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INTRODUCTION

The regulation of market entry changes the way markets allocate the costs and benefits of economic activity. For example, society chooses to regulate entry into the medical profession and the introduction of new pharmaceuticals to the market in order to protect patients from harm or the marketing of new securities in order to protect investors from fraud. And so it is with the energy industry: we regulate entry into the energy sector by way of siting regimes[1] for new energy infrastructure; these regimes, in turn, steer private capital toward investments that ensure the wide availability of a more reliable, affordable, and cleaner energy supply.[2] These siting regimes are part of a broader energy regulatory system that aims to control the behavior of monopolies (public utility law),[3] to prevent a wasteful tragedy of the com-

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1 As used here the term "siting regimes" is intended to subsume the various state and federal statutory permitting regimes applicable to energy projects. Those regimes are described, *infra* Part I.

2 For a summary of those laws, see *infra* Section I.B.

3 The notion that public utility regulation was driven in large part by the desire to ensure a reliable and affordable energy supply is of course disputed (to a greater or lesser degree) by public choice scholars and economic historians, who have characterized energy regulation as primarily the product of rent seeking by utility companies. For a summary history of public utility regulation and support for the public interest explanation for public utility law, see David B. Spence & Robert Prentice, *The Transformation of American Energy Markets and the Problem of Market Power*, 53 B.C. L. REV. 131, 141–48 (2012), and William Boyd, *Public Utility and the Low-Carbon Future*, 61 UCLA L. REV. 1614, 1635–51 (2014).

mons (oil and gas law),[4] and to force companies to internalize the externalities of energy production (environmental law).[5] Each of these bodies of regulation represents a social choice to intervene in the market—one born of public dissatisfaction with the market allocation of the costs and benefits of energy production. Importantly, these regulatory regimes are twentieth-century creations, products of the regulatory impulse that supported the so-called "New Deal consensus."[6]

Bipartisan support for that kind of lightly regulated capitalism is weakening in the twenty-first century. Today the two major political parties have become ideologically more homogenous and distant (from one another) than at any time in the modern regulatory era. The Republican Party, also known as the Grand Old Party (GOP) has moved sharply to the ideological right, and has grown hostile to most regulation—a phenomenon that began in the late twentieth century; by contrast, Democratic Party support for the regulatory state remains firm, and the party's progressive wing may have an appetite for stronger regulation.[7] At the same time, the rise of instantaneous digital communication is increasing the speed at which people can be mobilized for political action and the speed at which ideas (good or bad, true or false) are transmitted through the polity. These twenty-first century changes in the political environment are profound, and together they suggest the possibility that conflict over the siting of energy projects is getting more intense and more frequent over time.

Understanding this new politics of market entry matters because the American energy system depends upon private capital to serve the public's changing energy needs. Atypically among nations, the American government has never taken primary responsibility for providing energy infrastructure;[8] government has instead used regulation to invite, and to steer, private

4 *See, e.g.*, STEPHEN L. MCDONALD, PETROLEUM CONSERVATION IN THE UNITED STATES 36–38, 38 n.27 (1971) (discussing regulatory and statutory efforts to control economic waste from overuse in the oil and gas industry); Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—An Oil and Gas Perspective*, 35 ENVTL. L. 899 (2005) (discussing the objectives of regulations as preventing waste).

5 For a summary of the "internalizing externalities" explanation for environmental law, see generally RUSSELL HARDIN, COLLECTIVE ACTION (1982); MAKING THE COMMONS WORK (Daniel W. Bromley ed., 1992); and THE QUESTION OF THE COMMONS (Bonnie J. McCay & James M. Acheson eds., 1987).

6 "New Deal consensus" refers to the post–World War II bipartisan acceptance of the regulatory state. *See* DAVID S. BROWN, RICHARD HOFSTADTER (2006) (summarizing the origins and essence of Hofstadter's "New Deal consensus").

7 See *infra* Section I.C, for a fuller discussion of both of these phenomena.

8 An early twentieth-century "public power" movement urged government ownership in the electricity sector, but investor-owned utility ownership became the norm. For a good description of the public power movement, see ROBERT A. CARO, THE YEARS OF LYNDON JOHNSON: THE PATH TO POWER 518–28 (1982). Today's municipal utilities, serving about 13% of American electric customers, are vestiges of that movement, as are federal power agencies like the Tennessee Valley Authority. For a summary of existing public power providers, see *Where Is Public Power*, AM. PUB. POWER ASS'N, https://www.publicpower.org/where-public-power (last visited Sept. 15, 2019).

investment in energy services. Historically, that regulation encouraged the investments necessary to bring reliable, affordable energy to consumers. Today's energy facility siting regimes seek to balance the general public's interest in a reliable, affordable energy supply against the interests of locals and others who bear most of the social and environmental costs of hosting energy facilities. How regulators strike that balance implicates fundamental "government vs. market" and "national vs. local" divides that feed partisan ideological polarization.[9] Furthermore, as climate science implies an increasingly urgent need to transition away from fossil fuels and toward a cleaner energy mix,[10] the operation of energy facility siting regimes will influence the speed at which that transition occurs. Any clean energy transition will produce identifiable winners and losers as jobs and their economic ripple effects move from old to new industries and locales.[11] For all these reasons, it makes sense that the siting of new energy infrastructure would provoke increasingly intense conflict.

Understanding how nongovernmental organizations (NGOs) participate in siting proceedings for new energy infrastructure today can illuminate ways in which the regulatory environment is changing. The idea that regulation is a rigged system, dominated by business and unfriendly to NGO perspectives, seems to be more widely held among twenty-first century populists.[12] However, that view is belied by a substantial empirical literature that paints a more qualified and nuanced picture of business influence over policymaking

9 Political science measures of congressional ideology suggest that this is so. *See* Royce Carroll et al., *DW-NOMINATE Scores with Bootstrapped Standard Errors*, VOTEVIEW, https://legacy.voteview.com/dwnomin.htm (last updated Sept. 17, 2015) ("[T]he first dimension can be interpreted in most periods as government intervention in the economy or liberal-conservative in the modern era.").

10 Coral Davenport, *Major Climate Report Describes a Strong Risk of Crisis as Early as 2040*, N.Y. TIMES (Oct. 7, 2018), https://www.nytimes.com/2018/10/07/climate/ipcc-climate-report-2040.html.

11 Moreover, there is a clear partisan divide among elected officials over the policy implications of climate science. The opposition of congressional Republicans and President Trump to regulation of greenhouse gas emissions has been thoroughly documented. Rank-and-file Republicans may be more supportive of climate regulation, but so far there is no evidence that that preference is influencing elected national Republicans. *See* Leaf Van Boven & David Sherman, *Actually, Republicans Do Believe in Climate Change*, N.Y. TIMES (July 28, 2018), https://www.nytimes.com/2018/07/28/opinion/sunday/republicans-climate-change.html.

12 In the 2016 presidential campaign, this idea was expressed first by candidate Bernie Sanders and later echoed by candidate Donald Trump. It is finding resonance among 2020 presidential aspirants as well. *See* Jonathan Tamari, *The System Is 'Corrupt,' 'Rigged,' Not 'for Working People': Why 2020 Democrats Sometimes Sound a Bit Like Trump*, PHILA. INQUIRER (July 7, 2019), https://www.inquirer.com/news/democrats-2020-populist-rhetoric-donald-trump-elizabeth-warren-bernie-sanders-20190707.html. For recent, popular accounts of corporate/elite dominance, see generally NANCY MACLEAN, DEMOCRACY IN CHAINS (2017) and JANE MAYER, DARK MONEY (2016).

and regulation.[13] While businesses enjoy certain resource and organizational advantages in the contest to shape policy, those advantages do not always or systematically translate into probusiness outcomes.[14] By contrast, NGO participation in siting proceedings and other regulatory processes is less well studied. An existing literature examining "not in my backyard" (or "NIMBY") groups[15] suggests that local opposition to the siting of polluting facilities has implications for how society regulates and prioritizes risks, as well as environmental justice implications, and that politically weak groups have been disadvantaged by siting regimes.[16] However, much of that work predates the era of extreme partisan ideological polarization, heightened urgency over climate change, and instantaneous digital communication in American politics. Therefore, we might ask how these more recent trends affect today's siting conflicts. How is the new politics of market entry different? Does it create stronger or weaker barriers to entry for fossil fuel infrastructure? For new clean energy infrastructure?

Understanding the differences between local and national NGOs can help answer these questions. For example, because local opposition to all kinds of energy projects can be rational, siting conflicts involving clean energy infrastructure pose particular strategic dilemmas for national environmental NGOs. On the one hand, an environmental NGO's public stance in favor of a decarbonized energy mix suggests that it ought to support new wind farms, solar farms, and the transmission lines that facilitate clean energy development, even in the presence of local opposition. On the other hand, the growth of the modern environmental movement in the 1960s and 1970s was built around local opposition to new infrastructure.[17] The seminal cases in modern environmentalism—cases like *Sierra Club v. Morton*,[18] *Citizens to Preserve Overton Park, Inc. v. Volpe*,[19] and *Scenic Hudson Preservation Conference v. Federal Power Commission*[20]—involved opposition to infrastructure projects and demands that local environmental impacts be given greater weight in decisionmaking. That history may make environmental NGOs instinctively reluctant to actively support energy projects—even clean energy projects—

13 *See, e.g.*, Boyd, *supra* note 3. For a relatively recent review of the political science literature on business influence over policymaking, see TIMOTHY WERNER, PUBLIC FORCES AND PRIVATE POLITICS IN AMERICAN BIG BUSINESS 1–16 (2012).

14 *See infra* notes 147–50 and accompanying text (discussing literature about environmental justice); *infra* notes 249–51 and accompanying text (discussing literature about risk regulation).

15 The NIMBY label originally had pejorative connotation, some of which may have dissipated over time; nevertheless, I avoid it here, and use the terms "local opposition" or "NGO" instead.

16 *See infra* Section I.B.

17 For a description of which cases academics and practitioners consider the seminal cases in the history of environmental law, see James Salzman & J.B. Ruhl, *Who's Number One?*, ENVTL. F., Nov.–Dec. 2009, at 36.

18 405 U.S. 727 (1972).

19 401 U.S. 402 (1971).

20 354 F.2d 608 (2d Cir. 1965).

over local opposition. This phenomenon may explain cases like the Sierra Club opposition to utility scale solar farms in the Mojave Desert[21] and the Northern Pass Transmission Project which would have transmitted Canadian hydroelectric power into New England, a region woefully lacking in wind and solar generation.[22]

For all of these reasons, this Article examines the dynamics of NGO opposition to proposed energy infrastructure in the twenty-first century, specifically the tactics and issue arguments used by NGOs to oppose new energy infrastructure. The analysis is built around a data set comprising information more than four hundred NGOs whose missions include active opposition to one or more of nine different types of energy projects, including various types of fossil fuel infrastructure, renewable energy facilities, and smart grid technology.

Part I of this Article explains the legal context in which NGOs may challenge the approval of new energy projects. Siting regulation typically hands federal or state energy regulators broad discretion to approve or disapprove new projects, but also requires most projects to secure any of several ancillary, issue-specific environmental approvals. Thus, NGOs opposing energy projects can contest siting decisions on a variety of grounds in a variety of regulatory settings (given sufficient expertise and resources). Part II describes the data set at the heart of this analysis, which includes information about (1) the tactics each NGO uses to oppose energy projects, such as litigation, direct lobbying, mobilizing public participation in siting proceedings, protests, or economic boycotts, and (2) the issue arguments advanced by each NGO to mobilize opposition, such as those based upon the project's economic impacts, health and environmental risks, or environmental justice. The data are limited to siting disputes arising between 2000 and 2017. Part II also suggests some informal hypotheses about when we might expect to see particular tactics or issue arguments predominate across the different project categories and NGO types.

Some key findings from the data are reported in Part III. First, NGOs tend to focus on mobilizing the broader public to lobby decisionmakers (rather than, say, to litigate, boycott, or protest), and to do so around environmental and health risk issues. Interestingly, that conclusion holds true across all project types, fossil fuel and clean energy projects alike. Second, local NGOs were more likely to engage in risk amplification—that is, to advance claims about health risks that lacked solid scientific support—while national groups tended to be more circumspect about the way they discussed risk. Third, the tactical and substantive similarities among NGOs within pro-

21 For a description of the break between local California environmentalists and the national Sierra Club over these projects, see John Monsen, *Protecting the Mojave Desert's Wildlife*, Sierra Club Angeles Chapter (May 24, 2019), https://angeles.sierraclub.org/news/blog/2019/05/protecting_mojave_desert's_wildlife.

22 *See* Catherine Corkery, *Northern Pass: A Burden Too Heavy for NH*, Sierra Club (Nov. 13, 2015), https://www.sierraclub.org/new-hampshire/northern-pass-editorial (describing and encouraging the state to reject the Northern Pass).

ject categories (particularly fossil fuel project categories) implies the possibility of coordination among NGOs. Together, these findings seem consistent with the twenty-first century hyperpolarized, hyperconnected political environment. Mass mobilization is more efficient and effective than ever: digital communication tools enable NGOs to transmit messages almost costlessly, and to target audiences that are particularly receptive to individual messages. NGOs choose risk-based appeals because they resonate: if local NGOs need to build a broader base of support for their cause in order to improve the probability of victory before government decisionmakers, this approach makes sense. Part III also reports some data on the geographic distribution of NGO opposition to energy projects, which seems to be loosely correlated with *both* development intensity and political ideology.

Part IV places the results described in Part III in the context of ongoing scholarly debates about the politics of regulation. As always, NGOs and firms engage in a tug of war, each seeking to push or pull regulators toward a particular conclusion. In an era of inexpensive renewable energy, many find it untroubling that NGOs can more effectively use risk-based arguments to mobilize the public against new fossil fuel infrastructure. What *is* worrying is the possibility that those sophisticated digital communication tools enable NGOs (and others) to exploit risk perception biases to more effectively amplify perceived risk, which in turn could push regulators to produce siting decisions that have counterproductive effects. These can include *environmentally* counterproductive effects, as when opposition to transmission lines can (and does) deny consumers access to cheap, clean wind and solar energy, or when opposition to natural gas pipelines increases both energy prices and reliance on dirtier diesel fuel or coal.[23] As with other policy debates, modern digital politics can enhance misunderstanding,[24] move partisans and activists toward the ideological poles,[25] and make it more difficult for regulators to make sensible decisions about tradeoffs at the heart of any transition to a much greener energy mix.

I. NGOs and Siting Energy Projects

Relatively little scholarly attention has been devoted to the dynamics of NGO mobilization across different energy project types. One reason may be that the variety of issues and regulatory institutions subsumed by that task

23 *See infra* notes 255–56 and accompanying text (describing this very phenomenon in New England). We might speculate that regulators would be more sensitive to these indirect environmental costs than national NGOs pursuing a longer-term decarbonization strategy. Those NGOs may see these adverse environmental consequences as an acceptable short-term cost in exchange for the prevention of new fossil fuel infrastructure that might "lock in" reliance on fossil fuels for decades. For discussion of this carbon lock-in issue, see *infra* Part III.

24 For a recent meta-analysis of the literature on belief in misinformation, see Dietram A. Scheufele & Nicole M. Krause, *Science Audiences, Misinformation, and Fake News*, 116 Proc. Nat'l. Acad. Sci. 7662 (2019).

25 For data supporting this claim, see *infra* Section I.C.

make the problem seem intractable to social scientists: exploring conflict within a single set of risk issues or a single regulatory regime preserves degrees of freedom for the modeler. Or it may be that the dominant frames in the national political discourse—pitting fossil fuels against renewables—may divert scholars' attention from commonalities between opposition to a wind farm and opposition to pipelines, for example. Still, the relative dearth of cross-technology studies of energy siting conflicts is somewhat striking given their prominence across a wide variety of technological, social, and environmental contexts recently. While some energy technologies—nuclear power, in particular—have long provoked intense opposition, the twenty-first century has seen a succession of high-profile energy facility siting disputes around which large and diverse groups of people have mobilized to oppose different kinds of energy infrastructure. For more than a decade in the early 2000s conflict over the siting of the Cape Wind project in Nantucket Sound pitted locals against one another, dividing national environmental groups and providing fodder for late night comics and documentarians.[26] The 2010 documentary *Gasland*[27] triggered fears of air and water contamination from oil and gas production using hydraulic fracturing ("fracking")[28] and mobilized hundreds of local pockets of intense opposition to fracking[29] across the country.[30] At around the same time radiation fears triggered localized pockets of intense opposition to the installation of smart meters in homes, particularly in northern California,[31] but also in Maine,[32] Texas,[33] and other communities across the nation.[34] Most recently, groups like 350.org were able to mobilize massive, nationwide opposition to the Keystone XL Pipeline as an expression of opposition to reliance on fossil fuels, and particularly oil

26 *See* CAPE SPIN!: AN AMERICAN POWER STRUGGLE (Rebirth Productions 2014) (humorously depicting all of the conflict's byproducts).

27 GASLAND (International WOW Production & HBO Documentary Films 2010).

28 Fracking involves the injection of high volumes of water, sand, and chemicals into deep layers of rock (usually shale) to fracture the rock, freeing up oil, gas, or other hydrocarbons, enabling them to flow to the surface.

29 *See* Ion Bogdan Vasi et al., "*No Fracking Way!" Documentary Film, Discursive Opportunity, and Local Opposition against Hydraulic Fracturing in the United States, 2010 to 2013*, 80 AM. SOC. REV. 934 (2015) (tracing the spread of local activism and moratoria on fracking to screenings of the film); *see also Join the Movement*, AMS. AGAINST FRACKING, https://www.americansagainstfracking.org/join-the-movement/ (last visited Sept. 16, 2019).

