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RATIONAL ELECTRICITY REGULATION: ENVIRONMENTAL IMPACTS & THE "PUBLIC INTEREST"

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INTRODUCTION

The Bible records a lawyer's encounter with Jesus. I paraphrase: the lawyer stands up in a crowd and asks, "How do I get to heaven?" Jesus responds in law-professor fashion, "What does the law say? What's your take?" "Well, the law says love God and love your neighbor," the lawyer says. "Bingo!" Jesus replies. Discontent with the vagueness of the law, the lawyer presses, "Sure, but who is my neighbor?" The lawyer then slumps back into his seat as Jesus—still in law-professor persona—descends into parable, keeping his answer partially obscured.[1]

Like ancient Hebrew law, our modern law was raised on a steady diet of legal vagaries, and we law-types find ourselves asking the same sorts of questions: The "public interest?" Who is the "public?" My city? My country? Aren't some interests more important than others? What about conflicting interests? Vague laws generate questions, but perhaps nowhere do these questions carry greater importance than in electricity regulation.

Regulators of the electricity industry receive their authority from statutes saturated with notions of the "public interest." In various contexts, the Federal Energy Regulatory Commission (FERC) must ensure that utilities' actions are "just and reasonable,"[2] "consistent with the public interest,"[3] "compatible with the public interest,"[4] and "in the public interest."[5] Indeed, the whole reason for federal involvement in power regulation is quite explicitly the "public interest."[6] Likewise, state public utilities commissions (PUCs) must grapple with, *inter alia*, the "public convenience and necessity,"[7] "the interest and aid of public health, security, convenience, and general welfare,"[8] "enhance[ment] of socioeconomic fabric,"[9] "[just and reasonable],"[10] and "any other issue the [PUC] chooses to consider."[11]

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1 *Luke* 10:25–37.

2 16 U.S.C.A. § 824e(a) (2010) (ratemaking).

3 *Id.* at § 824p(b)(3) (2010) (transmission permitting); *Id.* at § 824b(a) (purchases and leases of generation facilities, and mergers and acquisitions).

4 *Id.* at § 824c(a) (issuing securities).

5 *Id.* at § 824i(c)(1) (transmission interconnections).

6 *Id.* at § 824(a) ("It is declared that the business of transmitting and selling electric energy . . . is affected with a public interest, and that Federal regulation of [power generation and transmission] is necessary in the public interest . . . .").

7 *E.g.*, KY. REV. STAT. ANN. § 278.020(1) (West 2010) (facility siting).

8 *E.g.*, CAL. PUB. UTIL. CODE § 202 (West 2010) (rulemaking policy).

9 *E.g.*, R.I. GEN. LAWS § 42-98-11(b)(3) (2010) (facility siting).

10 *E.g.*, TENN. CODE ANN. § 65-4-115 (2010) (ratemaking).

11 *E.g.*, OR. REV. STAT. ANN. § 757.212(7)(d) (West 2010) (resource planning).

Statutory commands like these caused an irritated Judge Friendly to remark,

> The statutes from which [agencies] derive their authority are so often couched in such broad general terms as to endow them with a discretion so wide that they can offer a more or less plausible explanation for any conclusion they choose to reach. . . . Sometimes telling the agency to do what is in the public interest is the practical equivalent of instructing it: "Here is the problem. Deal with it."[12]

Not much has changed. The world in which electric utilities operate, however, is changing rapidly. As the global recession reached its apex last year, electricity consumption sank 0.9% to twenty billion megawatts.[13] This was the first decline in consumption since at least 1971,[14] and still roughly 25% above 2000 levels.[15] The Energy Information Administration projects an 87% increase in electricity consumption from 2007–2035.[16]

The effects of fossil fuel-based power generation on the climate are well documented. An unremarkable[17] 1,000 megawatt base-load coal plant typically combusts close to 24,000 tons of coal every day,[18] emitting 36,000 to 84,000 tons of carbon dioxide (CO_2).[19] Using recent climate change figures from the U.S. Department of Energy, that coal-fired plant causes $0.76-$1.76 million of

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12 HENRY FRIENDLY, THE FEDERAL ADMINISTRATIVE AGENCIES 12 (1962) (quoting STAFF REP. OF H. COMM. ON INTERSTATE AND FOREIGN COMMERCE 6 (1961) *and* KENNETH DAVIS, ADMINISTRATIVE LAW TREATISE § 2.03 at 82).

13 *Electricity,* BP.COM, *Statistical Review of World Energy 2010,* http://www.bp.com/sectiongenericarticle.do?categoryId=9023768&contentId=7044479 (last visited Mar. 1, 2011) (North America produces 25% of the world total).

14 INT'L ENERGY AGENCY, 2010 KEY WORLD ENERGY STATISTICS 26 (2010), *available at* http://www.iea.org/textbase/nppdf/free/2010/key_stats_2010.pdf.

15 BP.COM, *supra* note 13.

16 U.S. ENERGY INFO. ADMIN., 2010 INT'L ENERGY OUTLOOK 77–95 (2010), *available at* http://www.eia.doe.gov/oiaf/ieo/pdf/0484(2010).pdf.

17 Coal plants commonly exceed 2,000 megawatt capacity and some exceed 3,000 megawatts. *See* U.S. ENERGY INFO. ADMIN., EXISTING GENERATING UNITS IN THE UNITED STATES BY STATE, COMPANY, AND PLANT, 2008 (2009), *available at* http://www.eia.doe.gov/cneaf/electricity/page/capacity/existingunitesbs2008.xls.

18 *See* NAT'L RES. COUNCIL, THE HIDDEN COSTS OF ENERGY: UNPRICED CONSEQUENCES OF ENERGY PRODUCTION AND USE 3 (2009) (assuming one ton of coal produces one MWh of electricity for purposes of environmental damage calculations).

19 Geoffrey M. Heal, *Reflections—The Economics of Renewable Energy in the United States*, 4 REV. ENVTL. ECON. & POL'Y 139, 140 (2010) (every ton of combusted coal combines with oxygen to produce 1.5 to 3.5 tons of CO_2, depending on carbon content); *see* U.S. ENERGY INFO. ADMIN., CARBON DIOXIDE EMISSION FACTORS FOR COAL (1994), *available at* http://www.eia.doe.gov/cneaf/coal/quarterly/co2_article/co2.html (describing factors in determining carbon content and energy density of different coal types).

exclusively climate-related damages every day.[20] Using climate figures from the British Department of Energy and Climate Change, those damage projections rise to $2.99–$6.97 million per day.[21] Natural gas-fired power produces roughly half the climate-related damages of coal.[22] Particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x), and heavy metal emissions—mostly from coal—also pose serious dangers to public health and the environment.[23] A congressionally-commissioned study by the National Research Council monetized the damage from SO_2, NO_x, and PM from coal and natural gas production. Each coal-fired megawatt-hour (MWh) of electricity caused, on average, $32 of damage to human health, grain crop and timber yields, building materials, recreation, and visibility of outdoor vistas.[24] Many coal plants studied caused upwards of $120/MWh.[25] Natural gas is better, producing an average of $1.60/MWh up to $10/MWh in damage. Fossil fuel plants' voracious water demand could lead to billions of dollars in water shortage-related damages.[26] The extraction processes required to unearth coal, oil, gas, and uranium cost human lives, injury, illness, and acute environmental disasters—as the Deepwater Horizon oil spill poignantly reminds us.[27] The effects of transmission line

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[20] *See* U.S. DEP'T OF ENERGY, FINAL RULE TECHNICAL SUPPORT DOCUMENT (TSD): ENERGY EFFICIENCY PROGRAM FOR COMMERCIAL AND INDUSTRIAL EQUIPMENT: SMALL ELECTRIC MOTORS Appendix 15A (2010) (climate damages equal to $21/ton CO_2 today, rising to $45/ton CO_2 by 2050), *available at* http://www1.eere.energy.gov/buildings/appliance_standards/commercial/sem_finalrule_tsd.html.

[21] *See* U.K. DEP'T OF ENERGY & CLIMATE CHANGE, CARBON APPRAISAL IN UK POLICY APPRAISAL: A REVISED APPROACH (2009), *available at* http://www.renewableseast.org.uk/uploads/Carbon%20Appraisal%20in%20UK%20Policy%20appraisal%20revised%20approach.pdf (at exchange rate of £1.00 = $1.625, climate damages equal $83/MWh of coal).

[22] NAT'L RES. COUNCIL, *supra* note 18, at 3–7.

[23] Particulate matter is a source of heart and lung disease, asthma, and haze; SO_2 forms sulfuric acid in the atmosphere that destroys vegetation and destabilizes water pH balances as acid rain; NOx causes smog and combines with SO_2 to form acid rain; emitted mercury and lead concentrate up the food chain and cause human developmental problems. *See* FRED BOSSELMAN ET AL., ENERGY, ECONOMICS & THE ENVIRONMENT 252–58 (2d ed. 2006); *see generally* VACLAV SMIL, ENERGY AT THE CROSSROADS 105–16 (2003).

[24] NAT'L RES. COUNCIL, *supra* note 18, at 3–4, 6–8.

[25] *Id.*

[26] Benjamin K. Sovacool & Kelly E. Sovacool, *Preventing National Electricity-Water Crisis Areas in the United States*, 34 COLUM. J. ENVTL. L. 333, 367–68 (2009).

[27] The April 20, 2010 explosion on the Deepwater Horizon platform killed 11, injured 17, and the oil discharge is among the largest spills in world history as well over 100 million gallons of crude have created an oil slick of at least 2,500 square miles—as of this writing. *See* Ray Henry, *Scientists Up Estimate of Leaking Gulf Oil*, Associated Press (June 15, 2010, 10:06 PM), *available at* http://www.msnbc.msn.com/id/37717335/ns/disaster_in_the_gulf/. Gas and oil extraction processes often inject diesel oil (containing benzene) or other drilling fluids down drill shafts, release radioactive pollutants (radium-226 and radium-228), and discharge a grease and water mixture and drill cuttings into land and water environments. *See* BP Exploration & Oil, Inc. v. EPA, 66 F.3d 784 (6th Cir. 1995) (describing in detail the various discharges of offshore oil and

construction and operation have received far less scrutiny, but are not insignificant: the United States now has roughly 160,000 miles of rural high-voltage lines that commonly require 200 plus foot-wide deforested easements.[28] Electricity production and transmission degrades ecosystems and their services,[29] which were valued in 1997 at $33 billion globally.[30] The industry likewise diminishes notoriously difficult to quantify "nonuse values."[31] Steadily increasing consumption of fossil fuel for electricity, therefore, is adding pressure to an already strained environment.[32]

Utility regulators' treatment of the environment—and the courts' posture toward that treatment—is now more important than ever. Utility regulators must act rationally when executing their statutory "public interest" duties. Equally important, courts must reevaluate their understanding of what constitutes rational decision-making in modern utility regulation. They should ask,

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gas exploration and extraction, and EPA's attempts to regulate those discharges); David Vearrier et al., *Technologically Enhanced Naturally Occurring Radioactive Materials*, 47 CLINICAL TOXICOLOGY 393, 393–406 (2009) (finding that workers in certain industries, including fossil fuel extraction and combustion, face increased risk of exposure to exceptionally potent "ionizing radiation"); Ian Urbina, *Regulation Lax as Gas Wells' Tainted Water Hits Rivers*, NEW YORK TIMES, A1 (Feb. 27, 2011).

[28] U.S. ENERGY INFO. ADMIN., TRANSMISSION FACT SHEET (2003), *available at* http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/transmission.html; *see, e.g.*, Route Permit Application by Great River Energy, 2010 WL 1677143 (Minn. P.U.C. April 22, 2010) (approving transmission project's 1.25 mile-wide route); Andy Stone, *An Interstate Highway System for Energy*, 182 FORBES 108, 108 (Nov. 24, 2008), *available at* http://www.forbes.com/forbes/2008/1124/108.html.

[29] The United States Department of Agriculture has defined ecosystem services as including "primary services" like nutrient cycling and soil formation; "provisioning services" like food, fiber, and pharmaceuticals; "regulating services" like pollination, water and air purification, flood and erosion prevention, and pest and disease regulation; and "cultural services" like recreation, ecotourism, and aesthetic and religious values. SALLY COLLINS & ELIZABETH LARRY, U.S. DEP'T OF AGRICULTURE, CARING FOR OUR NATURAL ASSETS: AN ECOSYSTEM SERVICES PERSPECTIVE 5 (2007), *available at* http://www.fs.fed.us/ecosystemservices/pdf/collins_larry.pdf.

[30] Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253, 253–60 (1997) ($33 trillion valuation based on 1997 dollar); *but see* Nancy Bockstael et al., *On Measuring Economic Values for Nature*, 34 ENVTL. SCIENCE & TECH. 1384, 1384–89 (2000) (explaining that measures of global willingness-to-pay to prevent complete loss of ecosystem services are specious and unrealistic as real world tradeoffs occur at points between complete loss and complete preservation, and therefore *marginal* willingness-to-pay is a more useful measure of eco-service value).

[31] Nonuse value is the gain in a person's utility without actually "using" a good, like environmental quality. This encompasses the "existence" value of knowing the good exists, "altruistic" value of knowing someone else is enjoying the good, and "bequest" value of knowing that future generations may enjoy the good. CHARLES D. KOLSTAD, ENVIRONMENTAL ECONOMICS 296 (2000).

[32] U.S. ENERGY INFO. ADMIN., ELECTRIC POWER ANNUAL 2009 31, Table 3.1 (2011), *available at* http://www.eia.doe.gov/cneaf/electricity/epa/epa.pdf; *see generally* VACLAV SMIL, ENERGY AT THE CROSSROADS (2003) (describing the upward trend in fossil fuel consumption throughout the twentieth century).

"Is decision-making that marginalizes environmental impacts rational?" This article highlights the inextricable tangles between environmental impacts and "public interest" duties, and concludes that utility regulators can make sensible decisions only by integrating environmental analysis into "public interest" analysis—or by dumb luck. The primary insight of this article, therefore, is that utility regulators cannot fulfill their statutory "public interest" duties without addressing environmental impacts. Although not identical, the two concepts are inseparable. As a result, judges ought to remand for further consideration any decisions that purport to execute "public interest" duties, but fail to weigh environmental impacts.

Part I of this article samples the authority and activities of the Federal Energy Regulatory Commission and state public utilities commissions to decipher how, as a practical matter, utility regulators interpret the "public interest." Most modern "public interest" language, it turns out, boils down to three interrelated principles: (1) cost-minimization, (2) nondiscrimination, and (3) service adequacy. When determining consistency with this conception of the "public interest," many utility regulators systematically exclude or marginalize environmental concerns.

Part II explores the implications of a bedrock administrative law doctrine that requires agency actions to arise from thoughtful decision-making processes. Assuming the three principles articulated in Part I are reasonable interpretations of "public interest" language, regulators must still take a hard look at all material facts and issues. In other words, even if a regulator's decision-making outcome appears reasonably related to its enabling statute, the reviewing judge must nonetheless see that the outcome was a product of a coherent and rational decision-making *process*. If the environment, therefore, is material to cost-minimization, nondiscrimination, or service quality—or any other statutory obligation, for that matter—then the so called "hard look" doctrine demands scrupulous environmental consideration. In most cases, the environment is indeed a salient component of "public interest" goals, and deserves hard look scrutiny.

Part III describes a variety of scenarios where utility regulators might sensibly ignore the environment in executing their "public interest" duties. Such situations could arise under de minimis environmental risks, great scientific uncertainty, environmental costs that are accounted for elsewhere, other statutory obligations requiring regulators to consider environmental impacts, or a tenuous connection between particular impacts and statutory "public interest" duties.

I. HOW UTILITY REGULATORS INTERPRET "PUBLIC INTEREST"

Regulation in the name of "public interest" is nearly as old as law itself. Historians have traced the genesis of public interest regulation to a handful of

beginnings. Roman emperor, Diocletian, fixed maximum prices for 800 different goods under the guise of the "just price" doctrine.[33] The doctrine recognized the heightened potential for coercion amid conditions of lopsided bargaining power, as might occur with supply shocks (e.g. a sudden famine) or resource monopolies.[34] "Just price" restrained prices to reflect production costs, regardless of market equilibria.[35] Other scholars look to the medieval guild system as the forerunner of regulation in the name of the "public interest."[36] Governmental bodies recognized, protected, and regulated monopolies held by trade guilds. Those guilds, in exchange for government restrictions on market entry, agreed to deliver adequate service to all customers at "reasonable" prices. Thus the public's interest in particular goods and services gave rise to an implied contract between regulator and regulated.[37]

Ancient roots slowly gave rise to common law doctrines laying out specific rights and obligations of "common callings."[38] These businesses "affected with a public interest" were constrained by courts from encroaching upon a handful of closely guarded interests. Courts required public businesses to provide (1) adequate (2) nondiscriminatory service (3) at reasonable rates.[39]

The Reconstruction era Supreme Court invoked a dusty treatise written by Lord Chief Justice Hale to link common law and economic conceptions of the "public interest":[40]

> [In the case of monopoly] there cannot be taken arbitrary and excessive duties for carnage, wharfage, pesage, etc., neither can they be enhanced to an immoderate rate, but the duties must be reasonable and moderate, though settled by the king's license or charter. For now the wharf and crane and other conveniences are affected with a public interest, and they cease to be *juris privati* only; as if a man set out a street in a new building on his

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33 BARRY M. MITNICK, THE POLITICAL ECONOMY OF REGULATION 243–44 (1980) (citing MARTIN G. GLAESER, PUBLIC UTILITIES IN AMERICAN CAPITALISM (1957)).

