awerbuch demonstrates that adding less risky renewable resources to a portfolio actually decreases the long-term cost of the portfolio, even if those resources are more expensive in the short term, because of the reduction in risk they afford. *Id.* at 697–99.

[252] *See* Jones & Tybout, *supra* note 121, at 33, 43.

[253] McAllister, *supra* note 6, at 2116–17, 2151–54.

and supply costs, particularly for new technologies, are certain to misestimate outcomes.[254] The longer the planning horizon, the more likely the inaccuracies; yet shorter planning horizons are likely to underestimate the impacts of future regulations and the benefits of long-term risk mitigation. Though modeling can illuminate risks inherent in the use of fossil fuels, or demonstrate long-term needs for infrastructure, the planning process alone cannot turn GHG mitigation into a utility goal. Only the legislature can do that.

Despite these drawbacks, a thorough planning process would advance an overall modernization of the system, particularly where the costs associated with GHG emissions, volatile commodities, and energy efficiency is modeled and accounted for within a utility resource portfolio. Technological changes could be prioritized based on risks related to extreme weather events and a long-term shift to renewable resources. Distributed infrastructure that is unwieldy and expensive over a five or even ten-year horizon could provide net benefits to customers over twenty or thirty years, particularly if analyzed as part of a portfolio that includes a smart grid, EVs, and a higher proportion of renewable resources. Importantly, a resource planning process can highlight the value and cost-efficiency of demand-side resources and conservation, which utilities might otherwise not have an incentive to pursue.[255] Resource planning that models regulatory risk and future carbon costs gives commissions a process for identifying the true costs of various resources, and therefore integrates the traditional cost-driven commission model with long-term sustainability planning. While it may be difficult to make long-term cost projections, this limitation can be addressed by modeling a range of projected costs in various scenarios.[256] Taken as a whole, this option appears to present the greatest opportunity to utilize existing commission resources, while requiring the least amount of legislative action, and providing the best integration of existing economic theory and new environmental realities.

Conclusion

Public utility commissions have primary oversight over retail electric utilities, and largely control utilities' ability to make significant new investments. As demonstrated herein, the history, enabling legislation, and early jurisprudence of commission jurisdiction have limited the scope of commission authority to the direct oversight of rates, with the goal of providing safe service as widely as possible at the lowest possible rates. Utility investments, the cost of which cannot be recovered in rates without commission approval, are reviewed primarily to determine rate impacts, with a requirement that investments provide a net benefit to current utility customers. As a result, commissions either cannot or will not pursue policies or programs that prioritize environmental,

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[254] *See* Goldman et al., *supra* note 250, at 3303, 3307, 3310 (describing both the need for long-term planning, and the "inherently speculative nature" of predicting future policies).
[255] *See* Bertschi, *supra* note 96, at 826–29.
[256] *See* Goldman et al., *supra* note 250, at 3303.

social, or long-term evolutionary goals over short-term economic ones. The inevitable result of this strict economic focus is that utilities will be unable to engage in evolutionary activities, such as the development of smart grid projects, transitions to distributed infrastructure, or a targeted reduction in GHG emissions, absent specific legislative directives.

This Article has examined three primary options for addressing this outdated structure to achieve pressing energy policy goals of the twenty-first century. Each has its benefits and weaknesses, but overall, the best option is for commissions to adopt a comprehensive cost/risk approach to resource planning. This approach could account for the environmental risks of climate change as they affect the utility system, the net benefit of long-term technological evolution, the threat of extreme weather events, and the potential for new environmental regulations. The best part of this approach is that it would utilize existing commission expertise in economic analysis, and would sit squarely within the traditional function of the commission. While not a perfect solution for addressing climate change or limiting GHG emissions, comprehensive, long-term planning would go a long way toward creating a twenty-first century public utility commission.