30 For a summary of local bans on fracking, see *Local Resolutions Against Fracking*, FOOD & WATER WATCH, https://www.foodandwaterwatch.org/insight/local-resolutions-against-fracking (last updated June 12, 2019).

31 *See* Felicity Barringer, *New Electricity Meters Stir Fears*, N.Y. TIMES (Jan. 30, 2011), http://www.nytimes.com/2011/01/31/science/earth/31meters.html.

32 *See* Antonio Regalado, *Rage Against the Smart Meter*, MIT TECH. REV. (April 26, 2012), https://www.technologyreview.com/s/427497/rage-against-the-smart-meter/.

33 *See* Chris Hooks, *As Towns Say No, Signs of Rising Resistance to Smart Meters*, N.Y. TIMES (May 18, 2013), http://www.nytimes.com/2013/05/26/us/as-texas-towns-say-no-signs-of-rising-resistance-to-smart-meters.html.

34 *See id.*; *see also* Regalado, *supra* note 32.

from the Canadian oil sands.[35] Some of those same groups rallied to oppose the Dakota Access Pipeline, partnering with environmental justice advocates who opposed its location adjacent to land owned by the Standing Rock Sioux Tribe.[36]

These intense siting conflicts are not new, but they seem to be getting common. They often unfold within the context of siting proceedings. This Part describes how legal regimes that regulate energy market entry work, and how market, political, and technological forces are changing in ways that may influence the management of conflict within those regulatory regimes.

A. Private Investment, Public Objectives

American energy markets rely predominantly on investments of private capital to provide energy services to the public.[37] Fossil fuel production is almost entirely managed by the private sector,[38] as is most electricity production and delivery.[39] As a consequence, American energy policy uses regulation to steer investment in favored directions in response to political pressure. In that sense, "energy policy" is the accumulated set of individual statutes and regulations that periodically change the way the energy supply system balances three fundamental goals: affordability, reliability, and environmental performance.[40] Prior to the late twentieth century, that balance was usually struck in favor of reliability (energy security and resource devel-

35 *See* Bill McKibben, *Keystone XL: Historic Moment to Resist*, 350.ORG (Nov. 20, 2017), https://350.org/nokxlpromise/ (describing 350.org's opposition to the Keystone XL Pipeline).

36 *See* Robinson Meyer, *The Legal Case for Blocking the Dakota Access Pipeline*, ATLANTIC (Sept. 9, 2016), https://www.theatlantic.com/technology/archive/2016/09/dapl-dakota-sitting-rock-sioux/499178/ (discussing the pipeline's impact on the Standing Rock Sioux Tribe).

37 *See World Energy Investment 2017*, INT'L ENERGY AGENCY (2019), https://www.iea.org/publications/wei2017/ (last visited Oct 6, 2019).

38 *See* JOEL B. EISEN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 9–11 (4th ed. 2015) (discussing the unique American practice of recognizing private ownership of natural resources). Unlike many other countries, the United States has no national oil company, in part because it is one of the few countries in which private ownership of mineral estates is the norm. Consequently, coal, oil, and gas development is managed by the private sector. Even in situations where minerals underlie federal land, their exploitation and production are managed by private sector lessees. *Id.*

39 About 75% of American electricity customers receive their service from privately owned companies; the remainder are served either by municipal utilities or electricity cooperatives. *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, THE CHANGING STRUCTURE OF THE ELECTRIC POWER INDUSTRY: SELECTED ISSUES, 1998, at 7 (1998), https://www.eia.gov/electricity/policies/legislation/california/pdf/chg_str_issu.pdf.

40 John A. Sautter, James Landis, and Michael H. Dworkin coined the term "energy trilemma" to describe this tension. John A. Sautter at al., *The Energy Trilemma in the Green Mountain State: An Analysis of Vermont's Energy Challenges and Policy Options*, 10 VT. J. ENVTL. L. 477, 478 (2009). As discussed below, economists might claim that a well-designed market can balance these concerns if only all three attributes could be accurately priced. *See infra* Section I.B.

opment) first, and cost minimization second.[41] Environmental performance was often an afterthought, if it was considered at all.[42] Thus, regulators applied a reliability- and cost-focused public interest standard centered on a determination of "need" for new infrastructure,[43] such as power plants,[44] transmission and distribution lines, pipelines,[45] and liquefied natural gas (LNG) facilities.[46] The late 1960s and 1970s[47] saw energy regulators broadening their conception of the public interest to place more emphasis on the

41 Thus, for example, the Natural Gas Act, 15 U.S.C. §§ 717–717z (2012), and the Federal Power Act, 16 U.S.C. § 791a (2012), and their state analogs require that prices be fair to consumers—"just and reasonable," in statutory parlance. *See, e.g.*, 16 U.S.C. § 824d(a) (2012). Regulators and courts have interpreted this requirement to imply that managers of the electric grid should operate the grid in ways that keep the lights on first and minimize costs second. *See* FED. ENERGY REGULATORY COMM'N, U.S. DEP'T OF ENERGY, SECURITY CONSTRAINED ECONOMIC DISPATCH: DEFINITION, PRACTICES, ISSUES AND RECOMMENDATIONS 5 (2006).

42 Concern about the social costs of new facilities was not entirely missing from early public interest determinations. In some cases, courts read the statutory language (especially the phrase "public convenience and necessity") to include social costs. *See, e.g.*, Kan. Gas & Elec. Co. v. Pub. Serv. Comm'n, 251 P. 1097, 1099 (Kan. 1927) ("The discretionary power of the commission to grant or withhold certificates of convenience to public utility companies is broader than its power to govern rates and services . . . .").

43 These are typically called "certificates of need" (CON) or "certificates of public convenience and necessity" (CCN). For a good summary of the long history of these public interest/need determinations, see Ford P. Hall, *Certificates of Convenience and Necessity* (pts. 1 & 2), 28 MICH. L. REV. 107, 276 (1929–1930); William K. Jones, *Origins of the Certificate of Public Convenience and Necessity: Developments in the States, 1870–1920*, 79 COLUM. L. REV. 426, 429–501 (1979); and Comment, *A Re-Examination of Competition in Gas and Electric Utilities*, 50 YALE L.J. 875, 882–84 (1941).

44 For a summary of current state CON/CCN licensing regimes for power plants, see EDISON ELEC. INST., STATE GENERATION AND TRANSMISSION SITING DIRECTORY (2013), https://studylib.net/doc/18141559/directory [hereinafter EEI DIRECTORY].

45 Regarding CON/CCN licensing for transmission lines and intrastate gas pipelines, see *id.* States also regulate siting of oil pipelines—even interstate pipelines—under various and varied state requirements. For a summary, see Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 982–88 (2015). Interstate natural gas pipelines must secure a CCN from the Federal Energy Regulatory Commission under section 7 of the Natural Gas Act. 15 U.S.C. § 717f(c) (2012).

46 Under section 3 of the Natural Gas Act, the Federal Energy Regulatory Commission grants licenses for onshore LNG terminals using a "public interest" standard. 15 U.S.C. §717b(a). The statute includes a provision protecting the existing customers of the licensee from having to pay for terminals that do not benefit them, which is analogous to a need determination. *Id.* § 717b(e)(4).

47 For a summary of post–World War II environmentalism as a legislative movement and its spate of legislative successes in the late 1960s and 1970s, see Henry P. Caulfield, *The Conservation and Environmental Movements: An Historical Analysis*, *in* ENVIRONMENTAL POLITICS AND POLICY 13, 13–48 (James P. Lester ed., 1989); and W. Douglas Costain & James P. Lester, *The Evolution of Environmentalism*, *in* ENVIRONMENTAL POLITICS AND POLICY 15, 27–34 (James P. Lester ed., 2d ed. 1995). The term "environmental decade" is often attributed to political scientist Lettie McSpadden Wenner. *See* LETTIE M. WENNER, THE ENVIRONMENTAL DECADE IN COURT (1982).

environmental consequences of energy development.[48] Since that time regulators have administered licensing regimes so as to approve new infrastructure only if (in their judgment) it served a need, was not too expensive, and entailed acceptable levels of environmental harm or risk.[49]

Against this legal backdrop recent trends in energy markets have been fueling demands for accelerated investment in new infrastructure. The restructuring of gas and electricity markets in the late 1990s and early 2000s introduced competition and market pricing of gas and electricity—first in wholesale markets,[50] and then in (some, but not all) state retail markets.[51] This transition to competitive markets triggered new investment in two ways: first, by allowing prospective investors in new energy production facilities to sell energy to formerly captive customers of monopoly utilities; and second, by creating the need for new energy delivery network (pipeline and transmission line) infrastructure to accommodate those newly possible transactions.[52] Some of this new investment serves reliability needs: for example, the 2014

48 *See, e.g.*, Scenic Hudson Pres. Conference v. Fed. Power Comm'n, 354 F.2d 608, 620 (2d Cir. 1965) (positing that an agency's public interest obligation "does not permit it to act as an umpire blandly calling balls and strikes for adversaries appearing before it" but rather to affirmatively protect the public on its own initiative). This approach was later codified in statutes like the National Environmental Policy Act, 42 U.S.C. § 4321, mandating broad reviews of the environmental effects of agency actions.

49 To be sure, different statutory regimes strike the balance between these three considerations differently, as do different decisionmakers applying the same statutory standards. *See* Sharon Jacobs & David Spence, *Energy Tradeoffs Podcast: Environmental Privileging*, ENERGY TRADEOFFS (May 12, 2019), https://www.energytradeoffs.com/2019/05/12/sharon_jacobs/ (discussing this issue).

50 The Federal Energy Regulatory Commission completed the restructuring of wholesale gas markets in 1992 with the promulgation of Order 636 mandating open access to pipelines and the unbundling of gas sales from transmission services. Pipeline Service Obligations and Revisions to Regulations Governing Self-Implementing Transportation; and Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol, 57 Fed. Reg. 13,267, 13,270 (Apr. 16, 1992). It did the same for wholesale electricity sales in 1996 with the promulgation of Order 888. Promoting Wholesale Competition Through Open Access Nondiscriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. 21,540, 21,591–97 (May 10, 1996).

51 Other states (predominately in the Southeast) have resisted the restructuring impulse, retaining the traditional, vertically integrated, bundled gas and electric service regime with regulated rates. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, THE CHANGING STRUCTURE OF THE ELECTRIC POWER INDUSTRY 2000: AN UPDATE, at i, ix–xi, 5-8 (2000).

52 Most experts estimate that modernizing the grid to meet new electricity market needs will require investment in tens of thousands of miles of new transmission lines at costs in the tens of billions of dollars. *See, e.g.*, Matthew L. Wald, *Giving the Grid Some Backbone*, SCI. AM. EARTH 3.0, Mar. 2009, at 52, 55–57 (explaining several proposed grid investment plans, involving tens of thousands of miles of new transmission lines costing tens of billions of dollars); *see also* RICHARD W. CAPERTON & MATT KASPER, CTR. FOR AM. PROGRESS , RE-ENERGIZE REGIONAL ECONOMIES WITH NEW ELECTRIC TRANSMISSION LINES 4 (2011), http://cdn.americanprogress.org/wp-content/uploads/issues/2011/12/pdf/transmission_lines.pdf (suggesting that the United States needs to invest at least $298 billion to upgrade the grid by 2030); PETER FOX-PENNER, SMART POWER 89–92 (anniversary ed. 2014) (describing plans for a transmission "superhighway").

"polar vortex" suggested to some analysts that existing natural gas infrastructure was insufficient to provide a reliable supply of natural gas in the northeast during cold snaps.[53] Other new investment is aimed at improving energy affordability, as when regional price differentials within the so-called "PJM" regional electricity market[54] incentivized new transmission to bring power from low price areas in western PJM to high priced eastern PJM,[55] and construction of new generation closer to those eastern customers.[56]

Another driver of investment in new energy infrastructure comes from exploding demand for renewable energy, driven by a combination of top-down policy mandates and bottom-up market demand. The policies include state clean energy standards,[57] tax credits,[58] federal air pollution regulation,[59] and state or local "decarbonization" plans,[60] all of which incentivize

53 *See* Jude Clemente, *The Northeast Natural Gas Pipeline Buildout Is Coming*, FORBES (June 25, 2017), https://www.forbes.com/sites/judeclemente/2017/06/25/the-northeast-natural-gas-pipeline-buildout-is-coming/#1b4da74d7f74.

54 PJM, which once stood for "Pennsylvania," New "Jersey," and "Maryland," now covers most of the Middle Atlantic region and significant portions of the Midwest. *Energy in New Jersey: Frequently Asked Questions About Energy*, ST. N.J. ENERGY MASTER PLAN, https://www.nj.gov/emp/energy/faq.html (last visited Aug. 31, 2019).

55 Attempts by PJM to site transmission to address this problem was the subject of two Seventh Circuit decisions. Ill. Commerce Comm'n v. FERC, 721 F.3d 764 (7th Cir. 2019) (overturning the cost allocation scheme for a major west-to-east transmission line); Ill. Commerce Comm'n v. FERC, 576 F.3d 470 (7th Cir. 2009) (same).

56 Attempts by two eastern PJM states—New Jersey and Maryland—to incentivize the construction of generation in their states were struck down by the Supreme Court as intrusions on the Federal Energy Regulatory Commission's exclusive authority to regulate prices in wholesale power markets. *See* Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1297 (2016); PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014).

57 A clean energy standard, or renewable portfolio standard (RPS), requires retailers of electric power within the state to meet their supply obligations using a specified percentage (or, in some cases, amount) of electricity from zero-emission or renewable sources. These policies vary widely: each defines "clean" or "renewable energy" differently and establishes different targets. For up-to-date information about state RPS, see *Database of State Incentives for Renewables & Efficiency*, NC CLEAN ENERGY TECH CTR., http://www.dsireusa.org (last visited Aug. 27, 2019).

58 In 1992, Congress established a production tax credit (PTC) for renewable energy projects in the Energy Policy Act of 1992. Energy Policy Act of 1992, Pub. L. No. 102-486, § 1914, 106 Stat. 2776, 3020–23 (codified as amended at 26 U.S.C. §§ 38–39, 45). Congress has intermittently renewed short-term tax credits for renewable energy ever since. *See, e.g.*, Consolidated Appropriations Act of 2016, Pub. L. No. 114-113, div. Q, § 187, 129 Stat. 2242, 3074 (2015); Tax Increase Prevention Act of 2014, Pub. L. No. 113–295, § 155, 128 Stat. 4009, 4021; American Taxpayer Relief Act of 2012, Pub. L. No. 112-240, § 407, 126 Stat. 2313, 2340–42 (2013); American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 1101, 123 Stat 115, 319 (extending the "Credit for Electricity Produced from Certain Renewable Sources").

59 The Obama EPA tightened various Clean Air Act ambient air quality standards, and established new rules governing mercury, precursors of regional haze and ozone, and greenhouse gas emissions. For a summary of those rules, see David E. Adelman & David B. Spence, *Ideology vs. Interest Group Politics in U.S. Energy Policy*, 95 N.C. L. REV. 339, 352–60 (2017).

construction not only of new utility-scale wind and solar facilities, but also the transmission lines necessary to bring their power to market.[61] Indeed, the more aggressive rapid-decarbonization plans call for construction of massive amounts of renewable energy infrastructure—a huge nationwide system of renewable generators connected by a national (or continental) transmission network.[62] Furthermore, now that renewables are price competitive with traditional energy sources in many places, corporate customers are demanding more clean energy.[63] For example, the desire for cheap renewable power is driving proposals to build new transmission capacity linking (1) the windy central plains to load centers to the east—cities like Minneapolis, Chicago, St. Louis and Houston—where consumers want utility-scale wind power,[64] and (2) transmission linking Texas wind power to consumers in the southeastern Gulf Coast states.[65] Regulators will determine which of these

60 For example, California's renewable energy plan comprises a suite of laws and regulatory initiatives aimed at drastic reductions in carbon use. *See Renewable Energy*, CAL. ENERGY COMMISSION, http://www.energy.ca.gov/renewables/ (last visited Aug. 31, 2019). Some cities are committing to purchase of only renewable power, incentivizing additional renewable generation on the grid. *See* Erica Robbie, *Aspen Is Third U.S. City to Reach 100% Renewable Energy*, ASPEN TIMES (Sept. 1, 2015), https://www.aspentimes.com/news/aspen-is-third-u-s-city-to-reach-100-renewable-energy/ (reporting on both Aspen's and Burlington's all-renewables policies).

61 *See* FOX-PENNER, *supra* note 52.

62 *See* Mark Z. Jacobson et al., *Low-Cost Solution to the Grid Reliability Problem with 100% Penetration of Intermittent Wind, Water, and Solar for All Purposes*, 112 PROC. NAT'L ACAD. SCI. 15060, 15060 (2015) (calling for the construction of a continental high-voltage transmission system to connect new and far flung utility-scale renewable generators). Clack et al. note that this plan contemplates a level of transmission and generation investment that is fourteen times historic annual rates. *See* Christopher T.M. Clack et al., *Evaluation of a Proposal for Reliable Low-Cost Grid Power with 100% Wind, Water, and Solar*, 114 PROC. NAT'L ACAD. SCI. 6722, 6725 (2017). More recently, the so-called "Green New Deal" sets ambitious clean energy goals that charge the federal government with overseeing and financing a rapid decarbonization of the economy. *See* David Roberts, *The Green New Deal, Explained*, VOX (Dec. 21, 2018), https://www.vox.com/energy-and-environment/2018/12/21/18144138/green-new-deal-alexandria-ocasio-cortez.