34 MICHAEL A. CREW & PAUL R. KLEINDORFER, THE ECONOMICS OF PUBLIC UTILITY REGULATION 27 (1986).

35 MITNICK, *supra* note 33, at 243–44 (1980).

36 *Id.* at 244–45.

37 For more on the "bargaining theory" account of regulation, *see* JIM ROSSI, REGULATORY BARGAINING & PUBLIC LAW (2005).

38 MITNICK, *supra* note 33, at 246.

39 *See* FORD P. HALL, THE CONCEPT OF A BUSINESS AFFECTED WITH A PUBLIC INTEREST 13–16, 56–62 (1940). "Reasonable" rates later acquired an economic efficiency hue, but at common law it was closer to the "just price" doctrine, meaning simply that prices must not exceed what consumers would expect to see under ordinary circumstances. *See* CREW & KLEINDORFER, *supra* note 34, at 27–28.

40 *See* HALL, *supra* note 39, at 13–16.

> own land, it is now a no longer bare private interest, but is affected by a public interest.[41]

Modern economic accounts of utility regulation feature the public's interest in social efficiency.[42] Consumer protection goals are corollary to achieving optimal, or, in the case of natural monopoly, "second best" market conditions.[43] The goal is to maximize welfare gains for all, including producer profits and consumer "profits" (i.e. willingness-to-pay above price actually paid).

Barry Mitnick laments that "there remains no accepted definition of the ['public interest'], much less an accepted operational definition offering indicators that we may use to determine empirically whether something is in the public interest."[44] Although many scholars argue that regulation does not arise and operate in pure magnanimity,[45] none seriously dispute that the "public interest" concept remains the dominant normative rationale for regulation, and indeed permeates the formal statutory duties of regulators. In utility regulation today, agency and judicial interpretations of statutory "public interest" mandates are colored by ancient "just price" doctrine, common law duties, and economic efficiency.

The organic statutes that breathe life into electricity regulating agencies wax heavy on "public interest" language, leaving most details to agency discretion. Details, especially environmental details, are rare birds in utility regulation.[46] Without further statutory guidance, agencies are forced to make choices regarding the content of the "public interest." And for the most part these choices show little concern for environmental consequences.

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41 Munn v. Illinois, 94 U.S. 113, 126 (1872) (quoting Lord Hale, *De Portibus Maris*, Hargrave Law Tracts, 78).

42 CREW & KLEINDORFER, *supra* note 34, at 10.

43 "Optimal" conditions exist in competitive markets where the price of a good equals its marginal cost of production. If fixed costs are large and marginal cost of production is roughly level or declining, as in the provision of utility services, regulators cannot fix prices at marginal cost without endangering the financial viability of the firm. Revenues compensate only variable costs and leave negative profits equal to fixed costs. A "second best" condition exists where price is set at average cost—the lowest price consistent with positive or at least non-negative profits. *See* LUIS CABRAL, INTRODUCTION TO INDUSTRIAL ORGANIZATION 75–78 (2000).

44 MITNICK, *supra* note 33, at 259.

45 Public choice theorists, led by George Stigler, emphasize regulators' drive toward self-preservation and expansion, and portray regulation as mere propitiation of powerful regulated firms. Regulators are thus "captured" by special interests, and "public interested" regulation is a practical myth. *See generally* George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. OF ECON. & MGMT. SCI. 3 (1971).

46 For discussion on the importance of "public interest" language in the presence of statutory detail regarding environmental consideration, *see infra* Part III.D.

A. Federal Energy Regulatory Commission

1. Ratemaking

The bread and butter authority of the Federal Energy Regulatory Commission (FERC) is ratemaking. The duty to ensure that all interstate transmission and wholesale power rates are "just and reasonable" extends to any "rule, regulation, practice, or contract affecting such rates."[47] FERC entertains complaints and brings motions of its own to enforce just and reasonable rates.[48] When a "rate, charge, classification, rule, regulation, practice, or contract" is found "unjust, unreasonable, unduly discriminatory, or preferential," FERC may order a refund to the ratepayer for the difference between what was paid and what would have been paid under a just and reasonable rate system.[49] The Supreme Court has said that this authority must be read in light of the Federal Power Act's core purpose to protect "the public interest."[50] Indeed, when a rate adversely affects the "public interest" it is not "just and reasonable,"[51] and when it is "unduly discriminatory" it is not in the "public interest."[52]

Prior to 1996, the dominant rate form was based on the cost of service. Cost-of-service rates provided for reasonable return on all prudent and useful investments. Regulators spread the utility's total revenue requirement across different customer classes. The total requirement was equal to [variable costs] + [rate of return × rate base].[53] In other words, the utility's total revenue requirement was equal to the costs of doing business plus a reasonable profit. In rate hearings, the parties scrupulously unpeeled the sticky distinction between reasonable and unreasonable fuel costs, employee salaries, capital depreciation, and which capital resources were useful enough and acquired prudently enough to form a component of a "just and reasonable" rate.[54]

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47 16 U.S.C.A. § 824e(a) (2010).

48 *Id.*

49 *Id.* at § 824e(b).

50 Fed. Power Comm'n v. Sierra Pac. Power Co., 350 U.S. 348, 355 (1956) (noting that a rate may be so low as to be "unjust and unreasonable" because it has "an adverse effect on the public interest").

51 16 U.S.C.A. § 824e(a) (2010).

52 New York v. FERC, 535 U.S. 1, 27 (2002) ("Upon a finding of undue discrimination, '[FERC] shall determine the just and reasonable . . . regulation, practice, or contract . . . and shall fix the same by order.'" (quoting 16 U.S.C. § 824e(a))).

53 DAVID MUCHOW & WILLIAM MOGEL, ENERGY LAW AND TRANSACTIONS § 2.07 (2010).

54 *See, e.g.,* Bluefield Water Works & Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679, 693 (1923) ("The return should be reasonably sufficient to assure confidence in the financial soundess of the utility and should be adequate . . . to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties."); MUCHOW & MOGEL, *supra* note 53.

In 1996, FERC turned wholesale ratemaking upside-down by issuing Order 888, which required transmission line owners to offer transmission access to all customers on the same terms and conditions as they use their own lines.[55] Order 888 did not speak directly to rates, but with an open-access transmission system, it laid the cornerstone for market competition at the power generation level. Market-based rates flourished. A seldom used rate policy—any rate goes, so long as market power is lacking—became the industry's mainstay.[56] As the market reach of power generators has expanded and overlapped with other generators, utilities' ability to affect prices with changes in output (i.e. market power) has diminished.

Order 888 arose from FERC's duty to protect wholesalers against unduly discriminatory transmission rates.[57] The overarching goal, however, was to promote competition between wholesale sellers of electricity.[58] In theory, the lowest cost producers would win the oncoming price wars, thereby increasing efficiency and reducing costs to consumers. A great many academics expressed deep concern about the effect deregulation might have on the electric industry's environmental performance.[59] Nonetheless, FERC stood by its assessment that

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[55] Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Util., FERC Order No. 888, 61 Fed. Reg. 21540 (May 10, 1996) (to be codified at 18 C.F.R. pt. 35, 385).

[56] *See* MUCHOW & MOGEL, *supra* note 53, at §3.03.

[57] Transmission Access Policy Study Grp. v. FERC, 225 F.3d 667, 685 (D.C. Cir. 2000) (refusing on ripeness grounds, to decide claim that Order 888 actually discriminated against transmission owners).

[58] Indeed the title of Order 888 illustrates this goal: "Promoting Wholesale Competition Through Open Access Non-discriminatory Services by Public Utilities." *Transmission Access*, 225 F.3d at 680 n.2.

[59] *See* Meredith L. Fowlie, *Emissions Trading, Electricity Restructuring, and Investment in Pollution Abatement*, 100 AM. ECON. REV. 837, 842–43 (2010) (finding that deregulated coal plants tend to disfavor pollution abatement investment because of uncertain cost recovery and disproportionately negative credit-rating effects relative to regulated counterparts); Edan Rotenberg, *Energy Efficiency in Regulated and Deregulated Markets*, 24 UCLA J. ENVTL. L & POL'Y 259, 271 (2006) ("In a market without adjustments for uncompensated environmental externalities, the price of power can be expected to stay far below social cost. Consequently, many socially desirable efficiency measures will not be performed."); Shi-Ling Hsu, *Reducing Emission from the Electricity Generation Industry: Can We Finally Do It?*, 14 TUL. ENVTL. L.J. 427, 428 (2001) ("A market-driven energy environment will probably lower energy costs in the long run, but will probably offer little or no incentives for electricity generation firms to reduce or eliminate emissions. In particular, market conditions may push the renewable energy industries to the brink of extinction."); David Mallery, *Clean Energy and the Kyoto Protocol: Applying Environmental Controls to Grandfathered Power Facilities*, 10 COLO. J. INT'L ENVTL. L. & POL'Y 469, 471–77 (1999) ("Recent deregulation of the electric utility industry significantly favors [older coal-fired power plants]"); Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Regulation: The Case of Electricity Deregulation*, 26 ECOLOGY L.Q. 243, 248 (1999) ("Deregulation creates incentives to use cheaper, yet more polluting, coal . . . ."); William G. Rosenburg, *Restructuring the Electric Utility Industry and Its Effect on the Environment*, 14 PACE ENVTL. L. REV. 69, 73 (1996) ("[T]he lowest-cost producers of power, by far, are the older, Midwest power plants that have the fewest environmental controls. These plants . . . will benefit from the greatest consumer

"negative consequences are not likely to occur until after the turn of the [20th] century" and that "impacts will remain modest at least until 2010;" therefore "there is no need for an interim mitigation program."[60] FERC's environmental analysis particularly concentrated on "possible increases in nitrogen oxides from certain fossil fuel generators," though at the time mercury and carbon dioxide emissions (CO_2) were completely unregulated and ozone regulation was far looser than it is today.[61] Furthermore, and more revealing of the agency's "public interest" interpretation, even if the environmental consequences were great, said FERC, "the Commission does not have the statutory authority under the Federal Power Act . . . to address this far-term problem."[62] Such a statement illustrates a shift in environmental posture from much earlier in the agency's history.[63]

FERC's authority over "just and reasonable" transmission pricing also carries environmental significance.[64] Order 888 and Order 2000 delegated most transmission grid management responsibilities to independent system operators (ISOs).[65] During the rulemaking proceedings, FERC rejected a request to give

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demand and will significantly increase production in turn increasing emissions. If a purely free market selling price is the only issue, rather than utilizing clean burning nuclear or gas power or building a new clean generator, customers across the country will favor the cheapest power (typically a coal-based generators) . . . ."); Rudy Perkins, *Electricity Deregulation, Environmental Externalities and Limitations of Price*, 39 B.C. L. REV. 993, 1055 (1998) ("Without environmental adders, carbon emissions taxes or other penalties on CO_2 output, cost advantages for coal could maintain or increase its use, thereby increasing global warming."); Justin M. Nesbit, *Commerce Clause Implications of Massachusetts' Attempt to Limit the Importation of "Dirty" Power in the Looming Competitive Retail Market for Electricity Regulation*, 38 B.C. L. REV. 811 (1997) (attributing increased pollution to coal's ability to externalize a portion of its costs). *But see* David B. Spence, *Coal-Fired Power in a Restructured Electricity Market*, 15 DUKE ENVTL. L. & POL'Y F. 187 (2005) (citing many above-cited sources and suggesting that they exaggerate the effects of electricity competition on environmental performance).

60 Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, FERC Order 888, 61 Fed. Reg. 21540, 21542 (May 10, 1996) (to be codified at 18 C.F.R. pt. 35, 385).

61 *Id.*; *see* David B. Spence, *Coal-Fired Power in a Restructured Electricity Market*, 15 DUKE ENVTL. L. & POL'Y F. 187, 207–10 (2005).

62 *FERC Order 888*, 61 Fed. Reg. at 21542.

63 Scenic Hudson Pres. Conference v. Fed. Power Comm'n, 354 F.2d 608, 614 (1965) ("The Commission has recognized generally that members of the public have rights in our recreational, historic and scenic resources under the Federal Power Act."); Namekagon Hydro Co., 12 F.P.C. 203, 206 (1954), *aff'd*, 216 F.2d 509 (7th Cir. 1954) ("[T]he Commission realizes that in many cases where unique and most special types of recreation are encountered a dollar evaluation is inadequate as the public interest must be considered and it cannot be evaluated adequately only in dollars and cents.").

64 16 U.S.C.A. § 824e(a) (2010).

65 *See FERC Order 888*, 61 Fed. Reg 21540; Reg'l Transmission Org., FERC Order 2000, 65 Fed. Reg. 809 (Jan. 6, 2000) (to be codified at 18 C.F.R. pt. 35). System operators are variously called independent system operators (ISOs) or regional transmission organizations (RTOs). The differences are insignificant for purposes of this article. *See* LORRIN PHILIPSON & H. LEE WELLS, UNDERSTANDING ELECTRIC UTILITIES AND DE-REGULATION 320–21 (2d ed. 2006).

ISOs specific direction on pricing.[66] It instead directed each ISO to "administer its own tariff and employ a transmission pricing system that will promote efficient use and expansion of transmission and generation facilities,"[67] provided of course that such tariffs are "just and reasonable."[68]

ISOs usually post available transmission capacity schedules on an electronic bulletin board and bidding system.[69] This schedule forecasts transmission availability well into the future, and buyers reserve network capacity hours, months, or years before the scheduled power generation occurs.[70] Capacity reserved with ample notice generally carries a lower price than short-notice reservations. In contrast with fossil fuels, most clean energy generation technologies produce on a highly variable schedule. Thus pricing schemes that have firm take-or-pay reservation requirements—fees for capacity reserved regardless of capacity actually used—may place clean energy at a competitive disadvantage vis-à-vis fossil fuels.[71] Distance-based pricing, based on the number of transmission miles energy must travel, may also disadvantage clean energy.[72] Wind, biomass, geothermal, and solar-thermal sources of energy are often located far from population centers, and involve high transmission costs relative to fossil resources.[73]

Some well-regarded alternative price methods could help restore a level playing field for transmission users. One such method is locationally-based pricing of transmission service.[74] This method assigns costs based on the congestion of each particular line throughout the day. This real-time congestion pricing diminishes the advantage of early reservations because it dictates prices in momentary, real-time markets. Furthermore, the issue of transmission distance, which disproportionately affects clean energy sources, is secondary to transmission congestion. But ultimately, FERC leaves it to ISOs "to reform

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66 *FERC Order 2000*, 65 Fed. Reg. at 876.

67 *Id.*

68 *Id.* at 913.

69 Open Access Same-Time Info. Sys. (Formerly Real-Time Information Networks) and Standards of Conduct, FERC Order 889, 61 Fed. Reg. 21737 (May 10, 1996) (codified at 18 C.F.R. pt. 37).

70 *See* Cambridge Elec. Light Co., FERC Op. No. 424, 84 F.E.R.C. ¶ 61049 (July 20, 1998) (holding firm transmission tariff "just and reasonable"); PHILIPSON & WELLS, *supra* note 65, at 332–33.

71 Capacity-based transmission tariffs are also called "*pro forma* tariffs." PHILIPSON & WELLS, *supra* note 65, at 343.

72 *Id.* at 343.

73 U.S. ENERGY INFO. ADMIN., TRANSMISSION PRICING ISSUES FOR ELECTRICITY GENERATION FROM RENEWABLE RESOURCES 9 (1999), *available at* http://www.eia.gov/FTPROOT/features/transprc.pdf.

74 PHILIPSON & WELLS, *supra* note 65, at 345–50 (stating that the complexity of locationally-based pricing of transmission service "seems justified to many, because [location-based pricing] is a 'fairer,' or at least more consistent, pricing system that encourages reasonable and workable buying, selling, and investment decisions by all involved parties").

transmission pricing, and in return [FERC] propose[s] to allow [ISOs] greater flexibility in designing pricing proposals."[75] Despite the varying environmental merits of transmission pricing schemes, therefore, FERC has essentially pre-anointed ISO pricing policies with a "just and reasonable" blessing.

2. Interconnection Authority

When developers build energy projects, they must connect their project with the transmission grid if they hope to move their electricity to major demand centers. Grid operators must ensure the orderly interconnection of power supplies to maintain reliability in the transmission networks. In practice, interconnection amounts to a severe bottleneck in the development process and clean energy developers feel the greatest squeeze. Of all interconnection requests from generators to ISOs from 2000 to 2007, only 3% of the proposed capacity had gone into service as of mid-2008.[76] As illustrated in the figure below, the ISO transmission interconnection queues have grown rapidly in recent years for some clean energy developers.