63 *See* DAVID GARDINER & ASSOCS., THE GROWING DEMAND FOR RENEWABLE ENERGY AMONG MAJOR U.S. AND GLOBAL MANUFACTURERS 3 (2017), https://www.dgardiner.com/wp-content/uploads/2017/09/Renewable-Energy-and-Climate-Commitments-in-the-Manufacturing-Sector_FINAL9.19.2017FINAL.pdf (describing the prevalence of clean energy goals among major manufacturers); Julia Pyper, *The Latest Trends in Corporate Renewable Energy Procurement*, GREENTECH MEDIA (June 30, 2017), https://www.greentechmedia.com/articles/read/the-latest-trends-in-corporate-renewable-energy-procurement#gs.D4MFjFs (describing exponential growth in demand recently).

64 Perhaps the best way to visualize this agenda is to view the map of transmission projects proposed by Clean Line Energy Partners, a merchant transmission company that sought to connect wind farms in the central plains to cities in the East. *See* Diane Cardwell, *Wind Power Transmission Project in Plains Earns U.S. Approval*, N.Y. TIMES (Mar. 25, 2016), https://www.nytimes.com/2016/03/26/business/energy-environment/wind-power-transmission-project-in-plains-earns-us-approval.html, to view that map.

65 The role of the Southern Cross Transmission Project bringing Texas wind power to southeastern states is explained at the project web site. *See Education*, SOUTHERN CROSS

proposals is built, and the next Section examines those siting regimes, and how they are designed to work.

B. Siting Regimes, NGOs, and the Public Interest

Energy projects face regulatory barriers to entry in the form of licensing regimes that are characteristically fragmented, both horizontally and vertically, enabling conflict to continue across multiple fronts simultaneously. Most energy projects must secure a license from an energy industry-focused lead agency, one typically granted broad discretion to make permitting and licensing decisions "in the public interest."[66] Sometimes the lead agency is a federal agency, like the Federal Energy Regulatory Commission (FERC),[67] and sometimes it is a state agency, like a state public utility commission (PUC),[68] or an oil and gas commission.[69] The lead agency's public interest determination may include a determination of need for the project,[70] or other broad consideration of how the project might serve the goals of reliability, affordability, and environmental performance. The lead agency, then, typically considers a wide range of costs and benefits (though in some states that statutory mandate is narrower than others).[71] Project benefits may include enhanced energy security and/or direct and indirect economic benefits, such as less expensive energy, jobs at the facility, or harder to quantify economic benefits that flow from the availability of energy from the project. Costs may be economic (decreased property values near the project), envi-

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TRANSMISSION, https://southerncrosstransmission.com/education/ (last visited Oct. 3, 2019).

66 For a look at the history of this concept in public utility law, see Boyd, *supra* note 3, at 1635–82; and sources cited *supra* note 43.

67 For example, FERC is the lead agency for the siting of interstate natural gas pipelines and LNG terminals. *See* 15 U.S.C. §§ 717b(e), 717f(e) (2012). For nuclear power plants, the federal lead agency is the Nuclear Regulatory Commission (NRC). *See* 42 U.S.C. §§ 2011–2021j.

68 State public utility commissions typically serve as lead agency for siting utility-scale power plants (including fossil-fueled and renewable plants) and intrastate natural gas pipelines and electric transmission lines. *See generally* EEI DIRECTORY, *supra* note 44.

69 State oil and gas commissions approve oil and gas production operations. For a summary of state oil and gas regulation, see Spence & Prentice, *supra* note 3, at 134–41.

70 Despite the transition to competitive electricity markets in many places, many siting regimes for power plants retain the requirement that the regulator make a formal determination of "need" for new facilities, a requirement some now see as vestigial because the facility will sell its output in a competitive wholesale market. For an example of how courts and regulators manage the awkward task of assessing the need for merchant power plants, see *Environmental Law & Policy Center v. U.S. Nuclear Regulatory Commission*, 470 F.3d 676 (7th Cir. 2006).

71 Some version of a public interest determination is characteristic of all the siting regimes examined here, except for oil and gas production approvals. In many states, the regulator makes no such determination, though in some states environmental concerns do find their way into lead agency decisions. *See Laws, Regulations, and Guidelines*, PA. DEP'T ENVTL. PROTECTION, https://www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/Pages/Laws,-Regulations-and-Guidelines.aspx (last visited Sept. 1, 2019).

ronmental-related risks (threats to flora, fauna, and ecosystems), health-related risks (increased mortality or morbidity associated with pollution from the facility), or social justice impacts (such as a disproportionate impact on minority communities). The cost-benefit profiles of different kinds of energy projects vary significantly, and are characterized by varying amounts of uncertainty. Some technologies (nuclear power, fossil-fueled power plants, transmission lines) have established track records, such that we can make reasonable estimates of their costs and risks. Others (fracking, smart meters) are new, and may have less well-established risk profiles. While the law charges regulators with addressing and balancing these concerns, the process is typically adjudicative and adversarial, pitting project sponsors against project opponents. The collective outcomes of these individual siting conflicts over time determine the overall balance the energy system strikes between affordability, cost, and environmental performance.

Beyond the lead-agency approval, most projects must also secure one or more issue-specific ancillary approvals from other federal, state, or local regulators, in addition to the license from the lead agency. In this split-jurisdiction environment, agencies may share jurisdiction relatively efficiently or inefficiently. In some cases, well-established interagency coordination procedures or systems of cooperative federalism[72] define (more or less clearly) the jurisdictional boundaries between agencies. In other cases, jurisdictional conflicts arise, triggering disputes over subject matter jurisdiction,[73] federal preemption of state law, or state preemption of local law.[74] For example, approvals of natural gas pipelines, LNG terminals, and nuclear power plants are managed by federal lead agencies under statutory regimes that preempt wide swaths of state and local law,[75] limiting (in the first instance) the ability

72 *See, e.g.*, Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179, 180 (2005) (defining "[c]ooperative federalism" as "an arrangement under which a national government induces coordination from subordinate jurisdictions"). For a more sophisticated discussion of federalism and interagency relations, see William W. Buzbee, *Contextual Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 108, 108, 122–26 (2005) (discussing the advantages of "regulatory overlap" between state and federal environmental law); and Robert A. Schapiro, *Toward a Theory of Interactive Federalism*, 91 IOWA L. REV. 243, 316 (2005) ("Federalism . . . achieves its goals not through the separation of state and national power, but through their interaction.").

73 *See generally* William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1 (2003) (exploring the ways jurisdictional overlaps or gaps can be exploited by firms).

74 For a discussion of federal preemption and state preemption regimes in energy law, see David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 468–77 (2013) (summarizing federal preemption regimes for energy production facilities); and David B. Spence, *The Political Economy of Local Vetoes*, 93 TEX. L. REV. 351, 368–76 (2014) (focusing on state preemption of local regulation).

75 Regarding the preemptive effect of NRC licensing of nuclear power plants, see *Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Commission*, 461 U.S. 190, 213–16 (1983) (upholding a California statute regulating waste storage because it was "economic"—not siting—legislation, and therefore was not preempted by the Atomic Energy Act); *Northern States Power Co. v. Minnesota*, 447 F.2d 1143, 1144 (8th Cir. 1971)

of project opponents to exert leverage by enlisting support from state or local governments. On the other hand, these federal licensing regimes also trigger ancillary environmental reviews under other *federal* statutes, such as the National Environmental Policy Act (NEPA),[76] the Coastal Zone Management Act (CZMA),[77] the Clean Water Act (CWA),[78] and the Endangered Species Act (ESA).[79] These ancillary reviews not only offer opponents additional substantive grounds on which to challenge a project, two of them—the CWA and CZMA—vest meaningful decision-making power directly in state regulators, sometimes compensating for state and local leverage lost due to federal preemption.[80]

State public utility commissions typically act as lead agencies for utility-scale power plants (fossil-fueled, wind, and solar), transmission lines, and smart meter rollouts;[81] state oil and gas agencies usually serve this role for oil and gas production projects (including fracking operations),[82] and for oil pipelines.[83] The degree to which these regimes grant leverage to *local* governments varies by state. Some states' home rule provisions provide local

(holding that states may not enact stricter radiation emissions regulations than the federal standards), *aff'd*, 405 U.S. 1035 (1972); *United States v. City of New York*, 463 F. Supp. 604, 614 (S.D.N.Y. 1978) (concluding that a city ordinance requiring an additional license for nuclear reactors was preempted by the Atomic Energy Act); and *Department of Environmental Protection v. Jersey Central Power & Light Co.*, 351 A.2d 337, 344 (N.J. 1976) (declaring that New Jersey's environmental protection agency's enforcement of state pollution laws against a nuclear power plant was preempted by federal regulation). Regarding the preemptive effect of FERC licensing of LNG terminals, see *Weaver's Cove Energy, LLC v. Rhode Island Coastal Resources Management Council*, 589 F.3d 458, 475 (1st Cir. 2009) (stating that the Natural Gas Act's grant of "exclusive authority" to FERC over siting LNG facilities preempts local siting laws).

76 NEPA requires the preparation of an environmental impact statement for any "major Federal actions significantly affecting the quality of the human environment," including projects approved by federal agencies having significant environmental effects. National Environmental Policy Act of 1969, Pub. L. No. 91-190, § 102(C), 83 Stat. 852, 853 (1970) (codified as amended at 42 U.S.C. § 4332(c) (2012)).

77 The CZMA requires that federally approved activities affecting states' costal zones be consistent with those states' approved coastal zone management plans. *See* 16 U.S.C. § 1456(c)(1) (setting forth the CZMA process for approving federal programs even when they are inconsistent with state programs, without consent from state agencies).

78 Section 401 of the CWA instructs federal agencies considering approval of projects that involve discharges to waterways to secure from the state in which the discharge occurs a certification that the project will not contravene various requirements of the Clean Water Act. *See* 33 U.S.C. § 1341(a)(4).

79 Section 7 of the ESA prohibits federal agencies from approving actions that "jeopardize the continued existence" of a listed endangered species. 16 U.S.C. § 1536(a)(2).

80 *See supra* notes 77–78.

81 *See* EEI DIRECTORY, *supra* note 44.

82 *See supra* note 69 and accompanying text.

83 For a summary of state permitting regimes, see BRANDON J. MURRILL, CONG. RESEARCH SERV., R44432, PIPELINE TRANSPORTATION OF NATURAL GAS AND CRUDE OIL: FEDERAL AND STATE REGULATORY AUTHORITY (2016).

governments with de facto vetoes over transmission lines,[84] wind- or solar-farm siting,[85] and oil and gas production.[86] In some situations involving a state-level lead agency, the project must also secure issue-specific approvals under *federal* law, which in turn may be administered by another state agency or a federal agency. For example, fossil-fueled power plants must secure a Clean Air Act (CAA) permit covering their air emissions and a CWA permit covering their wastewater discharges.[87] Thus, for example, the Sierra Club's campaign against coal-fired power plants includes active participation in air permitting proceedings before state environmental agencies,[88] as well as challenges to plant licensing before state public utility commissions;[89] and local opponents sometimes use the CAA to challenge air permits for compressor stations associated with natural gas pipelines.[90] Similarly, when a pipeline crosses a stream, it may trigger Army Corps of Engineers wetlands permitting jurisdiction,[91] the permit around which most of the Dakota Access Pipeline protests centered.[92] Similarly, opponents of Mojave Desert solar farms have argued (before state agencies and in court) that the projects will violate the ESA.[93] And so on. Table 1 summarizes the lead agency and regulatory approvals that are most commonly triggered by the energy projects considered here. Shading denotes lead agency permitting regimes that may include preemptive authority over regulation by subordinate jurisdictions.

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84 *See* Klass and Meinhardt, *supra* note 45, at 1027–53.

85 *See, e.g.*, Jesse Heibel & Jocelyn Durkay, *State Legislative Approaches to Wind Energy Facility Siting*, NAT'L CONF. ST. LEGISLATURES (Nov. 1, 2016), http://www.ncsl.org/research/energy/state-wind-energy-siting.aspx (discussing states with statewide zoning for wind).

86 *See* Spence, *The Political Economy of Local Vetoes*, *supra* note 74.

87 The Environmental Council of the States (ECOS) tracks the EPA's delegation of permitting authority under several major environmental statutes, including the Clean Air Act and the Clean Water Act. For a summary of this data, see SARAH GRACE LONGSWORTH ET AL., ENVTL. COUNCIL STATES, STATE DELEGATION OF ENVIRONMENTAL ACTS (2016), https://www.ecos.org/documents/state-delegations/.

88 For the Sierra Club's own summary of their victories in this campaign, see its "Moving Beyond Coal" web page: *Victories: Moving Beyond Coal, By the Numbers*, SIERRA CLUB, https://content.sierraclub.org/coal/victories (last visited Sept. 1, 2019).

89 *See, e.g.*, *Take Action for a Coal Free Avista*, SIERRA CLUB (Sept. 3, 2014), https://content.sierraclub.org/coal/update/3-sep-2014/take-action-free-avista.

90 *See, e.g.*, Dominion Transmission, Inc. v. Summers, 723 F.3d 238 (D.C. Cir. 2013) (state challenge to air permit for pipeline compressor station).

91 *See* 33 U.S.C. § 1344(g) (2012).

92 *See* PAUL W. PARFOMAK, CONG. RESEARCH SERV. INSIGHTS, IN10567, DAKOTA ACCESS PIPELINE: SITING CONTROVERSY (2017), https://fas.org/sgp/crs/misc/IN10567.pdf.

93 In addition to the section 7 requirement applicable to federal agencies, the ESA contains a prohibition against harming endangered species in section 9, applicable to private sector actors. *See* 16 U.S.C. § 1538(a)(1)(B) (2012).

TABLE 1: ENERGY PROJECT SITING AUTHORITY—LEAD AGENCY

	Federal	State	Local	Common Ancillary Reviews (Federal)
Nuclear Power Plants	Nuclear Regulatory Comm'n			NEPA, CWA[a]
Fossil-Fueled Power Plants		Public Utility Comm'n (PUC) or other siting agency	Municipalities (in some states)	CAA, CWA[b]
Wind Farms (Onshore)		PUC or other siting agency	Municipalities (in some states)	
Wind Farms (Offshore)	Dep't of Interior (beyond state waters)	Various state agencies (within state waters)		NEPA, CZMA, ESA
Solar Farms		PUC or other siting agency	Municipalities (in some states)	ESA
Transmission Lines		PUC	Municipalities (in some states)	CWA[c]
Smart Meters		PUC		
Oil & Gas Production Facilities		Oil & Gas Comm'n	Municipalities (in some states)	CAA
Oil Pipelines		PUC, State Oil & Gas Comm'n, or legislature		CAA, CWA[b,c]
Natural Gas Pipelines	Fed. Energy Regulatory Comm'n			NEPA, CAA, CWA[b,c]
LNG Terminals (Onshore)	Fed. Energy Regulatory Comm'n			NEPA, CWA[a,b]

Notes: [a]CWA § 402 permit to discharge wastewater; [b]CWA § 401 water quality certification; [c]CWA § 404 permit to dredge of fill wetlands

In sum, lead agency approval is typically a broad public interest inquiry, offering regulators considerable discretion to balance competing interests and intervenors wide latitude to raise disparate issues in opposition to (or support for) the project. The ancillary approvals, by contrast, tend to be issue-specific, focused on the protection of a particular environmental value (clean air, clean water, endangered species, etc.). This kind of regulatory fragmentation gives opposition groups multiple bites at the apple, and opportunities to partner with other groups to be heard in each decision venue, and to tailor their appeals accordingly.

C. Centrifugal Forces in Siting

Two interrelated societal forces seem to be intensifying conflict over energy infrastructure siting in the twenty-first century: namely, the rise of instant digital communication coupled with the well-documented hyperpolarization of the American polity. Scholars have treated the rise of digital media and the internet alternately as a force for social integration, and a source of fracture. The integration argument sees digital interconnectedness as likely to expose citizens to a broader set of views, improving civic culture and promoting deliberative democracy.[94] More recent scholarship points to fragmented internet subcultures and homogenous opinion ecosystems that contribute to ideological polarization among the politically active portion of the population, in part by inoculating belief against the effects of new information.[95] These technological changes, in turn, may be both a cause and a consequence of increasing ideological polarization of American political parties, particularly over the issue of government intervention in the market (regulation). How might these two forces interact in the context of siting disputes?

It seems evident that polarization increases the emotional intensity of political conflict, in two ways. First, as the parties' policy agendas grow further apart ideologically,[96] each agenda appears increasing unacceptable—even alarming—to members of the opposite party, making political victory seem an ever more important moral imperative. For example, increasing numbers of conservatives equate unregulated markets (including energy markets) with freedom and the good, see regulators as part of a dangerous and antidemocratic "deep state," and characterize regulation as antithetical

94 *See generally* KATHERINE CRAMER WALSH, TALKING ABOUT POLITICS (2004); Peter Dahlgren, *In Search of the Talkative Public: Media, Deliberative Democracy and Civic Culture*, 9 JAVNOST—PUB., no. 3, 2002, at 5; Joohan Kim et al., *News, Talk, Opinion, Participation: The Part Played by Conversation in Deliberative Democracy*, 16 POL. COMM. 361 (1999); Dhavan V. Shah et al., *Information and Expression in a Digital Age: Modeling Internet Effects on Civic Participation*, 32 COMM. RES. 531 (2005).

95 *See, e.g.*, Michela Del Vicario et al., *Mapping Social Dynamics on Facebook: The Brexit Debate*, 50 SOC. NETWORKS 6, 12 (2017) (studying the polarization between two communities and the impacts of echo chambers); Michela Del Vicario et al., *The Spreading of Misinformation Online*, 113 PROC. NAT'L ACAD. SCI. 554, 558 (2016) (showing that "social homogeneity is the primary driver of content diffusion, and one frequent result is the formation of homogenous, polarized clusters"); Michael Schudson, *Why Conversation Is Not the Soul of Democracy*, 14 CRITICAL STUD. MASS COMM. 297 (1997) (arguing that conversation is "at the center of democratic life"); *cf.* DIANA C. MUTZ, IMPERSONAL INFLUENCE 24 (1998) (balancing the roles of integration and fracture).

96 The most commonly cited database illustrating ideological polarization between the congressional parties is the so-called "DW-NOMINATE" maintained by Keith Poole and others. *See About the Project*, VOTEVIEW, https://voteview.com/about (last visited Sept. 1, 2019). Analyses of that data indicate that the parties in Congress are further apart ideologically than at any time after World War II, and that "role of government" issues drive polarization. *See* Jeff Lewis, *Polarization in Congress*, VOTEVIEW, (Aug. 14, 2019), https://voteview.com/articles/party_polarization.

to freedom.[97] By contrast, liberals increasingly favor decarbonizing the energy supply and view the need to rapidly "decarbonize" the economy as an urgent moral imperative requiring swift and bold government action.[98] Second, in Congress,[99] polarization begets gridlock[100] much of the time, which frustrates the policy agendas of any group seeking policy change. Conservatives have a difficult time repealing national permitting regimes that act as barriers to energy market entry, leaving those regimes in place, while liberals cannot legislatively regulate greenhouse gas emissions or establish national

97 Some trace the rise of this view to the funding of academic research by conservative funders, like the Koch Brothers' foundation. *See* Charles Ruger, Charles Koch Found., Presentation at the Private Enterprise Education Annual Meeting 2016, Session 3.F.7: Successful Models of Programs in Private Enterprise (Apr. 5, 2016), http://static1.squarespace.com/static/5400da69e4b0cb1fd47c9077/t/5720dd249f7266fe451787b4/1461771556956/APEETRANSCRIPT3.F.7SuccessfulModelsofProgramsinPrivateEnterpriseAPEE2016.pdf (describing the Koch Foundation strategy of funding scholars who value freedom, and equating that with research supporting deregulation). Others trace its origins to growing influence of Austrian economics and conservative philosophy. *See, e.g.*, FRIEDRICH A. HAYEK, THE ROAD TO SERFDOM (1944) (laying out the argument that social welfare is maximized by free exchange in ways we cannot know or estimate ex ante); 1 MURRAY N. ROTHBARD, MAN, ECONOMY, AND STATE (1962) (arguing that democratic governance is coercive, and that social organization by bilateral bargaining maximizes welfare); ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA (1974) (advancing a case for a minimal state lying somewhere between Hayek and Rothbard).

98 For a summary of the case for decarbonization, see Boyd, *supra* note 3, at 1632–35. For a summary of the argument that it is an urgent moral imperative, see Roberts, *supra* note 62; and Sarah Mac Donald, *Bill McKibben: Pope's Encyclical Gives Everyone 'Marching Orders' on Climate*, NAT'L CATH. REP. (June 30, 2015), https://www.ncronline.org/blogs/eco-catholic/bill-mckibben-pope-s-encyclical-gives-everyone-marching-orders-climate.

99 The causes of congressional polarization are disputed, but are ascribed by scholars to a variety of factors, most of which fall within either of two categories: one focusing on the increasing ideological homogeneity in congressional districts. *See, e.g.*, BILL BISHOP, THE BIG SORT 35 (2008) (discussing the "politics of place" that allow communities to "maintain political cohesion"); JEFFREY M. STONECASH ET AL., DIVERGING PARTIES xiv (Routledge 2018) (2003) (arguing that "constituents, how they differ, and in which district they live, matter"); Jamie L. Carson et al., *Redistricting and Party Polarization in the U.S. House of Representative*, 35 AM. POL. RES. 878, 899 (2007) (finding that "congressional districts that have significantly changed are having an effect on levels of polarization in the House"). A second set of diagnoses focus on various kinds of institutional factors that affect how parties manage congressional business. *See, e.g.*, Geoffrey C. Layman et al., *Party Polarization in American Politics: Characteristics, Causes, and Consequences*, 9 ANN. REV. POL. SCI. 83, 84 (2006) (discussing the "characteristics, causes, and consequences of ideological polarization among the parties' leaders and elected officials"); Richard H. Pildes, *Why the Center Does Not Hold: The Causes of Hyperpolarized Democracy in America*, 99 CALIF. L. REV. 273 (2011) (generally exploring the different causes of polarization).

100 *See* SARAH A. BINDER, STALEMATE: CAUSES AND CONSEQUENCES OF LEGISLATIVE GRIDLOCK 40–44 (2003) (discussing polarization and the pattern of legislative gridlock).

standards for renewable energy,[101] further increasing both groups' frustration.

These two phenomena shift focus to regulatory agencies as a focus of conflict over laws that neither party can change.[102] The presidential election of 2016 revealed another source of centrifugal force in American politics: namely, the ability of interested parties to shape belief, and to mislead, using the tools of modern digital communication.[103] Long before the modern behavioral revolution,[104] political philosophers and psychologists recognized that propagandists can shape belief by playing to the cognitive biases. James Madison's admonition in *Federalist No. 10* that a person's reason and passion have "reciprocal influence" on one another is an acknowledgment that emotion feeds bias.[105] Henry Adams' description of politics as the "systematic organization of hatreds" was a more blunt and condemnatory assessment of the manipulation of biases on American politics.[106] Academic psychologists began to chronicle the idea of biases in the early part of the twentieth century.[107] What *is* new is the speed and effectiveness with which these biases can now be exploited using modern communication tools.

As Russian bots and digital marketers have recently demonstrated,[108] our reliance on digital communication media creates "filter bubbles" that

101 For a description of the failure of carbon regulation at the national level, see Bryan Walsh, *Why the Climate Bill Died*, TIME (July 26, 2010), http://science.time.com/2010/07/26/why-the-climate-bill-died/.

102 States are less susceptible to polarization-induced gridlock because they are less ideologically heterogeneous. Thus, in very "red" states, like Texas, barriers to entry and regulatory burdens for energy facilities are low, making proponents of development happy and opponents unhappy. *See* EEI DIRECTORY, *supra* note 44, at 117 (describing a pro forma approval process for power plants in parts of Texas with competitive power markets). In very "blue" states, like California, regulatory barriers and burdens are relatively high, making opponents of development happy and proponents unhappy. *See id.* at 9 (describing the role of the California Energy Commission in power plant siting).

103 *See* Molly K. McKew, *Did Russia Affect the 2016 Election? It's Now Undeniable*, WIRED (Feb. 2, 2018), https://www.wired.com/story/did-russia-affect-the-2016-election-its-now-undeniable/; Gabe O'Connor & Avie Schneider, *How Russian Twitter Bots Pumped Out Fake News During the 2016 Election*, NPR (April 3, 2017), https://www.npr.org/sections/alltechconsidered/2017/04/03/522503844/how-russian-twitter-bots-pumped-out-fake-news-during-the-2016-election.

104 For summaries of the research of psychologists Daniel Kahneman and Amos Nathan Tversky, see generally DANIEL KAHNEMAN, THINKING, FAST AND SLOW (2011); CHOICES, VALUES, AND FRAMES (Daniel Kahneman & Amos Tversky eds., 2000).

105 THE FEDERALIST NO. 10 (James Madison).

106 HENRY ADAMS, THE EDUCATION OF HENRY ADAMS 7 (Modern Library 1931) (1918).

107 For a history of the idea of confirmation bias, for example, see Raymond S. Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, 2 REV. GEN. PSYCHOL. 175, 176–77 (1998). Confirmation bias applies irrespective of the truth or falsity of the belief. *Id.* at 188 ("Not only can it contribute to the perseverance of unfounded beliefs, but it can help make beliefs for which there is legitimate evidence stronger than the evidence warrants."). Leon Festinger's work on cognitive dissonance and rationalization dates to the mid-twentieth century. *See* LEON FESTINGER, A THEORY OF COGNITIVE DISSONANCE (1957).

108 *See* McKew, *supra* note 103.

limit information flows and homogenize (ideologically) social networks.[109] Where Americans once relied on a few sources of curated news, on the internet they are now confronted with vast amounts of uncurated information presented as "news." Human nature reacts to this not only by selecting information sources that feed their biases; in addition, Twitter, Facebook, and other platforms employ algorithms that amplify those biases in ways they never see.[110] In this way, digital communities accelerate the effects of confirmation bias,[111] and feed the increasingly segmented cultural identities that shape our politics, and our receptivity to new information about risk.[112] Thus, for example, Trump loyalists and Democratic Party loyalists hold not only different values, but also diametrically opposed beliefs about what is true over a wide variety of subjects.[113] Marketing professionals have long exploited these biases. Policy activists and interest groups (including environmental NGOs) are now beginning to do so as well: that is, to employ data analytics to take advantage of these characteristics of digital and social media platforms, in order to better test the appeal and effectiveness of political messages to specific audiences.[114] These sophisticated message-targeting efforts may explain why voter polarization apparently increases with voter engagement in politics and policy debate, implying that activists can drive polarization among the rank and file.[115] Thus, digital connectedness and polarization may feed each other, and the emotional intensity characteristic of high-profile conflicts over proposed energy projects, including the afore-

109 ELI PARISER, THE FILTER BUBBLE (2011).

110 *See id.*

111 *See* Nickerson, *supra* note 107, at 176–77 (discussing the history of confirmation bias and how it has changed); *see also* Tomas Chamorro-Premuzic, *How the Web Distorts Reality and Impairs Our Judgment Skills*, GUARDIAN (May 13, 2014), https://www.theguardian.com/media-network/media-network-blog/2014/may/13/internet-confirmation-bias.

112 *See* MARY DOUGLAS & AARON WILDAVSKY, RISK AND CULTURE 2 (1982) ("Fear of risk, coupled with the confidence to face it, has something to do with knowledge and something to do with the kind of people we are."); Dan M. Kahan & Donald Braman, *Cultural Cognition and Public Policy*, 24 YALE L. & POL'Y REV. 149, 150 (2006) (proposing that individuals have different ways of evaluating risk).

113 *See* Bobby Azarian, *An Analysis of Trump Supporters Has Identified 5 Key Traits*, PSYCHOL. TODAY (Dec. 31, 2017), https://www.psychologytoday.com/us/blog/mind-in-the-machine/201712/analysis-trump-supporters-has-identified-5-key-traits (suggesting reasons why Trump voters accept the President's demonstrably false statements); Lauren Griffin & Annie Neimand, *Why Each Side of the Partisan Divide Thinks the Other Is Living in an Alternate Reality*, CONVERSATION (Jan. 20, 2017), https://theconversation.com/why-each-side-of-the-partisan-divide-thinks-the-other-is-living-in-an-alternate-reality-71458.

114 DAVID KARPF, ANALYTIC ACTIVISM 2 (2017) (noting that interest groups and policy advocates are utilizing social media to spread their messages).

115 *See Political Polarization in the American Public, Section 1: Growing Ideological Consistency*, PEW RES. CTR. (June 12, 2014), http://www.people-press.org/2014/06/12/section-1-growing-ideological-consistency/#interactive; *see also* Geoffrey C. Layman et al., *Activists and Conflict Extension in American Party Politics*, 104 AM. POL. SCI. REV. 324, 324–27 (2010) (describing how party activists play a leading role in moving party rank and file away from the ideological middle and toward the poles—a process the authors call "conflict extension").

mentioned battles over the Cape Wind project, fracking, smart meters, and the Keystone XL and Dakota Access pipelines.[116]

In order to understand how these centrifugal forces are influencing the politics of entry into energy markets, this analysis examined closely *how* NGOs oppose the siting of energy projects in the twenty-first century.

II. NGO DATA SET AND EXPECTATIONS

A. *The NGO Data Set*

To build the data set on which this analysis is based, research assistants at the University of Texas assembled information about national and local NGOs[117] that actively opposed the siting of the following types of energy projects in the twenty-first century[118]: oil and gas production operations, liquefied natural gas (LNG) terminals, oil and gas pipelines, fossil-fueled power plants, electric transmission lines, wind farms (onshore and offshore), solar farms (photovoltaic and concentrated solar), nuclear power plants, and smart meters.[119] The energy project types were selected because new project proposals of these types are or were, during the study period, sufficiently numerous or common to provoke consistent local opposition.[120] For each project type, research assistants assembled two data sets: one consisting of information about NGOs opposing proposed projects of that type, and another consisting of information about the proposed projects the NGOs opposed.

116 *See supra* notes 27–36 and accompanying text.

117 In fact, the data set includes NGOs that claim international reach, national reach, and multistate/regional reach, all of which we classified under the label "national" on the grounds that they were *not* organized around opposition to a specific project or protection of a single environmental resource. Local and state NGOs, whose mission is to fight a specific local project or projects, or to protect a specific local resource, were classified as "local" in this analysis.

118 More precisely, the study period comprises the years 2000–2017, when data gathering ended. That is, researchers attempted to identify all NGOs that were active opponents of one of the energy project types during the study period. Some of the NGOs in the data set are now defunct, the projects they opposed having been built or canceled. Most continue to exist in some form.

119 For purposes of this analysis, defining NGO opposition to a particular "energy project" was relatively straightforward in all but two of our project categories. For oil and gas development and smart meters, respectively, it would be impractical to treat each smart meter or each oil or gas well as an individual project; nor did NGOs opposing those developments treat them that way. Rather, in those cases we defined "projects" to be the introduction of oil and gas production or smart meters to a particular geographic area. Thus, the roll out of smart meters by Pacific Gas & Electric in Marin County, California, was treated as a single project. Similarly, the introduction of fracking to Tioga County, Pennsylvania, was treated as a single project.

120 Thus, for example, hydroelectric projects and new offshore oil projects were excluded from this analysis because very few new projects in these categories have gone through siting processes in the twenty-first century.

Both data sets were assembled initially using web-available information (culled from NGO web sites and Facebook pages), supplemented by searches of legal (both administrative and judicial) and registered lobbyist databases. For the NGO data set, researchers' initial task was to identify NGOs whose missions included some form of organized opposition to our sample project types during the study period. This suggests a few important caveats when working with the data. First, the data set does not necessarily reflect the distribution of public opinion about energy projects. It excludes groups organized to support energy projects, including so-called "astroturf" groups[121] created to lobby on behalf of their projects.[122] Second, the data may also understate the number of opposition NGOs that existed during the study period, because data gathering took place during the 2016 and 2017 period. Therefore, it is possible that researchers could have missed information about NGOs that opposed energy projects within our study period if the NGO disbanded, and left no online record of its presence prior to 2016, and never participated in legal proceedings.[123]

Third, the data may be unrepresentative of public opinion because some interests never form groups. If political activity is the sum of the various vectors of interest group pressure,[124] that underrepresentation could act as a

121 Astroturf groups are styled as grassroots citizens groups but are in fact organized and/or funded by pro-development interests. The label "astroturf" is intended to denote fake grassroots organizations. *Astroturfing*, TAEGAN GODDARD'S POL. DICTIONARY, http://politicaldictionary.com/words/astroturf/ (last visited Oct. 24, 2019).

122 Because energy technologies compete with one another in the market, we also considered the possibility that NGOs in our data set might be funded by competitors. There have been news reports of Koch Brothers funding antiwind organizations, and Russian and Saudi funding of antifracking activism. *See* John Carney, *Matt Damon's Anti-Fracking Film Backed by OPEC Member*, CNBC (Sept. 28, 2012), https://www.cnbc.com/id/49218229; Keith Harrington, *Koch Brothers Declare War on Offshore Wind*, GRIST (July 16, 2011), http://grist.org/wind-power/2011-07-14-koch-brothers-declare-war-on-offshore-wind/; Matthew Sheffield, *Is Putin Funding Anti-Fracking Groups? Republicans Think so—and So Did Hillary Clinton*, SALON (July 16, 2017), https://www.salon.com/2017/07/16/is-putin-funding-anti-fracking-groups-republicans-think-so-and-so-did-hillary-clinton/. We found no evidence of such industry funding of NGOs in our sample, but recognize that it could be a driver of opposition in some cases.

123 For example, it is conceivable that once-active local antifracking NGOs in New York disbanded after the state banned fracking statewide in 2013. Similarly, if a particular NGO opposing a specific project removed its web presence before 2016 after stopping a project or failing to stop it, that NGO may be omitted from this data set. Or, as NGOs evolve and change names and missions, it is possible that researchers could have missed information about earlier NGO incarnations and their activities. Finally, the project data sets were built initially from the NGO data set; until researchers complete supplemental work to fill out the project data sets, it is possible that the data sets omit noncontroversial projects (those that attracted no NGO opposition) but are otherwise within our selected technologies and date range.

124 This view of the policy process was known as "pluralism theory" within the political science literature. *See, e.g.*, DAVID B. TRUMAN, THE GOVERNMENTAL PROCESS 45–47, 505 (Greenwood Press 1981) (1951) (explaining policy as the product of interest group pressure).

probusiness bias in the siting process.[125] On the other hand, scholars challenge some elements of the business dominance hypothesis, suggesting that for high-salience issues the policy process tends to be much more majoritarian,[126] even when the majority view contradicts the preferences of business.[127] That is, even if new NGOs do not form, politicians or extant NGOs may represent otherwise latent interests, even mobilizing those mass interests in their absence.[128] Indeed, some scholars explain social movement NGOs as a reaction to the exclusion of a group or interest from the dominant power structure, partly contradicting the hypothesis that mass interests are systematically underrepresented by interest groups.[129] In any case, for all

125 Both the sociological and economic wings of political science embraced this business dominance hypothesis in the 1950s and 1960s. Among the political sociologists, see, for example, CHARLES E. LINDBLOM, POLITICS AND MARKETS 171 (1977) (chronicling business' resource advantages over other interest groups in the policy process); E.E. SCHATTSCHNEIDER, THE SEMISOVEREIGN PEOPLE 34–35 (1960) ("The flaw in the pluralist heaven is that the heavenly chorus sings with a strong upper-class accent."). Among political economists, see, for example, MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION 141–48 (2d ed. 1971) (explaining probusiness bias in the policy process as the product of individual incentives for (or against) interest group formation).