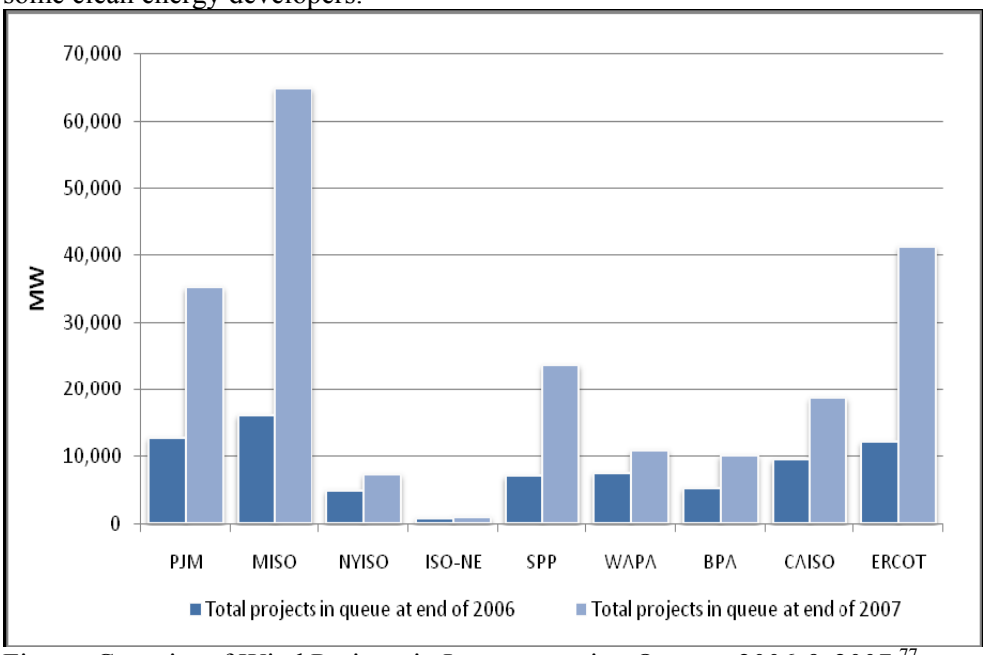

Figure: Capacity of Wind Projects in Interconnection Queues, 2006 & 2007.[77]

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[75] Reg'l Transmission Org., FERC Order 2000, 65 Fed. Reg. 809, 914 (Jan. 6, 2000) (to be codified at 18 C.F.R. pt. 35).

[76] NAT'L RENEWABLE ENERGY LAB., GENERATION INTERCONNECTION POLICIES AND WIND POWER: A DISCUSSION OF ISSUES, PROBLEMS, AND POTENTIAL SOLUTIONS 23 (Table 3) (2009), *available at* http://www1.eere.energy.gov/windandhydro/pdfs/44508.pdf.

[77] *Id.* at 20. Note: ERCOT does not maintain a "queue," therefore, project-specific cumulative data is not available; the 2006 ERCOT figure is an estimate of Exeter Associates, Inc.

This barrier to market entry likely favors older established energy facilities, and impedes the entry of newer competitive renewable technologies. It is not insignificant, then, that FERC also delegated to ISOs "sole authority for the evaluation and approval of all requests for transmission service including requests for new interconnections."[78] One commenter expressed concern about ISOs' "authority to deny a generator that is not optimally located on the grid," (like clean energy generators) and another recoiled at ISOs' "autonomous, unilateral authority" regarding interconnection decisions.[79] FERC shrugged.[80] Three years later, after recognizing that the interconnection process was characterized by delays, lack of standardization, and competitive advantage to incumbent utilities owning generation and transmission facilities—established fossil fuel-based utilities—FERC issued a corrective order.[81] To reduce opportunities for discrimination, Order 2003 established an optional standard interconnection agreement and procedures.[82] Yet again, however, FERC declined to consider environmental costs and benefits a relevant factor in interconnection decisions, and acknowledged that Order 2003 was based on the needs of large (typically fossil-fuel) facilities[83] and disadvantaged smaller generators.[84] Although FERC has since developed technical interconnection standards for small power facilities[85] and wind facilities,[86] the environment has not gained a footing in intercon-

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78 *FERC Order 2000*, 65 Fed. Reg. at 877.

79 *Id.* at 876.

80 *Id.* at 877. FERC said that those facilities that met a host of bureaucratic requirements, including filing extensive paperwork by 1994 and beginning construction before 1999, could seek an interconnection decision from FERC rather than the ISO. 16 U.S.C.A. § 796(17) (2010). Obviously, this excluded all new and recently planned clean energy facilities.

81 Standardization of Large Generator Interconnection Agreements and Procedures, FERC Order 2003, 68 Fed. Reg. 49846 (Aug. 19, 2003) (codified at 18 C.F.R. pt. 35) (facilities over 20 MW capacity); *see generally* NAT'L RENEWABLE ENERGY LAB., GENERATION INTERCONNECTION POLICIES AND WIND POWER: A DISCUSSION OF ISSUES, PROBLEMS, AND POTENTIAL SOLUTIONS (2009), *available at* http://www1.eere.energy.gov/windandhydro/pdfs/44508.pdf.

82 *FERC Order 2003*, 68 Fed. Reg. 49846, 49919 (ISOs retain ability to propose alternatives to FERC's suggested standards).

83 Standardization of Small Generator Interconnection Agreements and Procedures, FERC Order 2006, 68 Fed. Reg. 49974, 49976 (July 24, 2003) ("[Order 2003] was originally intended to develop standard generator interconnection procedures and a standard agreement for generators of all sizes.").

84 *FERC Order 2003*, 68 Fed. Reg. 49846, 49848-49849 (FERC agreed with small-scale energy advocates "that the use of [Order 2003] designed for Large Generators would unduly hinder the development of Small Generators."); NAT'L RENEWABLE ENERGY LAB., *supra* note 81, at 13.

85 Standardization of Small Generator Interconnection Agreements and Procedures, FERC Order 2006, 68 Fed. Reg. 49974 (July 24, 2003) (facilities under 20 MW capacity).

86 Interconnection for Wind Energy and Other Alternative Technologies, FERC Order 661, 111 F.E.R.C. ¶ 61,353 (June 2, 2005).

nection decision-making, which remains a largely first-come, first-served system.[87]

FERC's deference to ISO tariff and interconnection practices represents, in part, FERC's clean distinction between the environment and the "public interest." FERC does not acknowledge the influence of environmental costs and benefits on the "public interest" in transmission pricing and interconnection policies.

B. State Public Utilities Commissions

1. Ratemaking

States retain authority to determine utilities' retail rates to customers. Much like the Federal Power Act, most state public utilities commissions (PUCs)[88] police rates on the "just and reasonable" standard with special attention to discrimination and service reliability.[89] Since FERC's deregulatory reforms ceased with wholesale,[90] most state PUCs continue to hold a tight regulatory grasp on the retail industry. This means that they determine electricity rates through traditional rate cases. Even states with "deregulated" retail sectors determine distribution rates—the price of transporting power to the consumer—through traditional rate case proceedings.

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87 Stephen M. Fisher, *Reforming Interconnection Queue Management Under FERC Order No. 2003*, 26 YALE J. ON REG. 117, 120–21, 139–40 (2009) (noting the widespread discontent with Order No. 2003, and continued competitive disadvantage against renewable energy projects under revisory efforts); NAT'L RENEWABLE ENERGY LAB., *supra* note 81, at 36, 38.

88 I use the term "public utilities commission" or PUC throughout this paper. Some jurisdictions call this entity a "public service commission," "regulatory authority," "corporation commission," or other names. Furthermore, certain regulatory powers, like energy facility siting, may be delegated to a particular energy siting board rather than the PUC in some states. I deliberately use the term, "PUC" for all entities that exercise a traditional regulatory authority over electric utilities, including siting and ratemaking.

89 *E.g.*, MINN. STAT. ANN. § 216B.16(5) (West 2010) ("If, after the hearing, the commission finds the [proposed] rates to be unjust or unreasonable or discriminatory, the commission shall determine the rates to be charged or applied by the utility in question and shall fix them by order to be served upon the utility."); *id.* at § 216B.16(6) ("[I]n the exercise of its powers under this chapter to determine the just and reasonable rates for public utilities, [the commission] shall give due consideration to the public need for adequate, efficient and reasonable service and to the need of the public utility for revenue sufficient to enable it to meet the cost of furnishing the service . . . .").

90 Technically, the furthest reach of the reform was "unbundled" interstate transmission lines that were owned by utilities who also engaged in retail sales. *See* Transmission Access Policy Study Grp. v. FERC, 225 F.3d 667, 685 (D.C. Cir. 2000) (denying petitioner's claim that FERC was required to extend Order 888 to all retail transmission).

i. Prudence Review

One important tool in the traditional ratemaking process is prudence review.[91] PUCs scrutinize utilities' purchases such as research and development, pollution abatement equipment, and wholesale power to ensure that consumers only pay for those expenses that were incurred at least-cost and for which they received a benefit.[92]

Retail electric utilities' most environmentally significant purchase is wholesale power. Courts have created a caveat to the filed-rate doctrine, which would bar PUCs from denying cost recovery of "imprudent" power purchases.[93] The so-called *Pike County* exception allows PUCs to deny recovery of a power purchase at FERC-approved rates, if the "imprudence" determination turns on a factor other than the rate that was paid.[94] In *Public Service Company of New Hampshire v. Patch*, the New Hampshire PUC denied recovery of a utility's power purchase because "lower cost sources of energy" were available even though the rate was deemed just and reasonable by FERC.[95] The PUC's survey of lower cost alternatives, however, did not consider externalized environmental costs. The PUC actually used the exception to deny the utility's acquisition of clean hydro power, arguing that lower prices could be obtained in fossil fuel-leaning markets.[96]

The Massachusetts PUC, in *Re Western Massachusetts Electric Company*, denied cost recovery for nuclear energy.[97] The PUC demanded not just lower cost alternatives, but the "optimal supply alternative," which it found in this case to be gas-fired power without consideration of environmental tradeoffs.[98]

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91 *See id*; Duquesne Light Co. v. Barasch, 488 U.S. 299, 309 (1989) ("Under the prudent investment rule, the utility is compensated for all prudent investments at their actual cost when made (their 'historical' cost), irrespective of whether individual investments are deemed necessary or beneficial in hindsight."); *see* R.I. GEN. LAWS § 39-1-1(d)(5) (2010) ("[P]ublic utilities should have a reasonable opportunity to recover transitional costs associated with commitments prudently incurred in the past pursuant to their legal obligations to provide reliable electric service at reasonable costs.").

92 MUCHOW & MOGEL, *supra* note 53, at §2.07.

93 *See* Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 966 (1986) ("Once FERC sets such a rate [on wholesale customers], a state may not conclude in setting retail rates that the FERC approved wholesale rates are unreasonable. A State must rather give effect to Congress' desire to give the FERC plenary authority over interstate wholesale rates, and to ensure that the States do not interfere with this authority.").

94 Pike County Light & Power v. Pa. Pub. Util. Comm'n, 465 A.2d 735, 737–38 (Pa. Commw. 1983). Many courts recognize this exception. *See, e.g.*, Public Service Co. of N. H. v. Patch, 167 F.3d 29, 35 (1st Cir. 1998); Ky. W. Va. Gas Co. v. Pa. Pub. Util. Comm'n, 837 F.2d 600, 609 (3d Cir. 1988). FERC also recognizes this exception to the filed-rate doctrine. Palisades Generating Co., 48 F.E.R.C. P61,144, 61,574, n.10 (1989).

95 Public Service Co. of N. H. v. Patch, 167 F.3d 29, 35 (1st Cir. 1998).

96 *Id.* at 32.

97 *Re* W. Mass. Elec. Co., 80 P.U.R.4th 479 (Mass. 1986).

98 *Id.* at 538

In *Application of Northern States Power Co.*, an intervenor requested that the Minnesota PUC deny cost-recovery of an "environmentally inappropriate" 800-megawatt (MW) coal-fired plant.[99] But the PUC deemed the plant prudent, pointing not to environmental costs, but to the plant's low price in the absence of environmental harm.[100] Focusing on the low price of coal energy, the PUC concluded that "whatever the ultimate merits of [the intervenor's] environmental concerns, it is clear that . . . construction of [the coal plant] cannot be characterized as inappropriate."[101]

In June 2010, the Kentucky PUC rejected a utility's proposed purchase of 100 megawatts of wind power as failing the "just and reasonable" standard.[102] Acknowledging "that 'least cost' is one of the fundamental principles utilized when setting rates that are fair, just, and reasonable,"[103] the PUC nonetheless ignored environmental cost tradeoffs.[104] A price difference of $9 per megawatt-hour (MWh) between wind power and fossil power was enough evidence, said the PUC, to deem the contract in violation of least-cost principles.[105]

None of the PUCs mentioned above considered anything like the study by the National Research Council concluding that coal energy would imply additional climate-*unrelated* costs upwards of $120/MWh for coal sources, and $10/MWh for natural gas.[106] Nor did they consider the U.S. Department of Energy's (conservative)[107] climate-*related* damage calculations, suggesting an additional $32-$74/MWh for coal, and $16–$37/MWh for gas.[108]

Rather than interpreting the "prudence" component of "just and reasonable" rates to account for environmental externalities, these cases lend credence to some scholars' fear that deregulation favors heavy polluters.[109] In practice,

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99 No. E-002/GR-87-670, 1988 WL 486179, at *9 (Minn. P.U.C. Aug. 23, 1988).

100 *Id.*

101 *Id.*

102 No. 2009-00545, Re Ky. Power Co., 2010 WL 2640998, at *3 (Ky. P.U.C. June 28, 2010).

103 *Id.* at *2.

104 *Id.* at *3.

105 *Id.*

106 NAT'L RES. COUNCIL, *supra* note 18, at 6–8.

107 *Id.* (estimating 1 ton of CO_2 per coal-fired MWh and 0.5 ton of CO_2 per gas-fired MWh). *Compare* U.K. DEPT. OF ENERGY & CLIMATE CHANGE, *supra* note 21 (at exchange rate of £1.00 = $1.625, climate damages equal $83/MWh of coal), *with* U.S. DEP'T OF ENERGY, *supra* note 20, at Appendix 15A (climate damages equal to $21/MWh coal).

108 *See supra* notes 15–19.

109 CREW & KLEINDORFER, *supra* note 34. FERC, however, remains steadfast in its deregulatory policies. *See* Testimony of Jon Wellinghof, Chairman of FERC, *Hearing Before the Energy and Environment Subcommittee Of the Committee on Energy and Commerce United States House of Representatives Oversight Hearing for the Federal Energy Regulatory Commission March 23, 2010, available at* http://www.ferc.gov/EventCalendar/Files/20100323141517-Wellinghoff-3-23-10.pdf ("[Deregulated] markets create opportunities for a wider range of resources to compete on a level playing field with traditional generation resources. These less traditional resources include not only renewable energy resources, but also demand response, energy efficiency, distributed

PUCs frequently ignore or marginalize environmental impacts when evaluating costs.

ii. Rate Design

In the *Permian Basin Area Rate Cases*, the Supreme Court upheld a Federal Power Commission (FPC) rate design intended to incentivize natural gas exploration, reiterating FPC's freedom "to devise methods of regulation capable of equitably reconciling diverse and conflicting interests . . . includ[ing] the protection of future, as well as present consumer interests."[110] PUCs, like FERC, enjoy wide latitude to design the way utilities earn revenue.[111] Under traditional cost-of-service rate design, where a rate is fixed only once every few years, utility profits are coupled with volume of sales. If sales surpass forecasted demand, utilities enjoy greater profits. One common tactic to exploit the promise of coupled rates is to sell electricity in "declining blocks."[112] In a declining block rate design, electricity prices decline with greater quantities of consumption, thereby inducing greater consumption levels than would occur with a flat marginal cost curve.[113] Several PUCs recognized the negative effect coupled profits and sales had on utilities' efficiency efforts. In 1979, the California PUC instituted the nation's first decoupled rate design.[114] Rather than earning revenue by promoting waste, utilities earned a fixed profit margin re-

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generation, and other distributed energy resources. Where such resources are lower cost than traditional generation resources, as is often the case, their use in our electric system can lower total costs to consumers.").

110 Permian Basin Rate Cases, 390 U.S. 747, 767, 798 (1968); *see also* Fed. Power. Comm'n v. Hope Nat. Gas Co., 320 U.S. 591, 602 (1944) ("[T]he Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its rate-making function, moreover, involves the making of 'pragmatic adjustments.' . . . Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling. It is not the 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.").

111 Duquesne Light Co. v. Barasch, 488 U.S. 299, 313–14 (1989) (applying *Permian Basin* to state PUCs).

112 *See generally* Edythe S. Miller, *Rate Structure Reform: A Review of the Current Debate*, 12 J. ECON. ISSUES 609 (1978) (describing declining block rates and alternative rate designs).

113 *See* Joseph A. Herriges & Kathleen Kuester King, *Residential Demand for Electricity Under Inverted Block Rates: Evidence From a Controlled Experiment*, 12 J. BUS. & ECON. STATS. 419, 426 (1994) (conducting electricity block-pricing experiment, and finding that low-income consumers are less affected by block rate schemes, but "for higher income groups, [the last block price] will dominate the marginal usage decisions."); Joseph V. Terza and W.P. Welch, *Estimating Demand under Block Rates*, 58 LAND ECON. 181, 182–83 (1982).

114 RICHARD F. HIRSH, POWER LOSS: THE ORIGINS OF DEREGULATION AND RESTRUCTURING IN THE AMERICAN ELECTRIC UTILITY SYSTEM 181–83 (1999).

gardless of sales volume.[115] This design enabled utilities to make financial sense of conservation programs.

At the behest of state legislatures, many PUCs have followed FERC toward market-based rates via deregulated electricity retail markets, but they have met with variable success.[116] Market power remains a problem in many states including Rhode Island, where only one investor-owned utility offers service despite deregulatory efforts.[117] The goal of deregulation is to lower costs and therefore prices, but at the height of retail deregulatory efforts in 2000, prices actually rose for the first time in fifteen years.[118] Near-term efficiency gains, therefore, appear unlikely to eclipse marginal environmental losses due to deregulatory incentives for lower priced—but more environmentally costly—fossil energy.

Environmental consideration, however, is not completely foreign to state regulation of "just and reasonable" rates. While ordering a transition to deregulated competition, the Vermont PUC specifically required retail power sellers to disclose all sources of electricity so that consumers could "make more informed decisions about their power purchases, and . . . support environmentally responsible electricity sources."[119] The District of Columbia PUC gave a positive, if somewhat poker-faced, response to the Washington Metro Area Transit Authority's request to cap natural gas distribution prices to promote natural gas vehicles and pollution abatement.[120] The Rhode Island PUC recently disapproved a proposed power purchase agreement between an offshore wind

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115 Jeremy Knee, *An Environmental Role for Energy Regulators*, 3 NW. INTERDISC. L. REV. 104, 112–14 (2010).

116 In 2003, eighteen states were actively attempting to deregulate retail markets. ENERGY INFORMATION ADMINISTRATION, STATUS OF STATE ELECTRIC INDUSTRY RESTRUCTURING ACTIVITY 1 (2003), http://www.eia.doe.gov/cneaf/electricity/chg_str/restructure.pdf. By May 2010, the number of deregulating states shrunk to fifteen. ENERGY INFORMATION ADMINISTRATION, STATUS OF ELECTRICITY RESTRUCTURING BY STATE (2010), *available at* http://www.eia.doe.gov/cneaf/electricity/page/restructuring/restructure_elect.html.

117 *See generally* John Kwoka et al., *Divestiture Policy and Operating Efficiency in U.S. Electric Power Distribution*, 38 J. REG. ECON. 86, 87–88 (2010) (finding that state efforts to disaggregate vertically-integrated utilities have large adverse effects on efficiency).

118 Paul L. Joskow, *The Difficult Transition to Competitive Electricity Markets in the United States*, *in* ELECTRICITY DEREGULATION: CHOICES AND CHALLENGES 31, 32–34 (James M. Griffin & Steven L. Puller eds., 2005).

119 *In re* Restructuring of Elec. Util. Indus. in Vermont, 174 P.U.R.4th 409, 473 (Vt. P.S.B. 1996).

120 *Re* Washington Gas Light Co., Dist. of Columbia Div., 229 P.U.R.4th 177, 255–57 (D.C. P.S.C. 2003) ("WMATA says that it is seeking to address the issue of air pollution on a regional basis. . . . WMATA asks the Commission to at least restrain price increases on [the gas company's] distribution rates for service to CNG facilities. Over the long term, WMATA urges the Commission to take 'an explicit, regional, leadership role' in fostering CNG vehicle use. [DC PUC explains that natural gas price will not increase for vehicles through the order without explicitly accepting or rejecting WMATA's call for environmental leadership].").

farm and the local utility as unreasonably priced,[121] but only after judging the price in light of avoided climate-related damages from CO_2 valued at $80/ton.[122] Furthermore, most states encourage pollution abatement by allowing cost recovery of reasonable abatement expenses,[123] and some have explicitly declared pollution abatement expenses to be in the "public interest."[124]

2. Siting Standards

States also have jurisdiction over the siting of new electricity facilities, including transmission and power generation. Construction and operation of new transmission or generation facilities typically require certification from the PUC that "the present or future public convenience and necessity" require the new facilities[125] or that the facilities would "serve the public interest."[126] Some state legislatures have made clear to PUCs that the environmental impact is a relevant factor in siting decisions,[127] but many have not.[128] The Clean Air Act requires any new "major emitting facility" to acquire a permit from EPA prior to construction certifying that the facility will not cause a violation of federal air quality standards.[129] EPA's environmental analysis helps PUCs sift through environmentally destructive "major emitting facilities," but it leaves a large number of "non-major emitting" transmission and generation facilities without environmental cost-benefit balancing.[130]

State PUC interpretations vary with regard to the relevance of environmental costs in siting decisions. The North Carolina legislature provides that a certificate of "public convenience and necessity" for construction of a power

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121 Review of Proposed Town of New Shoreham Project, 280 P.U.R.4th 185, 212 (R.I. P.U.C. 2010).

122 *Id.*

123 *E.g.*, Application of Peoples Natural Gas Co., No. G-011/GR-92-132, 1993 WL 732432, at *8 (Minn. P.U.C. 1993) ("[T]he Commission will not discourage [reasonable pollution abatement] by being ambiguous about cost recovery.").

124 *E.g.*, *Re* Tuscon Elec. Power Co., No. 59602, 1996 WL 551857, at *3 (Ariz. P.U.C. 1996).

125 TENN. CODE ANN. § 65-4-201(a) (2011) (stating standards for siting generation facilities).

126 *Id.* § 65-4-208(a) (stating standards for siting transmission facilities).

127 *E.g.*, R.I. GEN. LAWS § 42-98-2(3), (8) (2011); VA. CODE ANN. § 56-46.1(A) (2011). Kentucky ambiguously directs the PUC to consider environmental costs and benefits, by ordering it to account for facilities' impact on "scenic surroundings" and "property values." KY. REV. STAT. ANN. § 278.710(1)(a) (2011). But the legislature pointedly reminds the Kentucky PUC that when siting generation facilities it "may consider the policy of the General Assembly to foster and encourage use of Kentucky coal by electric utilities." *Id.* § 278.020(1).

128 *E.g.*, ALA. CODE § 37-4-28 (2011); TENN. CODE ANN. § 65-4-201(a) (2011).

129 42 U.S.C. § 7475 (2006).

130 In relevant part, a "major emitting facility" is a new coal plant that emits 100 tons or more of any air pollutant, or any other new plant that emits 250 tons or more of any air pollutant. 42 U.S.C. § 7479(1) (2006).

facility shall be granted only if it is cost-effective and "in the public interest."[131] These facilities are evaluated under the state's policy of providing "fair regulation of public utilities in the interest of the public" and promoting "least-cost" power and "harmony between public utilities, their users and the environment."[132] In 2007, the PUC applied the statute to address reliability and power price concerns, as distinct from environmental effects.[133] In so applying the statute, the PUC approved an 800-MW coal-fired plant without any analysis of environmental costs.[134] One commissioner passionately dissented from the decision, pointing to the commission's duty to protect the "public interest" and promote harmony between utilities and the environment:

> We will fail in our legal responsibilities to the people of North Carolina and in our moral responsibilities to our children and grandchildren if we do not take bold, decisive action to address the problem, not just deal with the symptoms. . . . But replacing, megawatt for megawatt, coal-fired generation with coal-fired generation, no matter how much cleaner the new generation, continues to contribute to the problem.[135]

The following year, the North Carolina PUC reviewed a proposal for a 600-MW gas plant. It determined only that new gas plants "are more efficient than previous designs, resulting in a smaller impact on the environment."[136] With that exploration of environmental impacts, the PUC issued the certificate.[137]

With even less statutory direction to consider the environment,[138] however, the Illinois PUC espoused a very different interpretation. Like North Carolina, the Illinois PUC is not explicitly required to consider environmental costs in facility siting. But in their analysis of the "least cost" means of satisfying service needs, the PUC rigorously inquired into the details of environmental externalities.[139]

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131 N.C. GEN. STAT. § 62-110.1(e) (2010); *see generally In re* Duke Energy Carolinas, LLC, 257 P.U.R.4th 115, 121 (N.C. P.U.C. 2007) ("The standard of public convenience and necessity is relative or elastic, rather than abstract or absolute, and the facts of each case must be considered.").

132 N.C. GEN. STAT. § 62-2(a)(5) (2010).

133 *See In re* Duke Energy Carolinas, LLC, 257 P.U.R.4th at 121.

134 *Id.*

135 *Id.* at 142 (Owens, Comm'r, dissenting).

136 *Re* Progress Energy Carolinas, Inc., No. E-2, Sub 916, 2008 WL 4616736, at *9 (N.C. P.U.C. 2008). This includes the utility's integrated resources plan, which need not highlight any information pertaining to environmental costs. N.C. GEN. STAT. § 62-110.1(c).

137 *Re* Progress Energy Carolinas, Inc, 2008 WL 4616736, at *12.

138 220 ILL. COMP. STAT. 5/8-406(b) (2011).

139 *In re* Illinois Power Co., No. 06-0706, 2009 WL 3191528, at *3, 50–52 (Ill. P.U.C. 2009).

3. Integrated Resource Planning

Some state PUCs require utilities to develop and implement integrated resource plans. These plans incorporate least-cost supply-side planning and demand-side management programs to reduce customer demand through conservation and shift consumption away from peak demand hours.[140] PUCs often rely on these plans in the process of siting determinations.[141]

The Massachusetts PUC valued externalities in utility resource planning processes with numerical values assigned to various pollutants.[142] In 1994, however, the Massachusetts Supreme Court struck down the externality values as an excessive exercise of environmental policy.[143] Other states, like California, have explicitly recognized the need to address environmental externalities in planning the state's energy portfolio, though this innovation comes on the heels of legislative mandate rather than an interpretation of existing "public interest" mandates.[144]

The Rhode Island PUC does not appear to require consideration of environmental costs and benefits in least-cost power supply planning.[145] The Michigan PUC requires a consideration of the regulatory costs likely to affect prices, including environmental compliance costs, but the agency guidelines require no accounting of anticipated environmental externalities over the 10-year plan.[146] North Carolina requires such information as is necessary "to achieve maximum

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[140] *Re* Integrated Res. Mgmt. Practices, 116 P.U.R.4th 67, 70–71 (Mass. P.U.C. 1990) ("The proceeding's purpose has been to establish a regulatory framework that will result in each electric company's meeting its obligation to serve reliably and at the lowest possible cost.").

[141] *E.g.*, N.C. GEN. STAT. § 62-110.1(c).

[142] *Re* Boston Edison Co., D.P.U. 90-270, 1991 WL 518157, at *20 (Mass. P.U.C. 1991); ENERGY INFORMATION ADMINISTRATION, ELECTRICITY GENERATION AND ENVIRONMENTAL EXTERNALITIES: CASE STUDIES vi (1995), ftp://ftp.eia.doe.gov/pub/electricity/external.pdf.

[143] Mass. Elec. Co. v. Dep't of Pub. Util., 643 N.E.2d 1029, 1031 (Mass. 1994) ("[W]e conclude that the [PUC] is not authorized to take environmental considerations into account to the degree it has . . . ."). This and other cases are further discussed *infra* at Part III.E.

[144] CAL. PUB. UTIL. CODE § 701.1(a), (c) (West 2011) ("The Legislature finds and declares that, in addition to other ratepayer protection objectives, a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society of . . . energy . . . and to improve the environment . . . . (c) In calculating the cost effectiveness of energy resources . . . the commission shall include, in addition to other ratepayer protection objectives, a value for any costs and benefits to the environment, including air quality.").

[145] R.I. GEN. LAWS § 39-1-27.8 (2011). But the state's lone investor-owned utility voluntarily adopted a system reliability plan that weighs the environmental benefits of particular technologies added for grid reliability planning purposes. *See* National Grid Least Cost Procurement, No. 3931, 2009 WL 1145934 (R.I. P.U.C. 2009).

[146] MICH. COMP. LAWS § 460.6S(11) (2011); To Implement the Provisions of MCL 460, No. U-15896, 2008 WL 5426930 (Mich. P.S.C. 2008) (presenting guidelines for creating integrated resource plan).

efficiencies for the benefit of the people of North Carolina,"[147] but such plans may contribute little to environmentally considered decisions.[148]

C. "Public Interest" Principles: A Summary

The foregoing survey has panned out a handful of core meanings assigned to the "public interest." Those interpretive principles bear further distillation.[149] Economic theory regards the fundamental problem of public utilities as taking advantage of economies of scale (e.g. preventing needless duplication of power lines) while avoiding monopolistic excesses (e.g. preventing deliberate reductions in output to inflate prices and profits).[150] Because markets fail to deliver an efficient outcome, government should regulate.[151] FERC and PUC actions appear to recognize this "public interest" in social efficiency, for example, by promoting competition in the absence of natural monopoly[152] and reducing transaction costs by exempting bilateral contracts from "just and reasonable" review.[153] The paramount aim of efficiency measures, however, remains minimizing costs to consumers.[154] When markets are deemed unable to deliver minimum costs to consumers, many regulators allow recovery of only "prudent"

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147 N.C. GEN. STAT. § 62-110.1(c).

148 *See, e.g.*, *supra* text accompanying notes 131–37.

149 While nearly every controversy in law and policy can trace its roots to the epic tension between efficiency and equity, those objectives provide little guidance on the actual considerations regulators use to determine the "public interest." For this reason, I decipher regulators' "public interest" objectives at a slightly higher level of specificity. The reader should nonetheless intuit the efficiency-equity tension throughout "public interest" decision-making. Direct discussion of efficiency-equity tradeoffs has not been overlooked. Rather, it has been deliberately avoided.

150 CREW & KLEINDORFER, *supra* note 34, at 3.

151 M. A. UTTON, THE ECONOMICS OF REGULATING INDUSTRY 13 (1986).

152 *E.g.*, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, Order 888, 61 FERC 21540 (May 10, 1996).

153 *See* Morgan Stanley Capital Group, Inc. v. Pub. Util. Dist. No. 1, 554 U.S. 527, 542, 551 (2008) (affirming and strengthening the *Mobile-Sierra* doctrine, which establishes a presumption of "justice and reasonableness" for all contracted power rates, rebuttable upon showing that rates and terms are contrary to the public interest).

154 Fed. Power Comm'n v. Sierra Pac. Power Co., 350 U.S. 348, 354 (1956) ("That the purpose of the power given the Commission by § 206 (a) is the protection of the public interest, as distinguished from the private interests of the utilities, is evidenced by the recital in § 201 of the [Federal Power Act] that the scheme of regulation imposed 'is necessary in the public interest."); *see* Richard Cudahy, *Conference: Harvard Electricity Policy Group: Regulatory Decisionmaking Reform,* 8 ADMIN. L.J. AM. U. 789, 828 (1995) ("I think the fundamental problem [with deregulation] is somehow to enable regulators to preserve their function as defenders of equity while allowing competition to do the work of efficiency; not that they are not also interested in efficiency.").

expenditures and "least-cost" supply alternatives.[155] Utility regulators seek to minimize costs (and maximize benefits) to society or consumers or both.

The principle of nondiscrimination intertwines with "just and reasonable," cost-minimizing rates.[156] This principle is found in regulators' consumer bias. Price discrimination—varying prices according to consumers' respective marginal willingnesses-to-pay—could conceivably produce a superior result in terms of social efficiency by shifting surplus to producers.[157] But PUCs and courts have articulated a "right of consumers to pay a rate which accurately reflects the cost of service rendered"[158] and consumer protection against "excessive burden[s],"[159] which includes competitive disadvantage resulting from similarly situated customers bearing disproportionate costs.[160] In most cases, cost minimization and nondiscrimination are complementary. Nondiscrimination, for example, justified FERC's open-access transmission policy, which in turn accomplished competitive cost-reductions in the wholesale generation sector.[161] Historically, however, nondiscrimination has often stood at odds with low consumer costs, as during rural electrification.[162]

A third critical component of the "public interest" is adequacy of service.[163] For this reason, the Supreme Court declared that, as a baseline, "[r]ates

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155 *Re* Kentucky Power Co., No. 2009-00545, 2010 WL 2640998, at *2 (Ky. P.S.C. 2010) ("The Commission has long recognized that 'least cost' is one of the fundamental principles utilized when setting rates that are fair, just, and reasonable."); CREW & KLEINDORFER, *supra* note 34, at 28 ("[P]roducers may not be X-efficient if they are assured that all costs can be passed through to the consumer."); *see supra* Part I.B.

156 Fed. Power Comm'n v. Conway Corp., 426 U.S. 271, 278–79 (1976) ("The Commission must arrive at a rate level deemed by it to be just and reasonable, but in doing so it must consider the tendered allegations that the proposed rates are discriminatory . . . in effect.").

157 Utilities have historically engaged in "second-degree" price discrimination where prices vary according to customers' volume of consumption, but other forms of price discrimination could be possible and could deliver relatively efficient results. *See* CABRAL, *supra* note 43, at 167, 169, 173 (2000).

158 Pub. Serv. Co. v. Pub. Utils. Comm'n, 644 P.2d 933, 939 (Colo. 1982).

159 NRG Power Mktg., LLC v. Me. Pub. Utils. Comm'n, 130 S. Ct. 693, 699 (2010) (quoting Fed. Power Comm'n v. Sierra Pac. Power Co., 350 U.S. 348, 355 (1956)).

160 *Id.*

161 Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, Order No. 888, 61 FERC 21540 (May 10, 1996).

162 JIM ROSSI, REGULATORY BARGAINING AND PUBLIC LAW 78–79 (2005) (noting the economic inefficiency of enhancing electricity and gas access for a few high-cost customers at the expense of general ratepayers). Extension of service to high-cost customers follows the service adequacy principle as much as the nondiscrimination principle of "public interest."

163 For purposes of this paper, I also lump safety into this category. Safety has little connection to the environment, but it is usually recognized as a "public interest," often in tandem with service adequacy. *See, e.g.*, N.Y. PUB. SERV. LAW § 65(1) (Consol. 2011) ("Every gas corporation, every electric corporation and every municpality shall furnish and provide such service, instrumentalities and facilities as shall be *safe and adequate* and in all respects just and reasonable." (emphasis added)).

which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as [unjust and unreasonable]."[164] Importantly, it is in the consumer's and investor's shared interest to maintain the continuity and reliability of electricity service.[165] The "public interest" comprises the quality of electricity service rendered by utilities.[166]

These related objectives—cost minimization, nondiscrimination, and adequacy of service—form the common nucleus of the "public interest" as interpreted by utility regulators.[167] Sometimes conflicting, sometimes harmonious, these goals bend and mix with the circumstances to realize the public's aggregate interests. "Easier to sense than to define or instill," says one public utility scholar, "the public interest is divined not through opinion polls or political expediency but by the deliberative weighing of subordinate interests in the context of a social compact to pursue a larger common good."[168] In Part II below, I discuss where environmental consideration might fit within the traditional "public interest" objectives, and what courts should do about it.

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164 Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 605 (1944).

165 *See id.* at 603.

166 NAACP v. Fed. Power Comm'n, 425 U.S. 662, 670 (1976) ("The use of the words 'public interest' in the Gas and Power Acts is . . . a charge to promote the orderly production of plentiful supplies of electric energy and natural gas at just and reasonable rates.").