126 Much of the history of American regulation has been one of "republican moments"—instances in which the broad interest in a problem has overcome powerful, organized interests to produce national legislative victories. This terminology comes from James Gray Pope, *Republican Moments: The Role of Direct Popular Power in the American Constitutional Order*, 139 U. PA. L. REV. 287, 310–13 (1990). For applications of this idea to environmental and other forms of regulation, see Anthony Downs, *Up and Down with Ecology—the "Issue-Attention" Cycle*, 28 PUB. INT. 38, 39–41, 43–44 (1972) (explaining the "issue attention cycle" and its application to environmental concerns); Daniel A. Farber, *Politics and Procedure in Environmental Law*, 8 J.L. ECON. & ORG. 59, 60 (1992) (applying this idea to environmental law); David B. Spence, *A Public Choice Progressivism, Continued*, 87 CORNELL L. REV. 397, 436 (2002) (discussing "republican moments" and major regulatory legislation).

127 *See* KEN KOLLMAN, OUTSIDE LOBBYING 14 (1998) (finding that direct lobbying in the face of public opinion opposition has little effect); MARK A. SMITH, AMERICAN BUSINESS AND POLITICAL POWER 13 (2000) (finding that when business interests are united in actively supporting a policy proposal the Congress is *less likely* to accede to their wishes); Benjamin I. Page et al., *What Moves Public Opinion?* 81 AM. POL. SCI. REV. 23, 37 (1987) (explaining how business lobbying via media advocacy more often has counterproductive effects). Interestingly, our database demonstrates that local opposition groups do form frequently. Despite that fact, to oppose new energy projects, a recent survey of public attitudes toward fourteen energy projects found that proximity to proposed projects was not associated with an increase in opposition to the project. David M. Konisky et al., Examining the Role of NIMBYism in Public Acceptance of Energy Infrastructure (Aug. 14, 2018) (unpublished manuscript) (on file with author).

128 *See* Pope, *supra* note 126, at 310–11.

129 *See* Michael Lipsky, *Protest as a Political Resource*, 62 AM. POL. SCI. REV. 1144, 1144 (1968) (attributing protest to systematic power biases against the protesting population); *see also* Peter K. Eisinger, *The Conditions of Protest Behavior in American Cities*, 67 AM. POL. SCI. REV. 11, 18 (1973) (making the same point); William A. Gamson, *Stable Unrepresentation in American Society*, AM. BEHAV. SCIENTIST, Nov.–Dec. 1968, at 15, 18–20 (mobilization is triggered by exclusion from the power structure).

these reasons our numerical count of NGOs should not be taken as necessarily representative of public opinion toward the energy projects in question.

Finally, in the project data set the term "project" means a proposal to build a particular facility of a given type, such as a power plant (for example, the Cape Wind project) or pipeline (such as the Dakota Access Pipeline). Researchers did not produce a "project" list for oil and gas operations (fracking) or for smart meters, since opposition to those technologies focused not on individual installations but on the introduction of these technologies to a particular geographic—for example, the introduction of smart meter technology into Marin County, California, or the introduction of fracking to the town of Denton, Texas. Also, for certain project types, particularly transmission lines and pipelines, only major projects were considered.[130]

These caveats aside, the data set is intended to provide a snapshot of the set of organized NGOs that form to oppose energy projects. Table 2 summarizes basic characteristics of the data set. The data comprise more than four hundred NGOs and more than two hundred projects.

TABLE 2: NGOs AND PROJECTS IN DATA SET, 2000–17

Facility Type	No. of International or National NGOs	No. of State or Local NGOs	No. of Projects
Oil and Gas Production (Fracking)	20	73	N/A
Pipelines	30	49	39
LNG Terminals	30	37	14
Fossil-fueled power plants	8	48	93
Transmission lines	16	49	64
Wind Farms	16	66	53
Solar Farms	8	38	42
Nuclear power plants	9	17	18
Smart Meters	3	17	N/A

Clearly, some technologies incited more organized group opposition than others during the study period. We might hypothesize that the raw numbers in Table 2 ought to reflect some combination of the scale of the industry (number of projects) and the strength of public antipathy to the industry. The first four rows of the table reflect the strength of public opposition to fossil fuel infrastructure, and the increasingly organized national effort over the study period to restrict its growth. And the large number of groups formed to oppose fracking is likely a function of the hundreds of communities into which the industry ventured during the study period and the strength of public concern about the industry. By the same

130 Major transmission projects were defined according to length and voltage; major pipelines were defined according to their interstate nature and volume.

token, it is apparent from the table that other types of energy projects attract significant amounts of NGO opposition as well; wind farms and transmission lines, for example, triggered as much opposition by this measure as several of the fossil fuel project types.

B. Organizing the Data: The Logic of Opposition

1. Tactical Choices

NGOs opposing these energy projects have a menu of possible tactical approaches to choose from, including both inside strategies (such as direct participation in the siting proceeding, or hiring a lobbyist) and outside strategies (such as mobilizing others to pressure decisionmakers). Researchers organized NGO tactical choice data into four categories: (1) *legal intervention (litigation)* to challenge siting decisions made by regulators, including both formal intervention as a party to administrative siting proceedings and judicial challenges to siting decisions; (2) *political mobilization*, including both formal lobbying of government decisionmakers and campaigns to mobilize the public to comment on the record in agency proceedings; (3) direct *protest*, such as marches and sit-ins; and (4) boycotts or other *economic pressure*. Hypotheses *H1–H3* reflect expectations derived from prior research about how NGOs' tactical choices may be influenced by NGO-specific variables, and energy-project-type variables.

> *H1: Play to your strengths.* National NGOs will tend to employ tactics consistent with their resource strengths (expertise-lobbying, litigation science, etc.), while local NGOs seek "whatever works."

National NGOs' tactical choices ought to be more fixed or immutable than those of local NGOs. National NGOs' tactical choices reflect more fundamental and considered strategic choices about the best way to realize institutional goals, and the resource allocation and staffing decisions that result from those choices. We might expect local groups, by contrast, to take a more instrumental or ad hoc approach to tactics, particularly if they formed in response to local concern over a specific energy project proposal.[131] Local groups might also face more severe resource constraints than national NGOs; they may lack the resources to formally litigate or lobby decisionmakers directly, and may be relegated to grassroots methods: protests, showing up at public hearings, and information dissemination campaigns intended to build support for their cause. Furthermore, the local costs of a particular project may not loom as large to state and national regulators as they do to locals.

131 The Natural Resources Defense Council is more likely to use litigation, and Greenpeace is more likely to organize direct protests and boycotts, than most other national environmental groups. Indeed, NRDC describes itself as the "first litigation-focused" environmental NGO. *Litigation*, NRDC, https://www.nrdc.org/about/litigation (last visited Sept. 9, 2019). Similarly, Greenpeace describes itself as an organization that employs protests to achieve its aims. *About*, GREENPEACE, https://www.greenpeace.org/usa/about/ (last visited Sept. 9, 2019).

This might steer local NGOs toward building and mobilizing a more numerous and geographically broader set of allies so as to sway state or national regulators.

> *H2: Horizontal and vertical interconnectedness.* In a digitally connected world, NGOs' tactical choices will be influenced by successful tactics that other groups employ, or by assistance, coordination, and direction offered by national NGOs.

Digital connectedness facilitates vertical and horizontal relationships between NGOs that evolve from overlapping social movements that change over time.[132] Local groups may partner with other local groups, or seek assistance from national environmental groups; or national groups may bear the cost of organizing local opposition in order to further some national objective. For example, both National Wind Watch[133] and the Natural Resources Defense Council provide assistance to local groups that oppose wind farms and fracking, respectively.[134] While the heterogeneity of the environmental movement makes these sorts of collaborations delicate,[135] we nevertheless expect intergroup relationships to influence NGOs' tactical choices.

> *H3: NGOs tailor tactics to the regulatory decision environment.* NGOs' tactical decisions are influenced by their estimate of the likelihood of success under the particular siting regime.

The regulatory decision environment can also push NGOs toward particular tactical and issue choices. If NGOs mobilize based upon expected value

132 *See* Doug McAdam & Hilary Schaffer Boudet, Putting Social Movements in Their Place 177–78 (2012) (exploring intergroup coordination in opposition to LNG import terminals). In the literature on "social movements," that term subsumes not only local groups opposing particular land uses but also much broader social and political "-isms" like consumerism, environmentalism, and fascism, and seeks to understand why these social phenomena (movements) arise in some social, economic, and political contexts (geographically and over time), and not others.

133 National Wind Watch's web site offers a variety of technical and non-technical publications to provide support in opposition to what it calls "industrial wind" installations. NAT'L WIND WATCH, https://www.wind-watch.org/ (last visited Sept. 9, 2019).

134 *See* Alexandra Zissu, *How to Tackle Fracking in Your Community*, NRDC (Jan. 27, 2016), https://www.nrdc.org/stories/how-tackle-fracking-your-community.

135 For example, in opposing the Dakota Access Pipeline, the Sioux Tribe's objections were based on environmental justice concerns, not on broader opposition to pipelines or fossil fuels, despite the widespread support it received from anti-fossil-fuel groups. Nathan Rott & Eyder Peralta, *In Victory for Protestors, Army Halts Construction of Dakota Pipeline*, NPR (Dec. 4, 2016), http://www.npr.org/sections/thetwo-way/2016/12/04/504354503/army-corps-denies-easement-for-dakota-access-pipeline-says-tribal-organization; *see also* Andrew J. Hoffman & Stephanie Bertels, *Who is Part of the Environmental Movement?*, *in* GOOD COP/BAD COP 48, 61–62 (Thomas P. Lyon ed., 2010) (drawing distinctions between "bright green[ ]" groups that collaborate with business, and "dark green[ ]" groups that do not); Mark Van Putten, *Foreword: What Do Environmental Groups Want?*, *in* GOOD COP/BAD COP, *supra*, at xv, xvi–xviii (exploring differences between decentralized national membership organizations with local chapters, like Sierra Club or National Wildlife Foundation, and more centralized "grasstops" organizations like Natural Resources Defense Council and Environmental Defense Fund, that rely on a few large donors).

calculations, they ought to be influenced by their perception of the degree to which the decision process is stacked for or against them. If meaningful participation in the siting process requires technical expertise (as with nuclear licensing, for example) the NGO lacks, it may opt out of direct participation in favor of protests or boycotts. If the agency's primary historical mission is to ensure a reliable energy supply (such as a state oil and gas agency or public utility commission), an environmental NGO may eschew formal intervention in the siting proceeding (or judicial review of the agency decision) as futile; by contrast, the same NGO may perceive a greater likelihood of success participating in an ancillary environmental permitting proceeding for the same project, since the regulator's statutory mission makes it more receptive to the NGO's arguments.[136]

2. Issue Choices

Researchers grouped the arguments NGOs raise in opposition to energy projects into four categories: (1) *risks to human health*; (2) nonhealth *risks to the environment*; (3) *economic* arguments (reduced property values or other economic costs); and (4) *environmental justice* arguments.[137] Hypotheses *H4–H7* reflect expectations derived from prior research about how NGOs' issue choices will vary across energy project-types and siting regimes.

> *H4a: Health risk arguments ought to track actual risks.* NGO issue arguments about health and environmental risks ought to track the actual risks of the project they oppose.
> *H4b (alternate): Health risk arguments ought to track perceived risks.* NGO issue arguments about health and environmental risks ought to track the perceived risks of the project they oppose.

Some project types in the data set entail more risks to health than others. Coal-fired power plant emissions kill tens of thousands of Americans prematurely each year.[138] Natural-gas-fired power plants emit greenhouse gases, but produce a small fraction of coal's health risks.[139] Wind and solar

136 There is a well-established literature that examines these delegation decisions, and hypothesizes that elected officials choose delegates strategically in this way. *See, e.g.*, David Epstein & Sharyn O'Halloran, *Administrative Procedures, Information, and Agency Discretion*, 38 AM. J. POL. SCI. 697, 698 (1994); Arthur Lupia & Mathew D. McCubbins, *Designing Bureaucratic Accountability*, LAW & CONTEMP. PROBS., Winter 1994, at 91, 96–97; Jonathan R. Macey, *Organizational Design and Political Control of Administrative Agencies*, 8 J.L. ECON. & ORG. 93, 94, 99–108 (1992); Jonathan R. Macey, *Separated Powers and Positive Political Theory: The Tug of War over Administrative Agencies*, 80 GEO. L.J. 671, 672–73 (1992). For example, in energy permitting the Texas and Oklahoma legislatures delegated oil and gas permitting to an oil and gas commission; in New York and Pennsylvania, the legislatures delegated permitting to the state environmental agency.

137 Safety concerns were grouped in the "risks to human health" category.

138 *See* Paul R. Epstein et al., *Full Cost Accounting for the Life Cycle of Coal*, 1219 ANNALS N.Y. ACAD. SCI. 73, 91 (2011) (assessing the costs associated with coal production in the hundreds of billions, much of it associated with premature deaths).

139 *See, e.g.*, Lu Chen et al., *Comparative Human Toxicity Impact of Electricity Produced from Shale Gas and Coal*, 51 ENVTL. SCI. & TECH. 13018, 13025 (2017) (documenting disparate

power have no emissions, and pose almost no risk to human health at the power generation stage.[140] We should expect, then, that the projects that produce the largest risks to human health will generate most opposition framed around risks to human health. In that case, we might imagine a hierarchy in which coal-fired power plants and oil and gas operations invite the most risk-based opposition, and renewable power stations, transmission lines, and smart meters trigger the least amount of risk-based opposition.

On the other hand, we also know from the large literature on risk regulation that popular perceptions of risk deviate from quantifiable risks in systematic ways, and that the latter can drive opposition to unwanted land uses.[141] Paul Slovic's psychometric paradigm predicts that inaccurate risk estimates will be a function of the magnitude of the risk in question (undiscounted by its probability) combined with its unfamiliarity,[142] and he cites nuclear power plants as an example of a technology whose perceived risks greatly exceed its actual risks to human health.[143] Similarly, one of the early heuristics identified by Daniel Kahneman and Amos Tversky was humans'

impacts from discharges of toxics over the life cycle of coal and natural gas for use as electricity fuels); Nicholas Z. Muller et al., *Environmental Accounting for Pollution in the United States Economy*, 101 AM. ECON. REV. 1649, 1667–69 (2011) (estimating the mortality and morbidity harm associated with coal combustion at more than fifty times that of natural gas combustion).

140 Solar power entails significant externalities upstream of the power generation stage. Mining silicon or other minerals used in photovoltaic cells presents inhalation and other hazards to miners and neighbors, similar to other mining operations. The production of PV cells uses hazardous chemicals and produces hazardous wastes. *See* SILICON VALLEY TOXICS COAL., TOWARD A JUST AND SUSTAINABLE SOLAR ENERGY INDUSTRY 25–26 (2009), http://svtc.org/wp-content/uploads/Silicon_Valley_Toxics_Coalition_-_Toward_a_Just_and_Sust.pdf (summarizing these externalities). However, much of the upstream supply chain for solar cells and panels occurs outside the United States.

141 *See, e.g.*, U.S. ENVTL. PROT. AGENCY, UNFINISHED BUSINESS: A COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PROBLEMS OVERVIEW REPORT, at xix–xx (1987) (detailing the gap between expert and lay assessments of environmental risks); Chauncey Starr, *Introductory Remarks*, *in* SOCIETAL RISK ASSESSMENT 2, 2–3 (Richard C. Schwing & Walter A. Albers, Jr., eds., 1980) (describing public misperceptions of risk); Stanley Kaplan & B. John Garrick, *On the Quantitative Definition of Risk*, 1 RISK ANALYSIS 11, 12 (1981).

142 Paul Slovic, *Perception of Risk*, 236 SCIENCE 280, 281–83 (1987); Paul Slovic et al., *Facts and Fears: Understanding Perceived Risk*, *in* SOCIETAL RISK ASSESSMENT, *supra* note 141, at 181, 181–98 (Richard C. Schwing & Walter A. Albers, Jr., eds., 1980) (describing public misperceptions of risk).

143 Slovic, *supra* note 142, at 281, 284–85; *see also* Colin F. Camerer, *Prospect Theory in the Wild: Evidence from the Field*, *in* CHOICES, VALUES, AND FRAMES, *supra* note 104, at 288 (describing the problem of loss aversion); Daniel Ellsberg, *Risk, Ambiguity, and the Savage Axioms*, 75 Q.J. ECON. 643, 657 (1961) (describing the problem of ambiguity aversion). Subsequent analyses have supported this view. MASS. INST. TECH., THE FUTURE OF NUCLEAR POWER 9–10 (2003), http://web.mit.edu/nuclearpower/; *see also* JOHN M. DEUTCH ET AL., MASS. INST. TECH., UPDATE OF THE MIT 2003 FUTURE OF NUCLEAR POWER 8 (2009) (documenting a "risk premium" paid by nuclear power owing to the discrepancy between actual and perceived risk).

heightened sensitivity to the risk of loss,[144] and loss aversion can be triggered whenever a new (perceived) risk is introduced to the neighborhood in the form of a proposed energy project. All of which suggests an alternative hypothesis: namely, that risk-based appeals will be more commonly made in opposition to projects for which the *perceived* risks to human health are greatest, such as LNG facilities (fears of tanker explosions) or nuclear power plants (fears of meltdowns).