167 James C. Bonbright summarizes utility rate regulation with nearly identical principles, which he calls "consumer rationing" (my "cost minimization"), "fairness to ratepayers" (my "nondiscrimination"), and "capital attraction" (my "adequacy of service"). JAMES C. BONBRIGHT ET AL., PRINCIPLES OF PUBLIC UTILITY RATES 385 (2d ed. 1988); *see also* Fed. Power Comm'n v. Sierra Pac. Power Co., 350 U.S. 348, 354–55 (1956) (presenting possible factors to test whether a contract violates the "public interest" under the *Mobile-Sierra* doctrine, including (1) impairing financial ability of utility to render service, (2) casting an excessive burden on consumers, and (3) causing undue discrimination); *Testimony of Jon Wellinghof, Chairman of FERC, Hearing Before the Energy and Environment Subcommittee Of the Committee on Energy and Commerce United States House of Representatives Oversight Hearing for the Federal Energy Regulatory Commission March 23, 2010*, FERC (Mar. 23, 2010), http://www.ferc.gov/eventCalendar/files/20100323141527-wellinghoff-3-23-10.pdf ("As stated in our Strategic Plan, the Commission's mission is to assist consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means. Fulfilling this mission involves two primary goals: (1) promoting the development of safe, reliable and efficient energy infrastructure that serves the public interest; and (2) ensuring that rates, terms and conditions for wholesale sales and transmission of electric energy and natural gas in interstate commerce are just and reasonable and not unduly discriminatory or preferential. These goals are fundamental. They arise from the Commission's longstanding authorizing statutes, particularly the Federal Power Act . . . .").

168 *See* Janice A. Beecher, *The Prudent Regulator: Politics, Independence, Ethics, and the Public Interest*, 29 ENERGY L.J. 577, 578 (2008).

II. PROTECTING THE "PUBLIC INTEREST": REASONABLE PROCESS

Utility regulators express their statutory interpretations in formal and informal orders, rulemakings, and ratemakings. Courts treat these interpretations with deference. And for good reason. Gaps in statutes are viewed as Congressional delegations of authority to the agency to make policy through rules or orders.[169] Furthermore, agencies often apply technical expertise to decision-making that courts do not possess.[170] When ambiguity exists in a statute, courts will defer to any "reasonable" agency interpretation.[171] Likewise, when an agency makes a factual finding (e.g. "least-cost alternative") in a formal proceeding, courts will defer to the agency's finding if supported by substantial evidence on the record as a whole.[172] Courts defer to factual findings that are not "arbitrary [or] capricious" in informal proceedings.[173]

But judicial deference quickly dries up when judges sense that agency decision-making outcomes are the product of flippant decision-making processes. Section 706 of the Administrative Procedure Act (APA) directs courts to "hold unlawful and set aside agency action, findings and conclusions found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law . . . ."[174] In *Greater Boston Television Corp. v. FCC*,[175] Judge Leventhal described the implications of APA § 706:

> [T]he agency has latitude not merely to find facts and make judgments, but also to select the policies deemed in the public interest. The function of the court is to assure that the agency has given reasoned consideration to all the material facts and issues. This calls for insistence that the agency articulate with reasonable clarity its reasons for decision, and identify the significance of the crucial facts . . . . Its supervisory function calls on the court to intervene . . . if the court becomes aware, especially from a combination of danger signals, that the agency has

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169 Chevron v. Nat. Res. Def. Council, Inc., 467 U.S. 837, 865–66 (1984) ("Judges are not experts in the field, and are not part of either political branch. . . . [F]ederal judges—who have no constituency—have a duty to respect legitimate policy choices made by those who do.")

170 *Id.*

171 *Id.* at 844.

172 5 U.S.C. § 706(2)(E) (2006) ("The reviewing court shall . . . (2) hold unlawful and set aside agency action, findings, and conclusions found to be . . . (E) unsupported by substantial evidence . . . . In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party . . . ."); Allentown Mack Sales & Serv., Inc. v. NLRB, 522 U.S. 359 (1998).

173 5 U.S.C. § 706(2)(A) (2006).

174 *Id.*

175 444 F.2d 841 (D.C. Cir. 1970).

> not really taken a 'hard look' at the salient problems, and has not genuinely engaged in reasoned decision-making.[176]

Assuming that utility regulators' interpretation of the "public interest"—cost minimization, nondiscrimination, and service adequacy—is permissible, regulators must nonetheless take a "hard look at the salient problems" that their actions present to the "public interest."[177]

A. "Public Interest" as Cost Minimization

Environmental impacts present a "salient problem" to utility regulators' efforts at minimizing costs. In economic terms, it is a problem of market externalities. Markets without externalities go something like this: each laundry cycle costs me $2 in electricity and water. I will do laundry until my next wash and dry cycle yields me only one clean sock. Having one additional clean sock in my drawer is worth just less than $2 to me, so I give my appliances a rest and ditch the sock till I soil some more clothing. I minimize my costs by consuming electricity and water only when I sufficiently value another load ($2). All power consumption works more or less in the same way. I use energy until the costs of using the last unit exceed the benefits. In economics-speak, consumers consume until their private marginal costs of consumption equal their private marginal benefits.

Enter externalities. Suppose each time I use the washer, it leaks water on the floor. I don't notice because it's a small amount and always hidden from sight. After a short while, however, my downstairs neighbor discerns dark rings encircling her chandelier. Now each wash and dry cycle costs me $2 in electricity and water, and costs my neighbor $5 in ceiling damage—a $3 net loss. If my neighbor makes me pay the water damage, then I will do laundry only when clean clothing exceeds [$2 + $5 =] $7 in value to me (like for a hot date). If my neighbor can't figure out where the damage is coming from, then I will continue doing laundry whenever I value clean clothing at $2 or more. This means I do

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176 *Id.* at 851; *see also* David S. Tatel, *The Administrative Process and the Rule of Environmental Law*, 34 HARV. ENVTL. L. REV. 1, 5 (2010) ("[T]he purpose of this [hard look] requirement relates to the rationale for an agency's very existence. Congress delegates authority to administrative agencies not to authorize any decision at all, but to permit agencies to apply their expertise. The [hard look] requirement allows courts to determine whether agencies have in fact acted on the basis of that expertise.").

177 *Id.*; *see* Gary Lawson, *Outcome, Procedure and Process: Agency Duties of Explanation for Legal Conclusions*, 48 RUTGERS L. REV. 313, 317–19 (1996) ("At a minimum, the 'arbitrary or capricious' test prohibits decisionmaking processes that are starkly irrational, such as reliance on astrology. At a maximum, it imposes a far more rigorous requirement of explanation. Whenever an agency has legal discretion, the 'arbitrary or capricious' test requires the agency to exercise that discretion rationally. Where such discretion involves an issue of *policy* significance, well settled principles of administrative review typically impose a substantial duty of explanation on the agency." (emphasis added)). Environmental impact is one issue of "policy significance" present when protecting the "public interest" in the electricity industry.

more than the efficient quantity of laundry or invest less than the efficient amount in washer repairs.[178]

The lesson is this: it is virtually impossible to minimize total costs if a substantial portion of costs are left out of the calculation. Without complete information regarding costs, consumers will not minimize costs by limiting consumption to those uses imbued with benefits greater than or equal to costs.

Much utility regulation is founded upon the public's interest in minimizing costs: FERC's shift to deregulation was designed to "bring more efficient, lower cost power to the Nation's electricity consumers;"[179] regulated ratemaking decisions aspire to an "accurate" reflection of the costs;[180] siting decisions often turn on questions of "least cost" alternatives;[181] and so on. In determining whether a particular rule or order will minimize costs, one must perch the various costs and benefits on the balancing scale. In *Industrial Union Department, AFL-CIO v. Hodgson*,[182] the D.C. Circuit reviewed regulations promulgated under the "general policy objectives" of the Occupational Safety and Health Act to protect the public health.[183] The court invalidated various elements of the Secretary of Labor's benzene regulations because "the record, examined closely in relation to the relevant concerns of the Act, leaves nagging questions" as to why the Secretary allowed certain industries to delay compliance with asbestos standards to protect the public health.[184] Length of benzene exposure was an obviously relevant concern to the public health, and decisions regarding exposure required thoughtful explanation. Costs in utility regulation appear to be precisely the kind of "relevant concern" that "nagged" the *Hodgson* court in worker safety regulation. As length of exposure is relevant to public health, so damage to public resources—like the environment—is relevant to minimizing costs.

Nearly thirty years after *Hodgson*, the same court decided *United States Telecom Association v. F.C.C.*[185] The court reviewed the Federal Communica-

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178 Those inclined toward private contractual solutions might point to the Coase theorem outlined in Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1 (1960). Given the right conditions, the Coase theorem rejects regulation in favor of property rights transactions between polluters and injured parties. *Id.* Mathematically, the parties arive at an efficient solution and everyone is satisfied. *Id.* At least three critical conditions prevent an efficient solution, however, in electricity-related pollution: (1) high transaction costs due to a diffused injured class, (2) extraordinary market power possessed by most utilities, and (3) unclear property rights over clean air. *Id.*

179 Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, Order 888, 61 Fed. Reg. 21540, 21541 (May 10, 1996).

180 *E.g.*, Pub. Serv. Co. v. Pub. Utils. Comm'n, 644 P.2d 933, 939 (Colo. 1982).

181 *Supra* Part II.B.2.

182 499 F.2d 467 (D.C. Cir. 1974).

183 *Id.* at 470–71.

184 *Id.* at 488.

185 227 F.3d 450 (D.C. Cir. 2000).

tion Commission's (FCC) efforts to minimize costs of certain law enforcement features to telephone ratepayers.[186] The court struck down the regulations due in part to the FCC's acknowledgment that cost estimates "do not represent all carrier costs of implementing [the regulations]."[187]

In the same way, ignorance of environmental costs on electricity ratepayers may preclude "a rational connection between the relevant facts found and the choice made."[188] To disregard or cursorily consider an entire category of costs, in a statutory scheme intensely concerned with costs, would seem to violate the regulator's duty to construct for the reviewing court a clear and logical path to the regulator's conclusion.[189] Utility regulators may not simply assert that an action minimizes costs, they must "cogently explain," with reference to measurement methodology and data, how the action minimizes costs.[190] Such an explanation would seem to require a good faith analysis of real costs to consumers in the form of public health and productivity losses, climate change effects (positive and negative), and diminished ecosystem services[191] and "nonuse" values.[192] If one recognizes the legitimacy of environmental costs, then the prevailing approach to determining cost minimization in regulatory action could

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186 *Id.* at 461.

187 *Id.*

188 *Id.*

189 Indus. Union Dep't, AFL-CIO v. Hodgson, 499 F.2d 467, 475–76 (D.C. Cir. 1974) ("What we are entitled to at all events is a careful identification by the Secretary . . . of the reasons why he chooses to follow one course rather than another. Where that choice purports to be based on the existence of certain determinable facts, the Secretary must . . . find those facts from the evidence in the record. By the same token . . . where no factual certainties exist or where facts alone do not provide the answer, he should so state and go on to identify the considerations he found persuasive.").

190 U.S. Telecomm. Ass'n v. Fed. Commc'n Comm'n, 227 F.3d 450, 461 (D.C. Cir. 2000) ("Fundamental principles of administrative law require that agency action be 'based on a consideration of the relevant factors,'" and rest on reasoned decisionmaking in which 'the agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.'" (internal citations omitted)).

191 The United States Department of Agriculture has articulated ecosystem services as including "primary services" like nutrient cycling and soil formation; "provisioning services" like food, fiber, and pharmaceuticals; "regulating services" like pollination, water and air purification, flood and erosion prevention, and pest and disease regulation; and "cultural services" like recreation, ecotourism, and aesthetic and religious values. COLLINS & LARRY, *supra* note 29, at 5; *see* Costanza et al., *supra* note 30, at 253–60 ($33 trillion valuation based on 1997 dollar); *but see* Bockstael et al., *supra* note 30, at 1384–89 (explaining that measures of global willingness-to-pay to prevent complete loss of ecosystem services are specious and unrealistic as real world tradeoffs occur at points between complete loss and complete preservation, and therefore *marginal* willingness-to-pay is a more useful measure of eco-service value).

192 Nonuse value is the gain in a person's utility without actually "using" a good, like environmental quality. This encompasses the "existence" value of knowing the good exists, "altruistic" value of knowing someone else is enjoying the good, and "bequest" value of knowing that future generations may enjoy the good. KOLSTAD, *supra* note 31, at 296.

hardly be characterized as anything but "arbitrary [or] capricious."[193] While economists embrace the legitimacy of environmental costs, reviewing courts—quite unfortunately—generally do not.[194]

B. "Public Interest" as Nondiscrimination

A similar duty of agency explanation exists for regulatory efforts premised on nondiscrimination. *Federal Power Commission v. Sierra Pacific Power Co.* opened the door to attacking rates that militate against the public interest in nondiscrimination, as when rates to one consumer effectively "overburden" another.[195] This statement likely has in mind the case where high prices to one consumer class enable low prices to another consumer class.[196] But environmental externalities identically create "an advantage to one at the expense of the other."[197] Recall that where externalities are present, rates fail to reflect the total costs of electricity. Customers across a service area may pay similar power prices, but certain classes, like downwind customers, bear higher environmental costs. Indeed, environmental externalities encourage higher than optimal energy consumption among the group bearing a disproportionately low cost—further exacerbating the disparity in costs and benefits. Thus, evenly distributed rates fail to correct a discriminatory distribution of total costs and competitive advantage. In law concerned with how rates might differentially burden consumers, externalities are a problem.

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193 16 U.S.C. § 706(2)(A).

194 *See, e.g.*, Consumers Energy Co. v. Fed. Energy Regulatory Comm'n, 367 F.3d 915, 922–23 (D.C. Cir. 2004) ("In competitive markets, 'FERC may rely upon market based prices in lieu of cost-of-service regulation to assure a just and reasonable result.'" (quoting Elizabethtown Gas Co. v. Fed. Energy Regulatory Comm'n, 10 F.3d 866, 870 (D.C. Cir. 1993)). But environmental costs may be recognized as "noneconomic." *See* Citizens for Allegan Cnty., Inc. v. Fed. Power Comm'n, 414 F.2d 1125, 1130, 1133, (D.C. Cir. 1969) (affirming the FPC's finding that acquisition is the "in the public interest" in part because FPC required protection of the affected lake's water level, conservation, and recreational use. "The FPC is not interested alone in economic costs. It must consider other elements of the public interest, including specifically, here, the impact on the recreational use of the lake.").

195 Fed. Power Comm'n v. Sierra Pac. Power, 350 U.S. 348, 355 (1956).

196 Philadelphia Suburban Transp. Co. v. Penn. Pub. Utils. Comm'n, 281 A.2d 179, 184–85 (Pa. Commw. Ct. 1971) ("The requirement is merely that rates for one class of service shall not be unreasonably prejudicial and disadvantageous to a patron in any other class of service. Before a rate can be declared unduly preferential and therefore unlawful, it is essential that there be not only an advantage to one, but a resulting injury to another. Such an injury may arise from collecting from one more than a reasonable rate to him in order to make up for inadequate rates charged to another, or because of a lower rate to one of the two patrons who are competitors in business. There must be an advantage to one at the expense of the other.").

197 *Id.*

FERC's open access transmission policy is also premised on the nondiscrimination principle of "public interest."[198] Transmission owners were required to offer equivalent terms to all prospective customers.[199] Deregulation may, nonetheless, beget a different species of discrimination. Without consideration of the variable and remote nature of environmentally benign energy sources, discrimination against renewable energy sources may remain imbedded in transmission pricing and interconnection policies. First-come, first-served interconnection, for example, favors older established facilities,[200] and distance-based pricing formulas inflate prices for renewable energies.[201] Open competition in wholesale generation markets—the product of FERC's nondiscriminatory transmission policy—has been a lightning rod for criticism that it discriminates against cleaner fuels.[202]

These competitive advantages may prolong fossil fuel dominance by ignoring substantial environmental tradeoffs between fuel sources. One 1.5MW wind turbine, for example, can displace approximately 3,000 tons of CO_2 per year, which is equivalent to planting approximately 1.5 square miles of forest each year.[203] That one turbine may avoid $63,000 in climate change-related damages this year and $135,000 in the year 2050.[204] Other estimates far exceed those values.[205] It may avoid an additional $473,040 per year in damages from sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulate matter (PM).[206] By

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198 *See* Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, Order 888, 61 FERC 21540, 21541 (May 10, 1996) ("The legal and policy cornerstone of these rules is to remedy undue discrimination in access to the monopoly owned transmission wires that control whether and to whom electricity can be transported in interstate commerce.").

199 *Id.*

200 *Supra* Part I.A.2.

201 *Supra* Part I.A.1.

202 *Supra* note 43.

203 U.S. DEP'T OF ENERGY, WIND POWER TODAY 2 (2009); *see* CHARLES KOMANOFF, WIND POWER'S DISPLACEMENT OF FOSSIL FUELS 10 (2009), *available at* http://www.komanoff.net/wind_power/Wind_Power's_Displacement_of_Fossil_Fuels.pdf ("The amount of fossil fuels 'saved' or 'avoided' by the wind turbines may be estimated at around 90–95% of the fuel that ordinarily would be required to generate the same amount of electricity at fossil fuel generating plants in the absence of the wind turbines."); *contra* Kent Hawkins, *Integrating Renewables: Have Policymakers Faced the Realities?*, 18 USAEE DIALOGUE (2010) (challenging emission reduction benefits of wind power based on the use of simple-cycle gas plants when wind is not blowing).

204 U.S. DEP'T OF ENERGY, *supra* note 16.

205 Nicholas Stern, *The Economics of Climate Change*, 98 AM. ECON. REV. 1 (2008) (climate damage of carbon dioxide equals $85/ton); Frank Ackerman et al., *Did the Stern Review Underestimate U.S. and Global Climate Damages?*, 37 ENERGY POL'Y 2717, 2717 (2009) (climate damages of emissions are dramatically higher than Stern's estimates); U.K. DEP'T OF ENERGY & CLIMATE CHANGE, *supra* note 21.

206 Cost figure generated using $120/MWh damages from coal and a 30% capacity factor from non-emitting renewable alternative. *See* NAT'L RESEARCH COUNCIL, *supra* note 18, at 6.

ignoring environmental costs in nondiscriminatory policies, utility regulators perpetuate, rather than attenuate, discrimination between fuel sources and consumers.

C. "Public Interest" as Adequate Service

Of the prevailing conceptions of "public interest," adequacy of service may carry the least environmental significance. Environmental factors may nonetheless substantially affect the quality of electricity service.

Thermal power plants produce roughly 85% of all electricity in United States[207] and consume more freshwater than all domestic users save the agricultural sector.[208] These plants must condense large quantities of steam into water for cycling back to the central boiler. This condensation requires the extraction of an enormous amount of heat energy via cooling water from nearby sources. The heat, in turn, converts cooling water to gas that escapes into the atmosphere.[209] The rate of water consumption varies among generating sources:

Plant and Cooling System Type	Water Withdrawal (gal/MWh)	Water Consumption (gal/MWh)
Fossil/biomass/waste-fueled steam, once-through cooling	20,000 to 50,000	~300
Fossil/biomass/waste-fueled steam, pond cooling	300 to 600	300-480
Fossil/biomass/waste-fueled steam, cooling towers	500 to 600	~480
Nuclear steam, once-through cooling	25,000 to 60,000	~400
Nuclear steam, pond cooling	500 to 1100	400-720
Nuclear steam, cooling towers	800 to 1100	~720

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[207] ELEC. POWER RESEARCH INST., WATER AND SUSTAINABILITY (VOLUME 3): U.S. WATER CONSUMPTION FOR POWER PRODUCTION—THE NEXT HALF CENTURY vii (2002), *available at* http://mydocs.epri.com/docs/public/000000000001006786.pdf.

[208] THOMAS J. FEELEY & MASSOOD RAMEZAN, U.S. DEP'T OF ENERGY, ELECTRIC UTILITIES AND WATER: EMERGING ISSUES AND R&D NEEDS 2 (2003), *available at* http://www.net/.doe.gov/technologies/coalpoer/ewr/pubs/WEFpaperfinalheader_1.pdf (Electricity production accounted for 39% of all freshwater withdrawals in the nation—more than 97 billion gallons per day).

[209] ELEC. POWER RESEARCH INST., *supra* note 207, at vii.

Natural gas/oil combined-cycle, once-through cooling	7500 to 20,000	~100
Natural gas/oil combined-cycle, cooling towers	~230	~180
Natural gas/oil combined-cycle, dry cooling	~0	~0
Coal/petroleum residuum–fueled combined-cycle, cooling towers	~380	~200

Table: Cooling Water Withdrawal and Consumption (Evaporation to the Atmosphere) Rates for Common Thermal Power Plant and Cooling System Types[210]

Benjamin and Kelly Sovacool recently outlined the potential impacts of thermal power plants on freshwater supplies and the reciprocal effects freshwater supplies may have on power production.[211] Their generation and water consumption models predict that twenty-two major American metropolitan areas will experience severe water shortages by 2025.[212] Water shortages may cause generators to reduce output or shut down entirely, thereby spiking electricity prices and causing reliability problems in the grid.[213]

Another risk to service adequacy is regulatory intervention. Water shortages may encourage waves of strict regulation under Clean Water Act section 316(b), for example, which directs the EPA to prescribe technology standards for location, design, construction, and capacity of cooling water intake structures.[214] The EPA has made active use of this provision in recent years.[215]

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210 *Id.* at viii.

211 Benjamin K. Sovacool & Kelly E. Sovacool, *Preventing National Electricity Water—Crisis Areas in the United States*, 34 COLUM J. ENVTL. L. 333, 335 (2009).

212 *Id.* at 362.

213 *See id.*; Anton Caputo & Asher Price, *Water Helps Fuel the Debate on the STP*, SAN ANTONIO EXPRESS-NEWS, at 1A (Sept. 13, 2009) ("If a water shortage were to occur, the [nuclear] plant's operators would be forced to choose between potentially expensive backup plans to supply water, or simply cut down the plant's output, probably at a time when the area needs the power the most."); John Norton, *Water at Pueblo, Colo., Power Plant Slows to Trickle*, PUEBLO CHIEFTAIN, at 9 (Aug. 29, 2002) (29 megawatt plant shut down because of water shortage).

214 33 U.S.C. § 1326(b) (2006).

215 National Pollutant Discharge Elimination System: Regulations Addressing Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65256 (Dec. 18, 2001) (codified in scattered sections of 40 CFR) (stricter standards for new facilities); National Pollutant Discharge Elimination System—Final Regulations To Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41576 (July 9, 2004) (stricter standards for existing facilities); National Pollutant Discharge Elimination System Establishing Requirements for Cool-

Inattention to environmental performance could suddenly cast doubt on the viability of improvidently planned generation facilities.

Finally, climate change might have enormous effects on energy choices. A recent government report expressed deep concern about the climate's impact on power supply and use.[216] Among other effects, climate change will increase demand for electricity beyond the normal upward trend.[217] Many studies concur that electricity capacity must grow an additional 14–23% relative to growth needs absent climate change, entailing an additional $200–$300 billion (1990 dollars) in capital expenditures.[218] Changes in precipitation patterns may affect the output of hydropower,[219] put more cost pressure on thermal power plants, and create shortfalls in coal inventories as barge shipment becomes impractical.[220] Extreme weather events could cause acute disruption in transmission and generation service, especially since a number of operational power plants are sited at elevations of three feet or less.[221] In 2005, for example, extreme weather caused $15 billion in direct losses to the energy industry.[222] Furthermore, railroads—which transport 2/3 of coal used for power generation—follow closely along riverbeds, and are susceptible to increased occurrence of rainstorms.[223] Temperature increases could decrease overall thermoelectric power generation efficiencies. Given the dominance of thermal power generation in the United States, a 1% drop in efficiency due to temperature increase could cause a 25-million-MW loss in supply.[224] Indirect effects may include increased political

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ing Water Intake Structures at Phase III Facilities, 71 Fed. Reg. 35006 (June 16, 2006) (stricter standards for small facilities).

216 U.S. CLIMATE CHANGE SCIENCE PROGRAM, EFFECTS OF CLIMATE CHANGE ON ENERGY PRODUCTION AND USE IN THE UNITED STATES (2008) [hereinafter U.S. CLIMATE CHANGE] (report commissioned by Congress in § 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001), *available at* http://www.climatescience.gov/Library/sap/sap4-5/final-report/sap4-5-final-all.pdf.

217 *Id.* at 20.

218 *Id.* at 12 (citing K.P. LINDER & M.R. INGLIS, THE POTENTIAL IMPACT OF CLIMATE CHANGE ON ELECTRIC UTILITIES (1989)) ("The Linder-Inglis results are similar to electricity findings in most of the studies that followed.").

219 *Id.* at 40–41 (citing B.A. MILLER & W.G. BROCK, SENSITIVITY OF THE TENNESSEE VALLEY AUTHORITY RESERVOIR SYSTEM TO GLOBAL CLIMATE CHANGE (1988); Dennis P. Lettenmaier et al., *Water Resources Implications of Global Warming*, 43 CLIMATE CHANGE 537 (1999); Tim Barnett et al., *The Effects of Climate Change on Water Resources in the West: Introduction and Overview*, 62 CLIMATIC CHANGE 1 (2004)).

220 *Id.* at 32–34.

221 *Id.* at 35.

222 U.S. CLIMATE CHANGE, *supra* note 215, at 38 (citing MARKETWATCH, WALL ST. J., http://www.marketwatch.com (2006)).

223 *Id.* at 38.

224 *Id.* at 30 (citing CAL. ENERGY COMM'N, CEC–500–2006–034, COST AND VALUE OF WATER USE AT COMBINED CYCLE POWER PLANTS (2006)).

pressure and regulatory risk for polluting sources.[225] Regulators should engage these questions, both in terms of mitigating climate change and adapting to the effects of climate change on electricity service.

III. EXCEPTIONS TO AN ENVIRONMENTAL "HARD LOOK"

In the face of potentially significant environmental impacts, FERC issued Order 888. FERC justified its action in part by disclaiming statutory authority to address the environmental implications of its action.[226] Part II's examination of the foundational "public interest" principles, however, suggests that rational decision-making requires a "hard look" at environmental costs and benefits. But when might FERC's disclaimer make rational sense? A few circumstances could conceivably arise where utility regulators might be justified in omitting relevant costs and benefits in fulfilling "public interest" duties to minimize costs, cure discrimination, and ensure adequate service.[227]

A. De Minimis Risks

When a risk is so small that its regulation would be trivial, courts may interpret exceptions to clear statutory mandates. The court in *Alabama Power Co. v. Costle* expressly endorsed de minimis exceptions to the Clean Air Act's strict technology requirements for miniscule emissions of particular pollutants.[228] The court urged the Environmental Protection Agency to omit certain emissions after balancing the administrative burden with the risk posed by the pollutant.[229] That way, said the court, EPA can create a rational de minimis exemption.[230] But "[c]ategorical exemptions from the clear commands of a regulatory statute, though sometimes permitted, are not favored."[231] Likewise, utility regulators may balance (1) the expected administrative burden of environmental analysis with (2) the expected benefits of a given environmental action (or inversely, the expected harm of ignoring impacts).

Prior to comparing administrative and environmental burdens, however, regulators must first acquire and analyze the relevant environmental data. At least a rough knowledge of environmental benefits and expected research costs is prerequisite to a conclusion that those benefits are de minimis when compared with administrative costs. If preliminary data indicates that the range of poten-

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225 *Id.* at 50–53.

226 Order 888, 61 Fed. Reg. 21540, 21542 (May 10, 1996).

227 The structure of this Part derives largely from the CASS SUNSTEIN, RISK AND REASON 211–14 (2002).

228 636 F.2d 323, 405 (D.C. Cir. 1979), *overruled on different grounds by* Chevron, U.S.A., Inc. v. NRDC, 467 U.S. 837 (1984).

229 *Id.*

230 *Id.*

231 *Id.* at 358.

tial impacts is miniscule relative to the cost of obtaining further data, regulators may be excused from further environmental analysis and consideration under the de minimis exemption. Reliance on existing studies, like those mentioned elsewhere in this article,[232] could help ease the burden of preliminary research and approximate environmental damages where original research is infeasible. Similarly, environmental data collected pursuant to procedural statutes like the National Environmental Policy Act (NEPA) provide ready fodder for decision-makers. In this sense, a "soft look" precedes, and confirms the need for, a "hard look" at environmental impacts.

Recall that courts require a "'hard look' at the *salient* problems."[233] If a problem appears miniscule, then regulators need not consider it.[234] But a look at the kinds of problems considered salient by utility regulators suggests that the environment, in most cases, is not de minimis. In a case before the Illinois Supreme Court, the Illinois PUC disallowed $5,233 in excess compensation from three executives' salaries.[235] The Illinois Supreme Court affirmed.[236] The Indiana PUC scrutinized and disallowed a utility's $3,500 charitable contribution and a $450 advertising expense.[237] The North Carolina PUC flatly denied an assertion that a 0.48% increase in retail rates was de minimis.[238] A point of contention in a recent Illinois PUC transmission siting decision was the potential disruption of scenic views from farm grain bins.[239] Between the two routes, the PUC chose the one that "polluted" the visual field from a single grain bin as opposed to five grain bins.[240] The frequency of farmers' visits to the bins, and their propensities to gaze out at the landscape from the bins, went unmentioned—though one can safely assume that the tradeoffs were miniscule. In the context of health risks from benzene, the Supreme Court opined that a 1/1,000,000,000 chance of getting cancer from drinking a glass of water is de minimis, but a 1/1000 chance is likely significant.[241] If the environmental risk is truly miniscule, courts should not overturn agency decisions, even when they

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232 *See supra* notes 18–19, 26, 30, 327, and 330–31.

233 Greater Boston Television Corp. v. FCC, 444 F.2d 841, 851 (D.C. Cir. 1970) (emphasis added).

234 Or perhaps a cursory "soft" look is in order to establish that the issue is minor.

235 Du Page Util. Co. v. Ill. Commerce Comm'n, 267 N.E.2d 662, 667–68 (Ill. 1971)

236 *Id.*

237 2010 WL 1806474 (Ind. U.R.C. 2010).

238 Duck Energy Carolinas, LLC's Advance Notice of Power Purchasing Agreement, 2009 WL 904943, at *17, *30 (N.C.U.C. 2009).

239 *See* Ameren Ill. Transmission Co., 2010 WL 2647673 (Ill. C.C. 2010).

240 *Id.*

241 Indus. Union Dep't, AFL-CIO v. API, 448 U.S. 607, 655 (1980). Cass Sunstein points out that the Court failed to consider the at-risk population size and duration of exposure, which could render a "high" risk de minimis and a "low" risk significant. CASS SUNSTEIN, RISK AND REASON 214–16 (2002).

fail to fully consider the risk in decision-making.[242] No bright line guidance exists for balancing expected environmental impacts with expected administrative costs, but, as shown above, impacts typically cannot fit into the pin-sized opening for de minimis exceptions.

B. Scientific Uncertainty

Utility regulators may hesitate to rely on evidence of environmental costs when figures—as they often do—span a broad range of possibilities and depend on a number of interconnected factors.[243] Estimates of damages from greenhouse gases, for instance, vary dramatically. The United States Department of Energy estimated the costs of CO_2 at $21 per ton,[244] while its British counterpart priced CO_2 at $83 per ton.[245] If the range of environmental damage estimates is so broad that the threat may be termed "de minimis," then a utility regulator may rationally believe that it's not worth considering. Both CO_2 estimates almost certainly exceed the virtually nonexistent risks demanded for de minimis classification, but environmental risks in certain circumstances may not.

The continual improvement of environmental accounting tools should reduce uncertainty and encourage regulators to depend on quantified environmental impacts. Nonetheless, courts should require regulators to identify the range of potential environmental costs and the probabilities attached to particular costs in the range. Some environmental data may be imprecise but it is still germane to regulators' protection of the "public interest" and a rational decision-making process ought to consider it.

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242 One objection to de minimis exceptions is that they don't matter in terms of environmental impacts. Tiny risks will not likely affect the environmental quality of decision-making outcomes, whether or not they are considered. In terms of judicial review of the decision-making *process*, however, de minimis exemptions do matter. A recognized de minimis concept could mean the difference between "arbitrary or capricious" and rational agency decisions. Furthermore, the concept enables agencies, and thus taxpayers, to save on administrative costs, if the impacts are comparatively tiny.

243 *See, e.g.*, Mass. Elec. Co. v. Dep't of Pub. Utils., 643 N.E.2d 1029, 1032 (Mass. 1994) (In striking PUC's environmental externality calculations, court noted "[i]t is important to recognize that the range of considerations that the department treats as appropriate in valuing damage from pollution emissions is wide . . . . Certain of these damages are not measurable easily, if at all, in dollars and cents.").

244 U.S. DEP'T OF ENERGY, *supra* note 20.

245 U.K. DEP'T OF ENERGY & CLIMATE CHANGE, *supra* note 21. For a summary of the debate surrounding climate damage valuation, *see* Richard Tol, *The Economic Effects of Climate Change*, 23 J. ECON. PERSPECTIVES 29 (2009).

C. Accounting for Environmental Costs Elsewhere

1. Cost Minimization Principle

Rational utility regulation avoids double-counting costs. When firms bear the costs of their actions, incentives to minimize the costly activity leave society better-off. If firms bear more than the costs of their activity, they may reduce their activity too much, thereby leaving society less well-off. Consider sulfur dioxide regulation. In 1990, Congress created a sulfur dioxide (SO_2) emissions trading program that helps utilities internalize the costs of environmental damage from SO_2.[246] Assuming the emissions "cap" is set at the optimal level—with costs of reductions approximating the costs to society of not reducing emissions—emissions permits should stimulate permit prices approximating the social costs of the using the permit. Utilities will maximize profits by cutting back emissions in the cheapest possible way, meaning that they will minimize the sum of permit price and control costs.[247] So if reducing emissions—by reducing output, switching fuels, or adopting abatement technology—is cheaper than buying emission permits, the additional polluting activity is socially inefficient. Because of the cap-and-trade program, the additional polluting activity is also privately inefficient for the utility. High value polluting activity will continue, while low value polluting gets the axe. Costs are minimized; benefits maximized.[248]

Now consider a zealous PUC observing the damage from the remaining SO_2 emissions. It decides to make the utility "internalize" its environmental costs even further by denying recovery of its purchased power proportionate to the damage caused by the residual emissions. In terms of cost-minimization, this is folly. Assuming SO_2 trading markets are functioning properly,[249] the level of emissions is already optimal. The PUC's meddling double-counts the social costs of SO_2 and leads to inefficiently low levels of pollution. This was the focus of a Massachusetts Supreme Court case that invalidated the PUC's double-counting.[250] The PUC required utilities to factor PUC-calculated externality values into their integrated resource planning.[251] The court frowned on the PUC's attempts to internalize costs that, according to the court, were already

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246 42 U.S.C. § 7651b (2006).