As a caveat to *H4b*, however, we might expect national NGOs to be less likely than local NGOs to appeal to misperception of risk. As repeat players in siting conflicts and larger policy debates, national NGOs may be less likely to embrace risk-based arguments that lack a scientific basis, for fear of losing credibility in subsequent contests over energy projects. Local groups aiming to stop a single project may be more willing to do so if those arguments resonate with voters.

H5: Environmental risk arguments ought to be more broadly distributed across project types.

Virtually every project type in the data set has some sort of environmental impact. Power plants and LNG facilities with wastewater discharges can disrupt fisheries or broader aquatic ecosystems; and downwind deposition of their air emissions can harm animal habitats and fresh water systems. Wind farms, power lines, and concentrated solar farms pose a risk to birds, for example.[145] Because of their large lateral footprint and desert location, solar farms may also disrupt ground species' habitats.[146] It is safe to say that NGOs opposing every project type in the data set (with the possible exception of smart meters) ought to be able to raise some sort of argument based on the actual risk the project poses to nonhealth environmental values.

H6: Environmental justice arguments may track the proximity of projects to disadvantaged and minority communities.

Extensive prior scholarship suggests that energy facilities tend to be sited in disadvantaged communities.[147] However, depending upon why that is, we

144 Daniel Kahneman & Amos Tversky, *Choices, Values, and Frames*, 39 AM. PSYCHOLOGIST 341, 342 (1984) (illustrating individuals' stronger preference for avoiding losses than for realizing equivalent gains). This result may be an artifact of the need for early humans to preserve gains and to be vigilant against threats to those gains.

145 Concentrated solar power stations kill birds that fly into the path of the solar energy diverted by mirrors to the generating unit. *See* Morgan Walton, Note, *A Lesson from Icarus: How the Mandate for Rapid Solar Development Has Singed a Few Feathers*, 40 VT. L. REV. 131, 132 (2015).

146 *Id.* at 137.

147 ROBERT D. BULLARD, DUMPING IN DIXIE, at xiv (1990) (chronicling the disparate impact on poor, black communities of hazardous waste facility siting in the South). The scholarly literature lagged the environmental justice movement on the ground, which many trace to a dispute over hazardous waste disposal in Warren Country, North Carolina, in 1983, or to a 1987 report by the United Church of Christ identifying the racial disparities in exposure to toxic chemicals. *See* DORCETA E. TAYLOR, TOXIC COMMUNITIES 19 (2014) (describing the two reports and the history surrounding them).

may or may not see environmental justice arguments raised in our data. Different strains of the literature attribute this disparity to (a) conscious or unconscious racist motives, reflected in actions like zoning choices made by government,[148] (b) a poverty bias in the regulatory siting process, where land values in poor neighborhoods are correlated with race,[149] or (c) the relative inability of minority and poor communities to mount effective political and legal opposition, since political activity levels tend also to be correlated with race and poverty.[150] This last explanation suggests that disadvantaged communities may be underrepresented by NGOs, and unrepresented in siting processes for energy facilities. Nevertheless, for NGOs opposing projects in disadvantaged communities, environmental justice arguments can be a lever in litigation as well as a tool of mobilization.[151]

H7: NGOs tailor issue choices to the regulatory decision environment.

Finally, as with tactical choices, there are reasons to expect systematic differences between the risk-based arguments embraced by national versus local groups. In the context of siting regimes governed by a broad "public interest" decision criterion (like certificate of need proceedings), any and all

148 *E.g.*, TAYLOR, *supra* note 147, at 147–91; Craig Anthony Arnold, *Planning Milagros: Environmental Justice and Land Use Regulation*, 76 DENV. U. L. REV. 1, 3–4 (1998).

149 Tracy Yandle & Dudley Burton, *Reexamining Environmental Justice: A Statistical Analysis of Historical Hazardous Waste Landfill Siting Patterns in Metropolitan Texas*, 77 SOC. SCI. Q. 477, 488–89 (1996) (finding correlations for poverty but not racial minorities at the time of siting); *see also* Douglas L. Anderton et al., *Environmental Equity: The Demographics of Dumping*, 31 DEMOGRAPHY 229, 243 (1994); Vicki Been & Francis Gupta, *Coming to the Nuisance or Going to the Barrios? A Longitudinal Analysis of Environmental Justice Claims*, 24 ECOLOGY L. Q. 1, 33–34 (1997) (reaching similar conclusions); Lynn E. Blais, *Environmental Racism Reconsidered*, 75 N.C. L. REV. 75, 84–85 (1996).

150 *See, e.g.*, TAYLOR, *supra* note 147, at 81–82 (describing minority communities as a "path of least resistance" for project proponents); James T. Hamilton, *Testing for Environmental Racism: Prejudice, Profits, Political Power?*, 14 J. POL'Y ANALYSIS & MGMT. 107, 110 (1995); Yandle & Burton, *supra* note 149, at 490 (finding that increasing percentages of racial minorities in the neighborhood in the years after facility siting); Been & Gupta, *supra* note 149, at 33 (reaching the same conclusion); *see also* Kishore Gawande & Hank Jenkins-Smith, *Nuclear Waste Transport and Residential Property Values: Estimating the Effects of Perceived Risks*, 42 J. ENVTL. ECON. & MGMT. 207, 209 (2001).

151 A Clinton administration executive order mandated that agency environmental reviews include analyses of the particular impacts of proposed actions on minority communities. Exec. Order 12,898, § 1-102(b), 3 C.F.R. 859, 859 (1995), *reprinted as amended in* 42 U.S.C. § 4321 (2012). This may offer NGOs representing poor or minority communities another basis for opposition to energy projects, and we might therefore expect to see environmental justice arguments raised more often by groups using litigation; on the other hand, many scholars reviewing these environmental justice reviews conclude that they exert relatively little effect on outcomes. *See* Sheila R. Foster, *Meeting the Environmental Justice Challenge: Evolving Norms in Environmental Decisionmaking*, 30 ENVTL. L. REP. 10,992, 10,992 (2000); Uma Outka, Comment, *Environmental Injustice and the Problem of the Law*, 57 ME. L. REV. 209, 258 (2005). During the Obama administration, the EPA tried to reinvigorate environmental justice analysis, but that effort will undoubtedly be met with little enthusiasm by the Trump administration.

issue arguments might resonate with decisionmakers. These would include (a) when the introduction of a new power plant or power line near a residential neighborhood, which might reduce residential property values, (b) when the issuance of a license confers the power of eminent domain upon the licensee (as with natural gas pipelines and transmission lines),[152] or (c) when the new energy project will be paid for by ratepayers through regulated rates. By contrast, we might expect NGOs to employ narrower issue arguments in the context of ancillary approvals governed by narrower statutory criteria, such as water quality certificates issued under the Clean Water Act.[153]

III. Results: Popular Mobilization, Risk, and Digital Connectedness

Tables A-1 and A-2 (in Appendix A) summarize the NGO data. A complete analysis of all the trends in the data is beyond the scope of this paper, but they do illuminate several of the issues discussed in Part III. Specifically, three patterns in the data seem consistent with the notion that polarization and interconnectedness make twenty-first-century siting conflicts frequent and intense. First, the NGOs in our data set rely most heavily on mass mobilization efforts built around risk-based arguments (*H1*, *H4*, and *H5*); this holds true irrespective of project type. The tactics and issue arguments contemplated by regulatory regimes—administrative or judicial litigation around the definition of the public interest or lobbying to change the law—are far less frequently used than risk-based, mass appeals. Second, a closer look at NGOs' health-risk-based appeals shows that local NGOs (but not national NGOs) often mobilize support around health risk appeals unsupported by the scientific literature (hypothesis *H4b*), thereby feeding misperceptions of risk. Third, there is evidence in the data of digital interconnectedness of NGOs, particularly in the tactical similarity between national and local groups' opposition to fossil fuel projects, but elsewhere as well. This may reflect the increased effectiveness of public influence strategies in an era of easy both horizontal and vertical communication between groups (*H1* and *H2*). This Part elaborates on each of these three patterns, in turn, and explores their broader implications.

A. Mass Mobilization Around Risk

Table A-1 indicates that NGOs routinely seek to mobilize mass publics to political action in opposition to energy projects; indeed, it is the only tool of opposition employed by majorities of NGOs in every project category.[154]

152 Indeed, NGOs have begun to challenge the use of eminent domain power by licensees on Fifth Amendment takings grounds, arguing that private investment in energy infrastructure is not a "public use." For a discussion of this argument, see James W. Coleman, *Beyond the Pipeline Wars: Reforming Environmental Assessment of Energy Transport Infrastructure*, 2018 Utah L. Rev. 119, 167.

153 For a discussion of these proceedings, see *supra* note 78 and accompanying text.

154 Researchers did not code the NGO as "mobilizing political opposition" from the mere existence of a website with an opposition slant. Almost all the NGOs in our database

NGOs regularly urge voters to submit on-the-record comments to regulatory agencies and legislators, to show up at public hearings, and the like. A typical NGO appeal stresses the need for decisionmakers to hear the concerns of NGO members and provides advice about how to submit letters or emails to decisionmakers. Unsurprisingly, we found that this form of mobilization is most common when decisions are pending before lead agencies like state PUCs and the FERC; it is less common for ancillary environmental approvals, other than state Clean Water Act section 401 certifications required for pipelines.[155] NGOs mobilized the public not only to persuade regulators, but also when elected officials considered changing the law in ways that might affect the probability that a project would move forward. This happened during the study period most often in connection with fracking regulation, when state legislatures intervened to either preempt or protect local bans on oil and gas production: two states legislatively preempted local fracking bans, forcing fracking on local governments that opposed it,[156] and two states imposed statewide bans, thereby preventing fracking in local communities that wanted it.[157] Several NGOs (particularly in Texas) urged opponents of

provided information to people about the projects they opposed. Only if they urged on the record participation in siting regimes were they coded as mobilizers of such action.

155 In the wake of the movements to oppose the Keystone XL and Dakota Access pipelines, NGO oppositions to pipelines have now become more systematic and organized, and include appeals to urge states to deny these Clean Water Act approvals. In New York State, where fracking is very unpopular, pipelines are described as carrying "fracked gas," and the regulators have begun to deny 401 certificates to pipelines. *See, e.g.*, Letter from Thomas Berkman, Deputy Comm'r & Gen. Counsel, N.Y. State Dep't of Envtl. Conservation, to Georgia Carter, Vice President & Gen. Counsel, Millenium Pipeline Co., and John Zimmer, Pipeline/LNG Mkt. Dir., TRC Environmental Corp. (Aug. 30, 2017), https://www.dec.ny.gov/docs/permits_ej_operations_pdf/valleydecltr.pdf (denying 401 certification for the joint Valley Lateral Project); *see also* Sierra Club v. U.S. Army Corps of Eng'rs, 909 F.3d 635, 645, 654 (4th Cir. 2018) (overturning the Corps decision to allow pipeline construction to proceed under a Clean Water Act section 401 nationwide permit, and requiring that the project secure an individual 401 permit from the Corps).

156 In 2015, Texas and Oklahoma each amended their oil and gas statutes to preempt local bans on fracking, after the City of Denton, Texas, had banned the industry by referendum. *See* Emily Atkin, *Fracking Bans are No Longer Allowed in Oklahoma*, THINK PROGRESS (June 1, 2015), https://thinkprogress.org/fracking-bans-are-no-longer-allowed-in-oklahoma-6bae827748a0/; Wade Goodwyn, *New Texas Law Makes Local Fracking Bans Illegal*, NPR (May 20, 2015), https://www.npr.org/2015/05/20/408156948/new-texas-law-makes-local-fracking-bans-illegal.

157 This is despite the fact that many of the types of energy projects in our database could be stopped by elected politicians. The Keystone XL and Dakota Access pipelines engaged Presidents Obama and Trump, who took responsibility for their respective approvals and disapprovals of these lines. In 2013, New York imposed an indefinite moratorium on fracking, after several municipalities in the southern tier of the state had passed ordinances welcoming the industry. *See* Thomas Kaplan, *Citing Health Risks, Cuomo Bans Fracking in New York State*, N.Y. TIMES (Dec. 17, 2014), https://www.nytimes.com/2014/12/18/nyregion/cuomo-to-ban-fracking-in-new-york-state-citing-health-risks.html. Maryland imposed its statewide ban in 2017. Jon Hurdle, *With Governor's Signature, Maryland Becomes Third State to Ban Fracking*, STATEIMPACT PA. (Apr. 4, 2017), https://stateimpact.npr.org/

fracking to contact their state legislators while these decisions were pending. Despite the force of these kinds of legislative interventions, very little of this political action we observed consisted of formal, direct lobbying of legislators.[158] Formal lobbying is relatively expensive, which may account for its sparse use; by contrast, mass mobilization is more inexpensive than ever in the digital age.[159]

Table A-2 reveals that much of this political action was built around risk-based messages. NGOs were more likely to feature health and environmental risk-based claims than claims about the economic or environmental justice impacts of energy projects. This generalization holds across all project types for environmental risks, and across all but three project types for health risks.[160] Much of the health risk messaging fit expectations. For example, coal-fired power plants present the largest risks to human health among our project types[161] by a considerable margin, and virtually every NGO opposing coal-fired power plants mobilized political action around issues like the direct health impacts of conventional air pollutant emissions (on mortality),[162] the effects of emissions on climate,[163] and the effects of emissions on

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pennsylvania/2017/04/04/with-governors-signature-maryland-becomes-third-state-to-ban-fracking/.

158 The federal government and a sizeable minority of states require lobbyists to register. A search of those databases revealed that only eleven of the more than four hundred NGOs in our database were, or had hired, registered lobbyists.

159 Our data may understate the amount of direct lobbying that occurs in two ways. First, some states do not require lobbyists to register, meaning that direct lobbying of state legislators may occur there in ways we did not detect. Second, in project categories in which local government action can stop or slow a project, direct lobbying of local government officials may happen in ways we did not detect. This would be true under state permitting regimes that specifically grant vetoes to local governments—some state siting regimes for pipelines and transmission lines, and regulation of fracking in some states. Moreover, lobbying may be the province of national groups like Sierra Club because they pursue a long-term, broad national policy agenda. These groups have both the expertise and staff to lobby formally. The Sierra Club is a registered federal lobbying organization, and spent several hundred thousand dollars lobbying Congress in 2016. *See Sierra Club*, OPENSECRETS, http://www.opensecrets.org/lobby/clientsum.php?id=D000000259&year=2016 (last visited Sept. 27, 2019) (reporting the Sierra Club's lobbying activity and spending in 2016).

160 Health risk arguments were more common than the non-risk-issue categories in every project category except solar power and transmission projects, where economic impact arguments were slightly more common than health risk claims.

161 *See* Muller et al., *supra* note 139, at 1669–70; *see also* Epstein et al., *supra* note 138.

162 *See, e.g.*, *Indiana Survey: Hoosiers Would Pull Plug on Duke Energy's Proposed Coal-Fired Power Plant in Edwardsport*, CITIZENS ACTION COAL. (Apr. 22, 2008), https://www.citact.org/indiana-survey-hoosiers-would-pull-plug-duke-energys-proposed-coal-fired-power-plant-edwardsport ("Four out of five Indiana residents . . . are concerned about the possible ill health effects—including asthma, heart problems and mental retardation in children—that could be experienced by you, your family members and others as the result of increased pollution from a new coal-fired power plant in Indiana.").

ecosystems.[164] Fracking engenders more dread than risk,[165] but it too produces significant externalities, and most of the groups that mobilized opposition did so around health and environmental risks: many concerned air and water contamination, but also seismicity and other impacts.[166] Similarly, NGOs opposing pipelines raised concerns about water pollution risks, such as pipeline leaks at river crossings; this also comports with the tactical choice to challenge Clean Water Act approvals for pipelines.[167]

The predominance of environmental risk arguments across all project categories also reflects the fact that there exist people everywhere who oppose changes to the environmental status quo. Putting aside risk perception mistakes, there is nothing irrational about wanting your local viewshed to remain unchanged or preferring to avoid even tiny increases in the risk of environmental harm, for example. Accordingly, in some of the project categories that pose few health risks, NGOs tended to mobilize around environmental risks instead. For example, the Sierra Club's California/Nevada Desert Committee, a local organization, broke with the national organization to oppose "industrial renewables" in the Mojave Desert, based on the threat solar projects posed to the desert tortoise and other species.[168] The predominance of risk-based arguments across all project categories may reflect local NGOs' efforts to find arguments that resonate with a broader audience, so as to grow the size of the opposition.

This focus on mass mobilization around risk is consistent with NGOs' interest in growing their numbers (in order to grow their influence) and the notion that risk-based arguments resonate with audiences that may have previously been unfamiliar with the NGOs' causes. By mobilizing people in this way, they can bring public pressure to bear on decisionmakers to stop disfavored projects. One might ask, then, why boycotts and protests were relatively infrequently used by the NGOs, given both the ease of mobilizing people around risk-based concerns and the prominence of high-profile

163 *See, e.g.*, *Carbon Pollution*, MO. COAL. FOR ENV'T (June 23, 2015), https://moenvironment.org/carbon-pollution/ ("[I]t is critical that Missouri shift our energy portfolio away from coal-fired energy generation to reduce our contribution to climate change.").