247 Tom H. Tietenburg, *Economic Instruments for Environmental Regulation*, *in* ECONOMICS OF THE ENVIRONMENT: SELECTED READINGS 279, 285 (Robert N. Stavins, ed., 2005).

248 The SO_2 cap-and-trade program serves as a model for most CO_2 cap-and-trade programs proposed in Congress. This analysis, therefore, would apply equally to CO_2 cap-and-trade, were it ever to become law.

249 Real world market mechanisms diverge from theory. Transaction costs for example may inhibit efficient trading as when bilateral trading is disallowed or the permit market comprises a small number of firms. *See* Tietenberg, *supra* note 247, at 285–87.

250 Mass. Elec. Co. v. Dep't of Pub. Utils., 643 N.E.2d 1029 (Mass. 1994).

251 *Id.* at 1030.

priced via federal environmental regulation.[252] California has explicitly addressed this issue by prohibiting an assignment of environmental costs to emissions that occur under a tradable permit or emissions tax system.[253] The exemption policy follows California's recognition that "the alternative protocol for dealing with the pollutant operates to internalize its cost for the purpose of planning for and acquiring new generating resources."[254]

But cost-minimizing incentives are not aligned, competitive discrimination is not adequately policed, and reliable service is not ensured by most regulation occurring under major environmental statutes. One reason for this is the lack of market-based environmental regulation.[255] Under market-based systems, such as cap-and-trade or emission taxes, all the incentives are in place for utilities to minimize total costs, including environmental externalities.[256] Under command-and-control, the dominant approach of the Clean Air Act and Clean Water Act, regulators act on incomplete information regarding pollution control possibilities.[257] They determine appropriate control technologies and direct firms to reduce emissions in amounts enabled by the selected technologies. Unfortunately, pollution control costs are inefficient unless regulators select the optimal techniques, technologies, and targets virtually by accident. Economist Tom Tietenburg summarizes the problem:

> The [pollution] control authorities' desire to allocate the responsibility for control cost-effectively is inevitably frustrated by a lack of information sufficient to achieve this objective. Economic incentive approaches create a system of incentives in which those who have the best knowledge about control opportunities, the environmental managers for the industries, are encouraged to use that knowledge to achieve environmental objectives at minimum cost.[258]

Incentives to comply with command-and-control regulation should not be mistaken for incentives to abate pollution or efficiently minimize environmental costs. The utility pays for pollution control (e.g. technology installation) but not the residual damage from emissions once required controls are in place. Command-and-control, therefore, may implicitly subsidize utilities as electricity

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252 *Id.* at 1032 n.4.

253 CAL. PUB. UTIL. CODE § 701.1(d) (2010).

254 *Id*. § 701.1(d)(2)

255 Nathaniel O. Keohane et al., *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 317 n.24 (1998) (noting the tradable permit systems to phase down lead in gasoline, chlorofluorocarbons, and sulfur dioxide).

256 *See id.*; *see infra* Part II.A.

257 Tietenburg, *supra* note 247, at 281, 285.

258 *Id.* at 285.

prices reflect initial control costs but neglect residual environmental costs.[259] Furthermore, once a utility installs the required technology—which may be sub-optimal for the particular facility—incentives to minimize pollution through operational techniques evaporate. Technology requirements increase up-front costs but leave marginal private costs unaffected. Once the abatement device is installed, additional emissions cost nothing to the firm. Switching to cleaner fuels, for instance, has little advantage if a utility has already cleared regulators' technology hurdle. Consequently, utilities may select dirtier, but lower marginal cost, power facilities to meet base-load demand. Furthermore, command-and-control environmental regulation tends to ossify abatement technologies and techniques.[260] Utilities operating with "approved" technology and management techniques have little reason to invest time and dollars pioneering new methods and devices. Indeed, the electricity industry's historically paltry research and development efforts appear to be declining further as utility regulators move toward deregulation.[261] This stagnating effect may significantly alter the trajectory of future social costs associated with greenhouse gases and other pollutants[262] and compromise regulators' duties to future consumer interests.[263]

While command-and-control environmental regulations inflict arbitrary costs on polluters and reduce emissions, they do so without creating any meaningful internalization of environmental costs whereby utilities optimize environmental costs and benefits. The cost-minimization principle may require additional effort from utility regulators, especially where existing regulations make little pretense toward balancing environmental costs and benefits.[264]

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259 KOLSTAD, *supra* note 31, at 142–43.

260 Adam B. Jaffe et al., *A Tale of Two Market Failures: Technology and Environmental Policy*, 54 ECOLOGICAL ECON. 164, 171 (2005); *see generally* Adam B. Jaffe & Robert N. Stavins, *Dynamic Incentives of Environmental Regulations: The Effects of Alternative Policy Instruments on Technology Diffusion*, 29 J. ENVTL. ECON. & MGMT. 43 (1995).

261 Tooraj Jamasb & Michael Pollitt, *Liberalisation and R&D in Network Industries: The Case of the Electricity Industry*, 37 RESEARCH POL'Y 995, 998 (2008) ("The energy industry has generally been among the least R&D-intensive industries. However, the liberalisation of the sector has led to further decline in R&D efforts within the sector.").

262 Carlo Carraro et al., *Endogenous Technological Change and in Environmental Macroeconomics*, 25 RES. & ENERGY ECON. 1, 2 (2003).

263 Permian Basin Rate Cases, 390 U.S. 747, 798 (1968) ("The Commission's responsibilities include the protection of future, as well as present, consumer interests.").

264 Utility regulators should survey all feasible alternative methods of complimenting existing regulation so as to minimize costs. Consideration must be given, for example, to annual fees collected from utilities to fund state monitoring programs pursuant to the Clean Air Act. *See* 42 U.S.C. § 7661a (2006). This would prevent double-counting. An exemplary utility regulatory effort is the United Kingdom's Office of Gas and Electricity Markets' requirement that utilities allocate 0.5% of transmission and distribution revenues toward innovation programs. *See* OFGEM, Electricity Distribution Price Control Review, Appendix: Further Details on the Incentive Schemes for Distributed Generation, Innovation Funding and Registered Power Zones, Ref.145b/04, 10–12 (June 2004), *available at* http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=38&refer=Networks/ElecDist/PriceCntrls/DPCR4.

For other utility actions, outside regulation may be thin or nonexistent, rather than flawed. Carbon dioxide and other greenhouse gases come first to mind. Thin regulation might also be exemplified by the Clean Air Act's pre-construction review exemption of "minor" emitting facilities ejecting less than a few hundred tons of any given air pollutant per year.[265] Moreover, EPA must set the Clean Air Act's national ambient air quality standards at levels "requisite to protect the public health,"[266] without any regard for costs—environmental or compliance or otherwise.[267] Ensuring a particular level of public health has little bearing on ensuring an efficient level of environmental costs, especially considering that damage to public health is only one component of utilities' externalized costs.[268] In any case, environmental externalities require further effort to achieve cost-minimization. To the extent damage from coal and gas extraction, transmission and pipeline construction and operation, and power generation are not reflected in prices, utility regulators have sundry opportunities—and the duty—to improve efficiency and minimize costs.[269]

2. Nondiscrimination Principle

Few remedial measures exist to cope with environmental discrimination, and utility regulators, therefore, have correspondingly few reasons to ignore the distribution of environmental costs under the nondiscrimination principle. Utility regulators are empowered to regulate nearly all facets of utility business and therefore preempt consumer protection and antitrust statutes by occupying their respective fields of concern.[270] Environmental justice advocates

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265 42 U.S.C. § 7479(1) (2006).

266 *Id.* § 7409(b)(1).

267 *See* Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 464 (2001) ("[E]conomic considerations may play no part in the promulgation of ambient air quality standards under Section 109 of the CAA." (citations omitted)).

268 *See* COLLINS & LARRY, s*upra* note 29 (describing external effects on ecosystem services including "primary services" like nutrient cycling and soil formation; "provisioning services" like food, fiber, and pharmaceuticals; "regulating services" like pollination, water and air purification, flood and erosion prevention, and pest and disease regulation; and "cultural services" like recreation, ecotourism, and aesthetic and religious values); Costanza et al., *supra* note 30, at 253–260 (valuing global ecosystem services at $33 trillion valuation based on 1997 dollar); NAT'L RESEARCH COUNCIL, *supra* note 18, at 4 (monetizing SO_2, NO_x, and PM, emissions externalities based on impacts to human health, grain crop and timber yields, building materials, recreation, and visibility of outdoor vistas); KOLSTAD, *supra* note 31, at 296 (describing "nonuse" values like the "existence" value of knowing the good exists, "altruistic" value of knowing someone else is enjoying the good, and "bequest" value of knowing that future generations may enjoy the good.).

269 *See* Jeremy Knee, *An Environmental Role for Energy Regulators*, 3 NW. INTERDISC. L. REV. 104, 111–17 (2010) (describing a few opportunities for utility regulators to improve utilities' environmental performance).

270 *E.g.*, Pub. Util. Dist. No. 1 v. Dynegy Power Mktg., Inc., 384 F.3d 756, 761–62 (2004) (holding claims under state consumer protection and antitrust laws barred by filed-rate doctrine, field preemption, and conflict preemption).

have alternative means, namely, Executive Order No. 12898, Title VI of the Civil Rights Act, and the Equal Protection Clause of the Fourteenth Amendment.[271] For various reasons, however, these actions inadequately remedy lopsided distributions of environmental costs, especially in the context of utility regulation.

In 1994, President Clinton issued Executive Order No. 12898, which directed each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."[272] Many agencies developed environmental justice plans and incorporated them into agency decisions.[273] For instance, many agencies review discriminatory environmental impacts in formal reviews pursuant to the National Environmental Policy Act (NEPA).[274] The Order however does not bind independent agencies nor create a private right of action or standard for judicial review,[275] and FERC's sparse compliance record leaves much to be wanted.[276]

Title VI of the Civil Rights Act of 1964 might appear to give all private persons a legal right of action against discrimination under any program or activity covered by Title VI.[277] But it bans only "intentional" discrimination on the "grounds of race, color, or national origin,"[278] which does not cover disparate effects on other grounds. Even if one could prove intent to discriminate on forbidden grounds,[279] it appears that Title VI applies only to utilities receiving federal funds.[280]

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271 Jason Pinney, Note, *The Federal Energy Regulatory Commission and Environmental Justice: Do the National Environmental Policy Act and the Clean Air Act Offer a Better Way?*, 30 B.C. ENVTL. AFF. L. REV. 353, 371–72 (2003).

272 59 Fed. Reg. 7629, 7629 (Feb. 11, 1994).

273 Pinney, *supra* note 271, at 372–73.

274 *E.g.*, Federal Motor Vehicle Safety Administration, National Environmental Policy Act Implementing Orders, 69 Fed. Reg. 9680 at 9688-89 (March 1, 2004).

275 59 Fed. Reg. at 7632–33 ("This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. This order shall not be construed to create any right to judicial review involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order.").

276 Pinney, *supra* note 271, at 381–83 (describing FERC's record of compliance with Executive Order No. 12898).

277 42 U.S.C. § 2000d (2006).

278 *Id.*; *see* Alexander v. Sandoval, 532 U.S. 275, 293 (2001) (holding no private right of action exists under § 602 for remedy of disparate impact without showing of intentional discrimination).

279 *See* Donna Gareis-Smith, *Environmental Racism: The Failure of Equal Protection to Provide a Judicial Remedy and the Potential of Title VI of the 1964 Civil Rights Act*, 13 TEMP. ENVTL. L. & TECH. J. 57, 65–66 (1994) ("Minorities disproportionately affected by toxic waste facilities will find it difficult to obtain a judicial remedy under . . . the Equal Protection Clause of the Fourteenth Amendment . . . [proving discriminatory intent] is so onerous that equal protection is incap-

Justice Holmes called the Equal Protection Clause "the usual last resort of constitutional argument"[281]—a sentiment shared by environmental justice advocates.[282] No environmental justice claim has ever prevailed on equal protection grounds,[283] so it promises little relief from discriminatory distribution of environmental costs.

In this context, utility regulators may have much to offer. In February 2009, the New York PUC directed an electric utility that serves parts of New York City to file an integrated resource plan with special demand response initiatives in its service territory. The PUC required these initiatives to include programs to reduce operation and emissions of generating facilities located in disproportionately polluted communities, especially those comprising low-income or minority populations.[284] The resulting initiative specifically targeted a 50-MW reduction in output from gas turbines located in one of these so called "environmental justice" communities.[285] Moreover, to protect five other environmental justice communities within the utility's service area, the PUC prohibited diesel-fired power generating units within one-half mile of existing generators in those communities.[286] Forecasts of lower long-term utility costs and emissions borne by ratepayers in these environmental justice communities formed the centerpiece of the PUC's proceeding.[287]

3. Service Adequacy Principle

No agency outside of FERC and state PUCs appears to be tracking environmental impacts vis-à-vis electricity service adequacy. The EPA's regulation of power plant water intake could help conserve water supplies and prevent water scarcity from rendering a thermal plant unviable, but electricity service improvement is merely corollary to "impingement of mortality for all life stages of

able of affording relief to those who may be victims of discrimination in the context of facility siting.").

280 42 U.S.C. § 2000d (2006) ("No person in the United States shall . . . be subjected to discrimination under any program or activity *receiving Federal financial assistance*." (emphasis added)); Soberal-Perez v. Heckler, 717 F.2d 36, 38 (1983) ("[T]he statute was meant to cover only those situations where federal funding is given to a non-federal entity which, in turn, provides financial assistance to the ultimate beneficiary.").

281 Buck v. Bell, 274 U.S. 200, 208 (1927).

282 Pinney, *supra* note 271, at 377 ("The Equal Protection Clause has become one of the most disfavored theories for environmental justice advocates to employ in challenging discriminatory actions."); Gareis-Smith, *supra* note 279, at 65–67 (describing the "failure of Equal Protection" to remedy environmental discrimination).

283 Pinney, *supra* note 271, at 377.

284 Proceeding on Motion of the Commission to Consider Demand Response Initiatives, 2009 WL 3722049, at *1 (N.Y.P.S.C. 2009).

285 *Id.* at *4 n.5.

286 *Id.* at *10–11.

287 *Id.* at *1.

fish and shellfish."[288] And regulations like these could themselves threaten the viability of PUC-approved facilities as they need not consider compliance costs.[289] Moreover, threats from climate change and increased regulatory cost are completely unregulated outside of utility regulation. Exogenous environmental protections by, say, the EPA may help preserve electricity service by accident; a "positive" externality of regulation. But accidental protection of service quality is unbecoming of rational utility regulation, and regulators cannot rely on the arbitrary effects of exogenous environmental regulation.

D. Functional Equivalence: NEPA & Environmental Mandates

Sometimes lawmakers legislatively create an environmental "public interest." This usually takes the form of statutory direction to "consider" the environment in decision-making processes. By creating a discrete environmental decision-making "factor," however, lawmakers do little to ensure rational decision-making.

1. The National Environmental Policy Act

At the federal level, and mimicked in many states, the National Environmental Policy Act (NEPA) requires agencies to disclose the environmental effects of their actions. NEPA requires all federal agencies to assemble a detailed statement on the environmental impacts of any "major Federal actions significantly affecting the quality of the human environment," including alternatives to the action.[290] The environmental statement becomes a part of the record reviewable by courts.[291] However, NEPA is a procedural statute; not a substantive one.[292] This means that despite procedural obligations to gather information, agencies remain free to order decision-making priorities as they see fit.[293] No matter how damning the data, agencies may ascribe negligible decision-making weight to environmental impacts.

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288 Entergy Corp. v. Riverkeeper, 129 S. Ct. 1498, 1504 (2009) (quoting 40 C.F.R. § 125.94(b)(1), (2)); *see* 33 U.S.C. § 1326(b) (2006).

289 *See Riverkeeper*, 129 S. Ct. at 1508 (holding that EPA may, but need not, consider compliance costs when establishing water intake standards); Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 471 (2001) (the Clean Air Act "unambiguously bars cost considerations from the NAAQS-setting process, and thus ends the matter for us as well as the EPA.").

290 42 U.S.C. § 4332(C), (E) (2006).

291 *See id.* § 4332(C).

292 Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 558 (1978) (NEPA imposes upon agencies duties that are "essentially procedural. It is to insure a fully informed and well-considered decision, not necessarily a decision the judges of the Court of Appeals or of this Court would have reached had they been members of the decisionmaking unit of the agency." (citations omitted)).

293 Stryker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223, 228 n.2 (1980).

In *Stryker's Bay Neighborhood Council, Inc. v. Karlen*, the Department of Housing and Urban Development (HUD) declined citizens' requests to relocate a planned low-income housing project.[294] HUD refused to undertake the "only minimal" relocation efforts despite acknowledging that the alternative site would be environmentally superior and overcome "valid questions" about the impacts of the chosen site.[295] The Second Circuit determined that HUD gave insufficient decision-making weight to environmental findings made pursuant to NEPA.[296] The Supreme Court disagreed, reaffirming the wide latitude afforded agencies to elevate certain considerations over others in the decision-making process.[297] Nearly a decade later, the Court again affirmed that "[i]f the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs."[298]

But even discretion regarding decision-making priorities is subject to boundaries of rational decision-making. Complete disregard of environmental impacts is probably "arbitrary, capricious, [or] an abuse of discretion" under the Administrative Procedure Act.[299] The Fifth and Second Circuits have acknowledged that "it is our duty . . . to compel the decision-making to give serious weight to environmental factors in making discretionary choices."[300] The reverse is likely true as well: agencies may not consider *only* environmental impacts when other factors are relevant. The space between 0% and 100% decision-making weight, however, is essentially a matter of highly deferential agency discretion.[301]

NEPA's weak influence on decision-makers has not gone unnoticed. In the midst of transitioning its retail electricity markets, the Vermont PUC laid out an environmental plan. One component of this plan was to urge Congress to amend the Federal Power Act "to make it *clear* that FERC has both the authority and the responsibility to consider the environmental impacts of broad industry

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294 *Id.* at 225–26.