164 *See e.g.*, NAT'L PARKS CONSERVATION ASS'N, DARK HORIZONS: 10 NATIONAL PARKS MOST THREATENED BY NEW COAL-FIRED POWER PLANTS (2008), https://www.npca.org/resources/1507-dark-horizons-10-national-parks-most-threatened-by-new-coal-fired-power ("If we fail to stop this plan, our children and grandchildren will inherit national parks with sick and dying trees, parks with fish so laden with mercury that they are unsafe to eat, and parks where visitors cannot hike without risking an asthma attack.").

165 For a comprehensive comparison of the scientific literature and public opinion on risks associated with fracking, see DANIEL RAIMI, THE FRACKING DEBATE (2017).

166 In the fracking category, the most common health risk complaints were those associated with proximity to wells (e.g., burning eyes) and contaminated groundwater (e.g., carcinogens leaking into well water).

167 *See supra* note 155 and accompanying text (describing Clean Water Act challenges to pipeline siting).

168 *See* Renée Owens, *The Unpleasant Secrets of Clean Solar Energy*, DESERT REP. (Sierra Club Cal. & Nev. Desert Comm.), Dec. 2016, at 1, 8–9, http://www.desertreport.org/wp-content/uploads/2016/12/DR-Winter2016.pdf.

opposition movements such as those waged against the Dakota Access Pipeline.[169] Table A-1 shows that only in the pipeline category did the prevalence of boycotts or economic pressure rise to double digits (11%);[170] those were most frequently pushed by national NGOs (23%, as against 4% for local NGOs), and most of that was aimed at owners of the Keystone and Dakota Access Pipelines.[171] Protests—marches, public rallies, picketing, sit-ins—were only slightly more common. They were used mostly in the fossil fuel infrastructure categories (LNG, pipelines, fracking, and power plants),[172] but also by groups opposing solar power (mostly protests at the California capitol building against development of solar projects in the Mojave Desert). Even though nuclear power plants are large, capital-intensive, and long-lived investments that inspire dread,[173] few (8%) of the antinuclear NGOs in our data set urged or organized protests,[174] perhaps because most of the projects that were the object of NGO opposition during the study period were located adjacent to existing plants in neighborhoods already used to the presence of nuclear power, or because most never reached the construction stage.[175]

Despite their less frequent use, protests and boycotts can be seen as complements to NGOs' risk-based appeals to direct political participation. By attracting attention and amplifying public opposition, they exert indirect

169 In 2013, Sierra Club famously lifted its 120-year-old ban on civil disobedience to support the Keystone XL Pipeline protests. Lauren Feeney, *Why the Sierra Club Lifted Its Ban on Civil Disobedience to Protest Keystone XL Pipeline*, ALTERNET (Feb. 15, 2013), https://www.alternet.org/2013/02/why-sierra-club-lifted-its-ban-civil-disobedience-protest-keystone-xl-pipeline/.

170 The dearth of boycotts in our data may reflect that fact that they are difficult and expensive to monitor. If not managed well, they can engender sympathy for the object of the boycott.

171 Energy Transfer Partners (now Energy Transfer LP) owns the Dakota Access Pipe Line, as well as the Trans-Pecos Pipeline. *See Major Projects*, ENERGY TRANSFER, https://www.energytransfer.com/major-projects/ (last visited Sept. 27, 2019). In 2016 pipeline opponents boycotted a record label owned by the company's CEO, Kelcy Warren, and popular Texas musician Jimmy LaFave, who was dying of cancer at the time, provoking resentment among LaFave and his fans. *See* Kevin Curtin, *Playback: Sunday Morning Coming Down*, AUSTIN CHRON. (May 26, 2017), https://www.austinchronicle.com/music/2017-05-26/playback-sunday-morning-coming-down/ (quoting LaFave calling the social media attacks "a witch hunt gone wacko").

172 Majorities of NGOs in the LNG and pipeline project categories urged or organized protests, but the tactic also reached double-digit usage rates among groups opposing fossil-fueled power plants, fracking operations, and solar power.

173 *See supra* notes 142–43 and accompanying text.

174 There were protests against *existing* nuclear stations during the study period, with protestors urging their closure, particularly in more left-leaning states (California and New York). *See, e.g.*, Sean Emery, *Hundreds Protest near San Onofre Against Nuclear Energy*, ORANGE COUNTY REG. (Mar. 12, 2012), http://www.ocregister.com/2012/03/12/hundreds-protest-near-san-onofre-against-nuclear-energy/; Thomas C. Zambito, *Protestors Call for Shutdown of Indian Point*, J. NEWS (June 8, 2016), http://www.lohud.com/story/tech/science/environment/2016/06/08/protesters-call-shutdown-indian-point/85613178/.

175 Moreover, while almost twenty nuclear plants sought licensing during the study period, only four ever reached the construction stage (all in South Carolina and Georgia).

pressure on regulators. Indeed, many of the protests mounted by NGOs in our data set were aimed directly at the decisionmakers, as when antiwind protestors picketed a Department of Interior hearing on the Cape Wind project in Massachusetts,[176] or anti-fossil-fuel infrastructure protestors staged a sit-in at FERC offices in 2014.[177] Others were aimed directly at project sponsors, but in attention-grabbing ways, as when opponents of the pipelines urged the arrest of Energy Transfer LP's CEO Kelcy Warren.[178] By this same logic, we might have expected to see more environmental justice claims in the data, since they seemed to resonate with activists opposing both the Dakota Access Pipeline and the Cape Wind project. So it was surprising that so few NGOs in the data set featured claims about environmental justice (less than 10% in all but three project categories). It may be that minority communities are generally underrepresented within the set of organized NGOs,[179] or that many of the project types in our sample are typically located far from population centers.[180]

In any case, it seems among NGOs opposing energy projects in the twenty-first century, mass mobilization around project risks is the default strategy. This makes sense. Not only do risk-based appeals grab voters' attention, mass mobilization of political action (and protests) is a particularly efficient method of opposition in the digital era. Prior to the era of instant digital communication, this sort of mobilization would have involved group meetings face to face, or perhaps a telephone tree, or even letter writing. Now it is instantaneous and virtually costless.

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176 Jay Lindsay, *Filmmakers Take On Cape Wind Saga in 'Cape Spin,'* SAN DIEGO UNION-TRIB. (July 31, 2011), https://www.sandiegouniontribune.com/sdut-filmmakers-take-on-cape-wind-saga-in-cape-spin-2011jul31-story.html (describing pickets at Minerals Management Service hearing).

177 *See, e.g.*, Ayesha Rascoe, *Anti-Fracking Protesters Arrested Blocking Entrance to Federal Energy Regulatory Commission*, HUFFPOST (July 14, 2014), https://www.huffpost.com/entry/anti-fracking-protesters-arrested_n_5585675.

178 Jordan Blum & David Hunn, *Pipeline Protests Put Kelcy Warren in the Spotlight and Bull's-Eye*, HOUS. CHRON. (Nov. 21, 2016), https://www.houstonchronicle.com/business/energy/article/Pipeline-protests-put-Kelcy-Warren-in-the-10628354.php.

179 *See* discussion *supra* note 150 and accompanying text.

180 We did see some environmental justice claims made against utility-scale power plants, most of which involved southeastern states, where preexisting environmental justice-focused NGOs are more common. The Southern Alliance for Clean Energy objected to coal-fired plants, because "[t]he consequences of high-risk energy choices, like climate change and pollution, disproportionately impact communities of color, lower-income households, coastal areas, and other groups." *Diversity, Equity, and Inclusion*, SOUTHERN ALLIANCE FOR CLEAN ENERGY, https://cleanenergy.org/diversity-equity-inclusion/ (last visited Sept. 27, 2019). Everglades Earth First! opposed Florida Power & Light plants located near Seminole communities. *See Updates from the Seminole Opposition to FPL in the Everglades*, EARTH FIRST! NEWSWIRE (Apr. 14, 2014), https://earthfirstjournal.org/newswire/2014/04/14/updates-from-the-seminole-opposition-to-fpl-in-the-everglades/. An analogous regional effect may be at work in the LNG category as well, since the environmental justice movement grew out of the southeastern states, *see supra* note 147, and most LNG terminals are located in the South, *see* Appendix B.

B. Amplification of Risk

Table A-2 shows that variation in incidence of risk-based claims does not track neatly with variation in the size of the risks posed across project types, suggesting that other factors sometimes drive the focus on risk. Stated differently, while it is common for groups opposing particularly risky or dreaded technologies to invoke risk as a reason to oppose projects, it is also common for groups opposing other project types to base their appeals on risk. Looking behind the numbers, many NGOs made claims about health risks associated with wind farms, smart meters, transmission lines, fracking operations, and nuclear power that are not supported by the weight of the scientific record.[181]

Some of these amplified or exaggerated risk claims seem consistent with the Slovic psychometric paradigm, in which risks of real harms are not discounted by the probability that they will occur (misrepresenting probabilities);[182] others were simply claims of harm that are unsupported by the weight of scientific opinion (misrepresenting harms). Opposition to nuclear power plants continues to fall into the first category in ways Slovic noted thirty years ago, and the 2010 accident at Fukushima reinforced those fears, even though scholars estimate that the risk posed by nuclear power is very small.[183] Something similar appears to be at work in NGO arguments about pipelines. The effects of a pipeline leak can be serious—environmental harm to waterways and wetlands, for example. However, the probability that any particular pipeline will leak is very small.[184] Public perceptions of the risk of groundwater contamination from fracking may reflect a similar reluctance to discount the harm by the probability.[185] Consistent with the notion

181 *See* discussion *supra* notes 138–40 and accompanying text.

182 Slovic, *supra* note 142.

183 Scholars estimate that the number of people who died in the evacuation associated with the Fukushima accident will be ten times the number of premature deaths likely to result from the radiation release at Fukushima. *E.g.*, George Johnson, *When Radiation Isn't the Real Risk*, N.Y. TIMES (Sep. 21, 2015), https://www.nytimes.com/2015/09/22/science/when-radiation-isnt-the-real-risk.html; Richard Martin, *The Effects of Fukushima Linger After Five Years, But Not from Radiation*, MIT TECH. REV. (Mar. 10, 2016), https://www.technologyreview.com/s/601011/the-effects-of-fukushima-linger-after-five-years-but-not-from-radiation/. Estimates of premature deaths associated with the explosion at Chernobyl were significantly larger, but a comparatively small fraction to the number of premature deaths attributable to coal-fired power *annually*. *See* Mary Mycio, *How Many People Have Really Been Killed by Chernobyl?*, SLATE (Apr. 26, 2013), http://www.slate.com/articles/health_and_science/explainer/2013/04/chernobyl_death_toll_how_many_cancer_cases_are_caused_by_low_level_radiation.html (explaining that it is difficult to know why the estimates differ significantly because it is difficult to know if Chernobyl is directly linked to the deaths); *see also* Epstein et al., *supra* note 138, at 91–93.

184 *See supra* note 27–30 and accompanying text (describing the *Gasland*-inspired mistaken beliefs about the magnitude of health risks associated with fracking operations); Roger T. Hill, *Pipeline Risk Analysis*, INSTITUTION CHEMICAL ENGINEERS SYMP. SERIES, no. 130, 1992, at 657, https://engage.aiche.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=6262d4f9-7a5d-4d70-ab70-57e8e0207d5a.

185 *See* RAIMI, *supra* note 165, at 53.

of dread and the psychometric paradigm, these appeals resonate in ways probabilities do not, because they reference real accidents that caused real harm.

Claims about wind farms, transmission lines, and smart meters fall into the latter category, misrepresentation not of probabilities but of harms. Many of the NGOs in our sample advanced claims that transmission lines and smart meters emit radio frequency regulation that causes cancer. For example, Hope for the Hills linked transmission lines to "increased risk of developing brain tumors, childhood leukemia, ALS, more commonly known as Lou Gehrig's disease, and an elevated number of miscarriages."[186] The messaging of the Center for Electrosmog Prevention warned that smart meters "blanket[ ] entire communities and states with non-ionizing radiation" that is associated with "alarming symptoms and illness."[187] The National Research Council and the World Health Organization, among others, characterize these claims as unsupported by the scientific evidence.[188] Similarly, numerous opponents of wind farms in our sample cited "wind turbine syndrome," a combination of headaches, dizziness and nausea, in their literature.[189] For example, Fight the Wind, an Ohio antiwind group, references "the constant noise, flicker, and infra-sound of wind turbines," and claims that they "take a toll on your health."[190] Scholars have cast doubt on wind turbine syn-

186 *The Impact of Overhead High Voltage Transmission Towers and Lines on Eligibility for Federal Housing Administration (FHA) Insured Mortgage Programs: Field Hearing Before the Subcomm. on Ins., Hous. and Cmty. Opportunity of the H. Comm. on Fin. Servs.*, 112th Cong. 8 (2012) (statement of Bob Goodwin, President, Hope for the Hills).

187 *Center for Electrosmog Prevention's No Smart Meter Campaign*, CTR. FOR ELECTROSMOG PREVENTION, http://www.electrosmogprevention.org/center-for-electrosmog-prevention-anti-smart-meter-campaign/ (last visited Sept. 27, 2019).

188 COMM. ON THE POSSIBLE EFFECTS OF ELECTROMAGNETIC FIELDS ON BIOLOGIC SYS., NAT'L RESEARCH COUNCIL, POSSIBLE HEALTH EFFECTS OF EXPOSURE TO RESIDENTIAL ELECTRIC AND MAGNETIC FIELDS 2 (1997) (meta-analysis showing that "the current body of evidence does not show that exposure to these fields presents a human-health hazard"); WORLD HEALTH ORG., EXTREMELY LOW FREQUENCY FIELDS 12 (2007), https://www.who.int/peh-emf/publications/Complet_DEC_2007.pdf?ua=1 ("[O]n balance, the evidence is not strong enough to be considered causal . . . ."); *see also* Jarry T. Porsius et al., *Health Responses to a New High-Voltage Power Line Route: Design of a Quasi-Experimental Prospective Field Study in the Netherlands*, 14 BMC PUB. HEALTH 237, 238 (2014) (describing studies showing increase in symptoms following exposure to sham radio frequency radiation).

189 The work of Dr. Nina Pierpont, a pediatrician, is often cited in support of this phenomenon. *See Wind Turbine Syndrome: Hearing Before the Energy Comm.*, 2006 Leg., 229th Sess. 2 (N.Y. 2006) (testimony of Dr. Nina Pierpont, Fellow, American Academy of Pediatrics), https://docs.wind-watch.org/Pierpont-WindTurbineSyndrome.pdf. National Wind Watch and several other groups in the data set cited wind turbine syndrome as a basis for opposition. Wind Wise Massachusetts, for example, opposes "industrial wind turbines" as causes of "vibroacoustic disease." Thomas A. Jones, *Wind Turbine Syndrome and Vibroacoustic Disease*, WIND WISE MASS., https://windwisema.org/about/noise/wind-turbine-syndrome-and-vibroacoustic-disease/ (last visited Sep. 15, 2019).

190 *The Negative Effects*, FIGHT WIND, http://www.fightthewind.com/the-negatives (last visited Sep. 15, 2019).

drome,[191] noting that the pattern of noise and health complaints do not match proximity to the turbines, and tended to increase after opposition groups began to feature health concerns in their advocacy positions.[192]

Before imputing ignorance to those who are persuaded by NGOs' misrepresentation of harms, it is important to recognize that NGOs support the claims with citations to very well-qualified, but dissenting, members of the scientific community,[193] and it may be that the symptoms described are real. Some scholars ascribe these claims to the "nocebo effect," a phenomenon in which subjects experience expected symptoms after exposure to a stimulus or attribute existing symptoms to a suggested stimulus.[194] Moreover, it is difficult to generalize about (and to disentangle) the motivations behind these

191 A 2014 meta-analysis of then-available studies concluded that "[c]urrently, there is no further existing statistically-significant evidence indicating any association between wind turbine noise exposure and tinnitus, hearing loss, vertigo or headache." Jesper Hvass Schmidt & Mads Klokker, *Health Effects Related to Wind Turbine Noise Exposure: A Systematic Review*, PLOS ONE, Dec. 4, 2014, at 1, e114183, https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0114183&type=printable. The Australian Medical Association says that "[t]he available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity." AUSTL. MED. ASS'N, WIND FARMS AND HEALTH 1 (2014), http://waubrafoundation.org.au/wp-content/uploads/2014/03/AMA-Statement-Wiind-Farms-and-Health-2014.pdf.

192 Simon Chapman et al., *The Pattern of Complaints About Australian Wind Farms Does Not Match the Establishment and Distribution of Turbines: Support for the Psychogenic, 'Communicated Disease' Hypothesis*, PLOS ONE, Oct. 16, 2013, at 1, e76584, https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0076584&type=printable (finding nocebo effects in noise or health complaints associated with wind farms); Fiona Crichton et al., *Can Expectations Produce Symptoms from Infrasound Associated with Wind Turbines?*, 33 HEALTH PSYCHOL. 360, 363 (2014), http://web.b.ebscohost.com.proxy.library.nd.edu/ehost/pdfviewer/pdfviewer?vid=10&sid=dbdb500d-8ff5-4389-803a-0c8c5be92298%40pdc-v-sessmgr03 (finding that "elevated concerns about the health effects of sound produced by wind turbines" can be tied to hearing about the adverse health effects that might be linked to wind farms).

193 Regarding the effects of radio frequency radiation from power lines and smart meters, most of the NGOs cite David O. Carpenter, Professor and Director of the Institute for Health and the Environment at the University at Albany, and a Harvard-educated medical doctor. *See, e.g.*, *Dr. David Carpenter's Letter to BG&E*, MD. SMART METER AWARENESS (Feb. 21, 2012), http://marylandsmartmeterawareness.org/general-info/dr-david-carpenters-letter-to-bge/ (detailing his views about the risks of smart meters). The most-cited expert on wind turbine syndrome is Dr. Nina Pierpont. *See supra* note 189.