295 *Id.* at 230 (Marshall, J., dissenting).

296 *Id.* at 227.

297 *See id.* at 227–28.

298 Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989); *see also* San Juan Citizens' Alliance v. Salazar, 2009 U.S. Dist. LEXIS 29804, at *34–35 (D. Colo. 2009) ("Once environmental concerns are adequately identified and evaluated by the agency, NEPA places no further constraint on agency actions. In other words, NEPA prohibits uninformed—rather than unwise—agency action. Consistent with the courts' generally deferential review of agency action, in reviewing the adequacy of a final environmental impact statement [(EIS), courts] merely examine whether there is a reasonable, good faith, objective presentation of the topics [NEPA] requires an environmental impact statement to cover." (citations omitted)).

299 5 U.S.C. § 706(2)(A) (2006).

300 County of Suffolk v. Sec'y of Interior, 562 F.2d 1368, 1375 (2d Cir. 1977) (quoting Sierra Club v. Morton, 510 F.2d 813, 819 (5th Cir. 1975)).

301 SUNSTEIN, *supra* note 223, at 212–13.

restructuring decisions."[302] The lobbying plan, the PUC hoped, might breathe life into NEPA's ambitious language,[303] but NEPA's segregation of environmental impacts from other factors continues to hinder courts' enforcement of rational decision-making.[304] Agencies can bury environmental findings by minimizing their weight in the decision-making process.

Courts and agencies continue to treat the environment as a discrete component rather than a fully integrated consideration. But in utility regulation, countervailing factors are themselves infused with environmental significance. Regulators are charged with shepherding the "public interest," and cannot rationally separate environmental impacts from established interests in cost-minimization, nondiscrimination, and service adequacy.

2. Environmental "Consideration" Mandates

The same subtle abuses of discretion can arise when lawmakers impose requirements to "consider" environmental impacts without specifying measurement methods (e.g. economic quantification vs. intuitive valuation) or decision-making weight inherent in the impacts.[305] Some PUCs have used their discretion to all but ignore environmental impacts.[306] The North Carolina legislature provides that a certificate of "public convenience and necessity" for construction of a power facility shall be granted only if it is cost-effective and "in the

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302 Restructuring of Elec. Util. Indus. in Vt., 174 P.U.R.4th 409, 473 (Vt. P.S.B. 1996) (emphasis added).

303 42 U.S.C. §§ 4331, 4332 (2006) ("Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter . . . to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."). *Id.* at §§ 4332, 4331(a).

304 42 U.S.C. § 4332(B) (2006) (All federal agencies must "identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations.").

305 *E.g.* KY. REV. STAT. ANN. § 278.710 (LexisNexis 2010) ("[T]he board shall, by majority vote, grant or deny a construction certificate, *either in whole or in part*, based upon the following criteria:" (1) impact on scenic surroundings; (2) property values; (3) adjacent property; (4) surrounding roads; (5) anticipated noise levels; (6) economic impact on the affected region and state; (7) existence of other generation facilities; (8) local planning and zoning requirements; (9) potential impact on the electricity transmission system; (10) compliance with statutory setback requirements; (11) efficacy of proposed mitigation measures; and (12) history of environmental compliance.). In addition, the Board may consider the policy of the General Assembly to encourage the use of coal as a principal fuel for electricity generation. *Id.* § 278.020(1).

306 *Contra* Review of Proposed Town of New Shoreham Project, 280 P.U.R.4th 185, 212 (R.I.P.U.C. 2010) (considering avoidance of $80/ton carbon dioxide damages when determining whether price from proposed renewable energy project is "commercially reasonable").

public interest."[307] Proposed facilities are evaluated under the state's policy of "promot[ing] harmony between public utilities, their users and the environment."[308] In 2007, the PUC approved an 800-MW coal-fired plant without any analysis of environmental costs.[309] One commissioner colorfully dissented:

> We will fail in our legal responsibilities to the people of North Carolina and in our moral responsibilities to our children and grandchildren if we do not take bold, decisive action to address the [climate change] problem, not just deal with the symptoms. . . . But replacing megawatt for megawatt, coal-fired generation with coal-fired generation, no matter how much cleaner the new generation, continues to contribute to the problem.[310]

The following year the North Carolina PUC reviewed a proposal for a 600-MW gas plant. It determined only that new gas plants "are more efficient . . . than previous designs, resulting in a smaller impact on the environment."[311] With that exploration of environmental impacts, the PUC issued the certificate.[312]

In 1986, Congress imposed one notable exception to FERC's environmental discretion. The Electric Consumers Protection Act required FERC to give "*equal* consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife . . . the protection of recreational opportunities, and the preservation of other aspects of environmental quality" in hydroelectric licensing decisions.[313] Such legislative direction, however, remains exceptional.

Fifteen state PUCs have an obligation or a specific grant of authority to consider environmental impacts.[314] Yet one might surmise that legislatures etched this language with invisible ink. A recent study using multiple regression analysis found that environmental mandates on state PUCs had no impact

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307 N.C. GEN. STAT. § 62-110.1(a), (e) (2010); *see generally In re* Duke Energy Carolinas, LLC, 257 P.U.R.4th 115, 121 (N.C.U.C. 2007) ("The standard of public convenience and necessity is relative or elastic, rather than abstract or absolute, and the facts of each case must be considered.").

308 N.C. GEN. STAT. § 62-2(a)(5) (2010).

309 *See Duke Energy*, 257 P.U.R.4th at 121.

310 *Id.* at 27.

311 Application of Progress Energy Carolinas, Inc. for Certificate of Public Convenience, 2008 WL 4616736, at *9 (N.C.U.C. 2008). This includes the utility's integrated resources plan, which need not highlight any information pertaining to environmental costs. N.C. GEN. STAT. § 62-110.1(c) (2010).

312 Application of Progress Energy Carolinas, Inc, 2008 WL 4616736, at *12 (N.C.U.C. 2008).

313 16 U.S.C. § 797(e) (2006) (emphasis added).

314 Michael Dworkin et al., *Revisiting the Environmental Duties of Public Utility Commissions*, 7 VT. J. ENVTL. L. 1, 2 n.4 (2006).

on aggregate percentage increases in CO_2 emissions, and likewise no impact on per capita emissions.[315]

An environment-infused "public interest" might invigorate hard look judicial review, even in this discretionary setting. As with any discrete factor, utility regulators may marginalize environmental impacts as they see fit. But regulators may have a difficult time explaining themselves if courts recognize that the overriding factors themselves contain inextricable links to the environment. If regulators elevate the cost-minimization principle, environment is a critical component. If the nondiscrimination principle is dispositive, distribution of environmental impacts is integral. If service quality is paramount, regulators must address the non-de minimis possibilities of environmental feedbacks.

Integrating environmental accounting with other "public interests" resists the fallacy that regulators can surgically remove the environment from a convoluted, interdependent system of interests. Admittedly, this is a mostly semantic construct. But its adoption would make for a more sensible and realistic conception of the "public interest." A fully integrated—as opposed to discrete—environmental "public interest" could do what NEPA and state requirements to "consider" environmental impacts fail to do: force utility regulators to take a genuinely hard look at environmental costs and benefits.

E. Tenuous Connections to Statute

The statutes from which agencies derive their authority, often called "organic" statutes, limit agencies' authority to act. It would seem odd indeed if the Internal Revenue Service began policing taxpayers' dietary standards, or if the Department of Agriculture scrutinized farmers' expressions of political speech. But in 1972, the National Association for the Advancement of Colored People (NAACP) petitioned FERC's predecessor, the Federal Power Commission (FPC), to draft a rule requiring utilities to adopt affirmative action programs and enable offended employees to file discrimination complaints with FPC.[316] The FPC refused, and in 1976 the case went before the United States Supreme Court. The NAACP argued that FPC's duty to ensure "just and reasonable" rates and protect the "public interest" required it to regulate utilities' employment practices.[317] Rejecting the NAACP's argument, the Court asserted that "[t]he use of the words 'public interest' in the Gas and Power Acts is not a directive to the Commission to seek to eradicate discrimination, but, rather, is a charge to promote the orderly production of plentiful supplies of electric energy and natural gas at just and reasonable rates."[318] The purposes of the statutes

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315 John A. Sautter, *State Environmental Law and Carbon Emissions: Do Public Utility Commissions Use Environmental Statutes to Fight Global Warming?*, 23 ELEC. J. 1, 11 (2010).

316 NAACP v. FPC, 425 U.S. 662, 664 (1976).

317 *Id.* at 666.

318 *Id.* at 670.

constrained the FPC's authority.[319] While disallowing consideration of employment discrimination *per se*, the Court urged FPC to regulate employment discrimination insofar as it affects costs borne by ratepayers.[320]

Any environmental action must bear upon the purposes of the statutes from which utility regulators derive authority, namely the triune "public interest" principles of cost minimization, nondiscrimination, and service adequacy.[321] Suppose a utility purchases a private forest to fuel its biomass facility. It decides to harvest trees using bombs rather than saws. The utility's forest management may damage the local ecosystem and spring water system, contaminate the soil, and perhaps wreck the home of an endangered animal. Ratepayers, however, would not bear the substantial environmental costs. Nor would there be any perceivable effects on cost, distribution, or service quality. Rather, in this hypothetical, the damage is fully internalized and reflected in property values. This hypothetical G.I.-Joe utility is stupid, but the "public interest" remains unharmed. Utility regulators probably cannot intervene on the basis of environmental harm alone. A statutory connection is needed.

Likewise, setting efficiency standards for new appliances, homes, and buildings is most likely out-of-bounds. Although dishwasher engineering standards may affect electricity demand, which in turn may affect electricity prices, the connection to utility business operations is tenuous. Utility regulators ultimately regulate utilities—not consumers.[322]

Furthermore, organic statutes may protect only the "public interest" of the relevant "public." Coal markets, for example, may fail to reflect mining injuries and deaths because taxpayers (who are not necessarily ratepayers) partially compensate victims.[323] Such circumstances involve real externalized cost, but if mining accidents do not affect service or costs to rate-paying consumers in any way, the problem may reside beyond utility regulators' "public interest" authority.[324] The externality may cause artificially low coal prices, thereby encouraging suboptimally high levels of consumption, but no more ratepayers are injured than before—just non-rate-paying coal miners. Likewise, CO_2 damage

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319 *Id.* at 669–70 n.6 (noting an environmental "subsidiary purpose" to the Federal Power Act).

320 *Id.* at 667–68.

321 *Id.* at 670.

322 Utility regulators can, and do, direct utilities to establish demand-side management programs that provide consumers with various incentives for efficiency improvements, but regulation ends with the utility's behavior. *See supra* Part I.B.3. The California legislature created the California Energy Commission, in part, to set efficiency standards for appliances, because the California PUC lacked authority. RICHARD F. HIRSH, POWER LOSS 181 (1999).

323 By the end of 2008 the Black Lung Disability Trust Fund—which is (inadequately) funded by an excise tax on coal—had run a debt to the U.S. Treasury of $10.4 billion. OFFICE OF MANAGEMENT AND BUDGET, BUDGET OF THE UNITED STATES GOVERNMENT: FY 2010, Appendix 783 (2010).

324 Lawsuits, supply delays, and other factors make it unlikely that extraction catastrophes would have no effect on ratepayers. *See* NAACP v. FPC, 425 U.S. 662, 668 (1976) (noting the possibility of litigation costs affecting ratepayers).

calculations that account for climate-related damage to foreign nations may be problematic since they value the interests of non-ratepayers.[325]

If cost-minimizing incentives are correct, cost distribution has no discriminatory effect, and service is adequate, then the utility regulator's job is finished. But one should not overstate the limitations that this, and other exceptions, place on utility regulators' obligation to protect the "public interest." A great many environmental costs slip between regulatory cracks leaving consumers none-the-better for it.

IV. CONCLUSION: WHAT THIS REALLY MEANS

The inquisitive ancient Jewish lawyer might ask, "what is the 'public interest,' anyway?"[326] I would promptly hand him a copy of this article. Being a time-conscious attorney, he'd skip from the Intro to the Conclusion and say, "sure, but what does the environment have to do with 'minimizing costs' or 'curing discrimination' or 'ensuring adequate service,' and why does this even matter?" Lacking the creative capacity to invent a parable, I'd urge him to read just a few remaining paragraphs:

Insofar as environment is absent from considerations of cost, discrimination, and service adequacy, utility regulators tease the judiciary with "arbitrary or capricious" decision-making. Decisions based on minimizing costs for consumers should account for externalized costs, like pollution and worker illness or death, in addition to costs reflected in the pricetag. Likewise, the effects of pollution are not evenly distributed, and can involve tacit cost discrimination between similarly situated consumers. Finally, the very reliability of electricity service could be compromised by poorly considered utility regulation.

Practically, what would this mean? If the judiciary took the hard look doctrine more seriously in PUC decisions—and PUCs responded—we would witness a number of effects. First, electricity prices would increase and demand would decrease as regulators seek to minimize aggregate social costs. Recognizing the damage to public goods like air and water quality, PUCs would deny more siting permit applications from heavy polluting plants and transmission lines running through pristine land. For existing plants, PUCs might devise a special "public benefits surcharge" to direct demand away from heavy polluting sources (e.g. make them uneconomical as a base load generators) and pressure utilities to shift investment to cleaner power supplies. Similarly, they might assure utilities of generous cost-recovery for aggressive pollution abatement measures, perhaps guaranteeing recovery for fixed abatement-cost/abatement-quantity ratios defined for different pollutants (i.e. ratios set at the efficient level, equating abatement costs and avoided environmental costs). The corollary of

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[325] *See, e.g.*, Mass. Elec. Co. v. Dep't of Pub. Utils., 643 N.E.2d 1029, 1032 (Mass. 1994) (citing consideration of out-of-state environmental impacts as a defect in PUC consideration of environmental costs).

[326] *See supra* note 1.

demand reductions is emission reductions, the value of which would exceed the price increase so long as regulators carefully weigh the costs and benefits in siting and rate decisions. Kury and Harrington constructed a model of carbon pricing in Florida revealing that for every $1 increase in emissions price (i.e. the marginal damage to the environment per ton emissions), the price of electricity would raise by 55¢ per MWh.[327] At an emissions price of $45, significant declines in emissions would occur, as natural gas replaces coal in the generator dispatch order.[328] Only modest reductions would occur below that price, however, as coal would likely replace petroleum and coke in the dispatch order.[329] Although electricity demand is considered relatively price inelastic,[330] researchers at the Carnegie Mellon Electricity Industry Center determined that a carbon price of $35/ton would stimulate a 10% reduction in emissions.[331] Short-term reductions would vary depending on the generation mix of the state, though long-term reductions could be much more significant.[332]

Second, a genuinely hard look at the "public interest" would lead to a more equitable distribution of environmental costs. PUCs may strategically diffuse the pollution distribution in the siting process. In the alternative, PUCs may remedy inequities by using rate discounts or special efficiency program benefits to compensate communities bearing a disproportionate pollution burden (assuming those costs aren't yet compensated through a different route like, say, private nuisance action).

Third, a deeper inquiry into service adequacy would discover long-term threats to electricity reliability and quality. Consumers may notice little difference in the faithfulness of their light bulbs, as service will mostly endure the nagging water shortages, reduced thermal efficiencies, steep demand increases, political pressure, and fuel and electricity supply shocks. But they would certainly notice the increased costs of maintaining adequate service. Mitigating, and learning to cope with, utilities' environmental impacts now, would help circumvent substantial future investments in service reliability. Direct effects might include increased research and development inputs, more water conscious

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327 Theodore J. Kury & Julie Harrington, *The Marginal Effects of the Price for Carbon Dioxide: Quantifying the Effect on the Market for Electric Generation in Florida*, 23 ELEC. J. 73, 77 (2010).

328 *Id.* at 78.

329 *Id.* ("We find that at relatively low emissions prices emissions levels decrease, but that coal usage actually increases as fuel sources such as petroleum coke and fuel oil are displaced. Once this initial reduction has been achieved, further increases in carbon prices may do little to decrease emissions until a 'critical point' has been achieved, and coal can be displaced by natural gas.").

330 Kathleen Spees & Lester B. Lave, *Demand Response and Electricity Market Efficiency*, 20 ELEC. J. 69, 76 (2007) (reviewing studies suggesting elasticity ranges from -0.2 to -0.9, suggesting that a 10% price increase leads to consumption decreases ranging from 2% to 9%).

331 Adam Newcomer et al., *Short Run Effects of a Price on Carbon Dioxide Emissions from U.S. Electric Generators*, 42 ENVTL. SCI. & TECH. 3139, 3143 (2008).

332 *Id.*

plant siting, and development of long-term energy planning (50–100 year plans, as opposed to the typical 5–10 year plans).

Centuries of legal development have made the "public interest" concept what it is today in utility regulation. To some, it may seem intuitively sensible to recognize a discrete environmental component in the "public interest." The law, however, is not always intuitive, and in the case of electricity regulation "public interest" does not expressly include environmental protection. But the existing "public interest" concept, which emphasizes cost minimization, nondiscrimination, and service adequacy, clearly implies some level of environmental protection. As I have shown, these traditional "public interest" questions are laden with environmental significance. Not only do "public interest" decisions impact the environment, but the environment, in return, impacts the logic of "public interest" decisions. Rational decision-making, therefore, must require a hard look at environmental impacts to ensure a sensible "public interested" outcome.