194 *E.g.*, Paul Enck & Winfried Häuser, *Beware the Nocebo Effect*, N.Y. TIMES (Aug. 10, 2012), https://www.nytimes.com/2012/08/12/opinion/sunday/beware-the-nocebo-effect.html (explaining their research into side effects experienced by drug trial patients taking placebos, and that "expectations can also do harm"); Porsius et al., *supra* note 188, at 238, 245 (discussing the possible role of nocebo effects in health complaints about power lines); Chapman, et al., *supra* note 192 (discussing the role of nocebo effects in complaints about wind farms); *see also* Phelim McAleer's documentary, *FrackNation*, which suggests that some of the health symptoms depicted in the movie *Gasland* were caused by nocebo effects. FRACKNATION (AXS TV broadcast Jan. 22, 2013).

exaggerated or unsupported claims. Because scientific consensus evolves over time, it is of course possible that some of these apparently hyperbolic claims will be proven correct, however unlikely that seems now. The nocebo effect suggests that some portion of these claims are sincere, not fabricated. Other NGOs may adopt these arguments instrumentally in order to strengthen opposition to projects opposed for other reasons, to build a broader base of opposition. The lack of scientific basis for some of the health risk claims made by NGOs may partly explain the gap between the percentages of national and local NGOs making health risk claims in the wind, transmission, and solar categories. The average local NGO in those three categories is more than twenty percent more likely to make health risk claims in opposition to those types of energy projects; there is no comparable gap in the data for fossil fuel infrastructure, presumably because those project types offer NGOs more in the way of scientifically supported health risk appeals.[195]

C. Interconnectedness (and Coordination?)

In a number of disparate ways, the data also support the inference that NGOs are using modern communication tools to learn from, and coordinate with, each other. This seems most evident in NGO tactical and issue choices in the fossil fuel project categories, but it also shows up in other ways as well.

Consistent with *H1*, one might expect that because formal legal intervention in siting and judicial proceedings entails significant costs, it would be the exclusive province of sophisticated national NGOs. However, as Table A-1 indicates, that was not the case. More than half of the NGOs opposing fossil-fueled power plants, pipelines, and nuclear power plants employed litigation as a tool of opposition, as did more than one-fourth of the NGOs opposing LNG terminals, wind and solar power plants, and smart meter rollouts.[196] Many of these NGOs were local. One possible reason for this is that modern communication has reduced the transaction costs for national NGOs of mobilizing legal opposition. National groups can bear the information costs of legal intervention by providing local groups with "how to" advice for intervening formally in siting proceedings.

In the fossil fuel project categories, tactical similarities between national and local groups may be a product of specific national campaigns undertaken during the study period, particularly by Sierra Club and 350.org.

195 Indeed, as Table A-2 indicates, national groups are slightly *more* likely to raise health-risk claims in opposition to fossil fuel infrastructure. *See infra* Table A-2.

196 In several recent cases NGOs have used litigation to try to stop FERC-approved natural gas pipelines, with mixed success. *See, e.g.*, Sierra Club v. U.S. Army Corps of Eng'rs, 909 F.3d 635, 639 (4th Cir. 2018) (overturning a construction permit for a pipeline); Sierra Club v. FERC, 867 F.3d 1357, 1363 (D.C. Cir. 2017) (overturning FERC approval of three natural gas pipeline projects bringing gas to power plants in the southeastern United States); Const. Pipeline Co. v. N.Y. State Dep't of Envtl. Conservation, 868 F.3d 87, 90–91 (2d Cir. 2017) (upholding New York State's denial of a water quality certificate to the pipeline).

Sierra Club's "Beyond Coal" campaign (and its more recent "Beyond Dirty Fuels Initiative") enlist local groups to oppose fossil fuel infrastructure.[197] Similarly, 350.org cofounder Bill McKibben has used opposition to pipelines as a way to create and sustain a federal network of activist organizations dedicated to opposing fossil fuel infrastructure.[198] The success of these national campaigns may have attracted the support necessary to fund the high litigation rates in the pipeline and fossil-fueled power plant categories.[199] Both the Sierra Club and 350.org have found success using high-profile fossil fuel projects[200] to mobilize legal opposition to fossil fuel infrastructure among local groups and motivate individuals (judging by the numbers in Table A-1).[201]

These coordinated national campaigns may also explain the higher incidence of protest as a tool of opposition in the fossil fuel project categories. Protest is costly in time and effort (though advocating it is not) and sometimes entails physical and legal risk; it may be that opponents of fossil fuel infrastructure are more motivated to direct action and protest than opponents of other types of energy projects. The propensity to protest among local NGOs opposing these projects was probably also driven in part by the calls to direct action by 350.org, Food & Water Watch, and other national groups. These groups offered a straightforward and compelling rationale for protest: namely, that avoiding unacceptable levels of global warming requires keeping carbon in the ground ("unburn[able] carbon"), which in turn sug-

197 Maya Weber, *Sierra Club Ups Investment in Blocking Natural Gas*, PLATTS GAS DAILY, Oct. 3, 2016 (S&P Glob., London, UK); Mark Hand, *Sierra Club's Campaigning Extends Beyond Coal To 'Dirty Fuels,'* SNL ENERGY DAILY GAS REP., Apr. 20, 2016 (SNL Fin., Charlottesville, Va).

198 McKibben, *supra* note 35 (describing the mobilizing force of the Keystone project).

199 Information about which local groups benefit from the financial assistance of national NGOs is difficult to come by, but the Sierra Club has long financed legal and political action by local organizations through the Sierra Club Foundation. The Sierra Club Foundation's annual report delineates the amounts given by purpose or goal, but does not include specific information about grants to particular Sierra Club chapters or other NGOs. *E.g.*, SIERRA CLUB FOUND., PARTNERING FOR PROGRESS 18–19 (2017).

200 John Cassidy, *The Symbolic Politics of Keystone XL*, NEW YORKER (Feb. 25, 2015), https://www.newyorker.com/news/john-cassidy/the-symbolic-politics-of-keystone-xl.

201 Why was litigation used less often by NGOs opposing fracking? There is little incentive for NGOs to intervene formally in regulatory agency proceedings governing approval of fracking projects. These approvals are made well by well, and each developer may drill tens or hundreds of wells in any particular local area. Therefore, the costs of contesting each approval are prohibitively high for NGOs. In that context it may make much more sense for NGOs to focus on lobbying state and local legislative bodies to ban or restrict fracking. Those efforts show up in the political action column of our database. The litigation burden falls on municipalities that seek to ban or regulate fracking within their borders, and municipalities do not show up in our data set. These factors, considered against the very large number of antifracking NGOs, result in a low incidence of litigation in that project category. The database contains more antifracking NGOs than any other project category, and almost eighty percent of those groups are local groups whose efforts are probably more profitably spent lobbying local officials to impose fracking bans.

gests that we ought not to build additional infrastructure to serve the fossil fuel market.[202] Those messages may have resonated especially among younger voters, among whom concern about climate change is higher,[203] and for whom the opportunity costs of protest are lower.

Top-down organizational efforts may also explain similarity between local and national NGOs' use of litigation, political action, and issue arguments in other project categories as well: National Wind Watch offers how-to advice to local antiwind groups by way of the "[l]egal documents" part of its website.[204] The aforementioned use of nearly identical health-risk-based arguments by far flung local NGOs in opposition to wind farms, smart meters, and transmission lines[205] may also be evidence of horizontal coordination—or the ease of information sharing and signaling in the digital environment—as well.

None of this is terribly surprising, but its rapid growth is new. The ease with which NGOs can share information and coordinate tactics helps them overcome organizational disadvantages in the contest to shape regulatory decisionmaking and improves their ability to oppose new infrastructure.

D. The Geography, Ideology, and Effects of NGO Opposition

What does it matter if NGOs are better able to use risk-based arguments to mobilize political and legal opposition to energy projects than they once were? Has the new politics of market entry raised barriers to entry for new energy infrastructure? Has it changed the regulatory environment in other ways? Our data do not offer a systematic quantitative answer to these questions, but we can nevertheless draw some important inferences from these data.

1. A Caveat: Measurement Difficulties

First, an important caveat: measuring the effects of NGO opposition on project outcomes is extremely difficult. Except for the fossil-fueled power plant and transmission project categories (and perhaps nuclear power),[206]

202 Bill McKibben, *Global Warming's Terrifying New Math*, ROLLING STONE (July 19, 2012), http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719 (discussing the notion of unburnable carbon as a reason to stop building fossil fuel infrastructure).

203 Julianne Hodges, *Poll Finds Millennials More Concerned About Energy and the Environment*, DAILY TEXAN (Apr. 20, 2016), https://www.dailytexanonline.com/2016/04/20/poll-finds-millennials-more-concerned-about-energy-and-the-environment (reporting results of the UT Energy Poll, showing a gap between young and old voters on this issue).

204 *Selected Documents: Some Important Documents About Industrial Wind Energy, Legal Documents*, NAT'L WIND WATCH, https://www.wind-watch.org/documents.php (last visited Sept. 27, 2019) (offering examples of agreements to protect neighbors from the effects of wind turbines).

205 *See supra* Part I.

206 We were able to use data from the U.S. Energy Information Administration to identify all of the proposed projects above certain size thresholds—major projects—in these

we cannot be confident that our data set includes every (or even nearly every) proposed project in each project category during the study period because the data set was built around NGOs and the particular projects they opposed. Moreover, even if the data set included all proposed projects within each category, we would still be unable to quantify the effectiveness of NGO opposition because of a basic endogeneity problem: that is, even a more complete set of proposed projects would itself be a censored sample of the potentially lucrative projects that investors might have pursued but for the anticipated strength of NGO opposition in certain locations.[207]

Furthermore, ascribing causal effect to a particular tool of opposition is difficult because of the number and complexity of social, economic, and political forces at work in determining project outcomes. Projects may succeed or fail for any of a dozen or more reasons, and NGOs collectively battle projects on multiple fronts, winning on some and losing on others. Siting proceedings are sometimes not determinative of particular project outcomes. Sometimes NGOs lose all the important battles but win the war, as with the Cape Wind project, which earned all the necessary regulatory approvals but died after regulatory delays extended the conflict beyond the expiration of the power purchase contract on which the proposed project was financed.[208] Sometimes NGOs win important battles but lose the war because of political change, as when early victories before the Obama administration that seemed to sink the Keystone XL Pipeline were reversed under the Trump administration,[209] or local government decisions on proposed fracking operations were overturned by state legislatures.[210] Sometimes NGOs' victories on ancillary issues can stop a project, sometimes not. For example, NGOs have begun to win battles in pipeline siting disputes by persuading the State of New York to reject required approvals under the Clean Water Act,[211] and persuading courts that FERC NEPA reviews for pipelines are flawed.[212] How do we measure success in these complex situations? Both of the last two pipeline examples are "victories" for NGOs in some sense. However, the former

two categories. We cannot be as certain about the completeness of the project data set in the other project categories.

207 *See, e.g.*, Hamilton, *supra* note 150 (discussing how sponsors of hazardous waste facilities avoid siting them in areas with politically active populations).

208 *See* Ros Davidson, *Cape Wind: Requiem for a Dream*, WINDPOWER MONTHLY (May 1, 2018), https://www.windpowermonthly.com/article/1462962/cape-wind-requiem-dream (noting that the "project would never recover" after several different conflicts).

209 *See* Peter Baker & Coral Davenport, *Trump Revives Keystone Pipeline Rejected by Obama*, N.Y. TIMES (Jan. 24, 2017), https://www.nytimes.com/2017/01/24/us/politics/keystone-dakota-pipeline-trump.html ("In his latest moves to dismantle the legacy of his predecessor, Mr. Trump resurrected the Keystone XL pipeline that has stirred years of debate, and expedited another pipeline in the Dakotas that had become a major flash point for Native Americans.").

210 *See supra* notes 72–86 and accompanying text (describing the fracking preemption issue).

211 *See* Sierra Club v. U.S. Army Corps of Eng'rs, 909 F.3d 635, 645, 654 (4th Cir. 2018).

212 *See* Sierra Club v. FERC, 867 F.3d 1357, 1363 (D.C. Cir. 2017).

may well kill pipeline projects that the FERC would otherwise approve, while the latter victory may be hollow, as the FERC merely corrects the defect in the NEPA review and approves projects anyway.[213]

For these reasons, reaching general conclusions about the effectiveness of particular tactical and issue approaches to opposition is beyond the scope of this project. However, the data do permit us to draw some preliminary inferences about when and where NGO opposition is most prevalent, and about how geography and ideology might be driving opposition and thereby influencing entry into energy markets. Appendix B contains information about the geographical distribution of the NGOs and types of energy projects examined in this analysis, as well as information about citizen ideology (liberal vs. conservative) by state.

2. Fossil Fuel Infrastructure and Opposition

Looking first at the fossil fuel infrastructure (power plants, pipelines, fracking, and LNG terminals) data in Appendix B, the existence or nonexistence of NGO opposition within a state roughly tracks the distribution of projects (as expected). With the exception of antifracking NGOs (some of which exist beyond the boundaries of potential oil and gas production areas),[214] in places where there are no proposed infrastructure projects, generally there is no opposition, and some opposition arose in virtually every state in which projects were proposed. These correlations seem strongest in the LNG category, and less strong (but strong nevertheless) in the fossil-fueled power plant and pipeline categories.

However, the *intensity* of opposition to fossil fuel infrastructure (as measured by number of opposition NGOs by state) seems less well correlated with the intensity of proposed development (as measured by number of project proposals), and the pattern suggests that political ideology may play a role in driving this measure of opposition intensity. Relatively little NGO opposition to fossil-fueled power plants arose in "red" states like Texas and Kentucky, for example, considering the relatively large number of proposed projects there. Similarly, considering the concentration of pipeline projects in the midsection of the country, there is relatively little NGO opposition in "red" states like North Dakota and Nebraska,[215] while opposition to pipelines in the eastern part of the country (and especially the Northeast) seems to be more intense. Nor do the "red" states hosting the largest number of LNG

213 The Clean Water Act certificate is legally required for the project to move forward, while the defect the court identified in the FERC's environmental review is curable by republishing the environmental impact statement.

214 Vermont's fracking ban, for example, is merely symbolic or expressive, as there are not shale hydrocarbon resources in Vermont. *See infra* Appendix B.

215 The Keystone Pipeline was an exception to this generalization. Its original route traversed an important groundwater aquifer in Nebraska, inciting the opposition of Nebraskans of all political stripes. *See* Michael Avok, *Nebraska Lawmakers Vote to Reroute Oil Pipeline*, REUTERS (Nov. 16, 2011), https://www.reuters.com/article/us-oil-pipeline-nebraska/nebraska-lawmakers-vote-to-reroute-oil-pipeline-idUSTRE7AF1QK20111116.

project proposals (Texas and Louisiana) host the largest concentration of anti-LNG NGOs. To the contrary, the two LNG proposals attracting the most opposition during the study period were in "blue" states: Maryland's Cove Point LNG export expansion project (opposed by thirty-one NGOs) and Oregon's Jordan Cove Project (opposed by fifteen NGOs).[216] Generally speaking, NGO opposition to other fossil fuel infrastructure in the "blue" states of California and Oregon also seems relatively intense compared to the intensity of development there. The picture of NGO opposition to fracking seems to be correlated with state ideology as well, when one considers the geographic distribution of shale oil and gas production areas.[217]

Indeed, opposition to fossil fuel infrastructure may be even more intense in "blue" states than the data indicate, because of a censored sample problem there. For example, during the study period developers did not propose any large coal-fired power plants in California, New York, Oregon, Connecticut, or Maryland (and proposed only one in Massachusetts, which was rejected); they did propose major natural-gas-fired plants in each of those states, and most of those were approved over NGO opposition. By contrast, developers proposed ten coal-fired and two gas projects (that were large enough to fit our definition of "major" projects) in Texas; the two gas plants were approved and built, and seven of the ten coal-fired plants were rejected. By those measures, NGOs had more success in Texas than they did in the aforementioned "blue" states; in all likelihood, the reality is that developers foresaw the futility of proposing fossil-fueled power plants in those more liberal states and so never proposed projects there. In the LNG data set the censoring effects of political ideology may be even stronger. During the study period, Asia and Europe were the most potentially lucrative markets for natural gas, yet very few projects are proposed on the East or West Coasts of the United States. The intensity of opposition to the Maryland and Oregon project proposals indicates that developers' caution about those locations would have been warranted.

Thus, political ideology appears to play a role in the intensity of opposition to new fossil fuel infrastructure. It sometimes manifests as defeat in sit-

216 One imagines that had the New York Port Ambrose project not been abandoned early on it might have attracted opposition from more than the twelve NGOs in our data set that actively opposed it. *NY Governor Cuomo Vetoes Port Ambrose LNG Project*, WORLD MAR. NEWS (Nov. 13, 2015), https://worldmaritimenews.com/archives/176439/ny-governor-cuomo-vetoes-port-ambrose-lng-project/.

217 We might also expect to see property-rights-based opposition to pipelines from the ideological right, but we do not. It may be that this particular driver of opposition is understated by our measure of intensity—the number of NGOs—for two reasons. First, it may be that property rights activists opposing pipelines do not do so by forming or joining NGOs, since they have the option of refusing to sell their property and fighting condemnation in court as individuals. This would not explain why nearby landowners who oppose the pipeline, but whose land is not taken, have not joined or formed opposition groups, however. Second, *if* property rights conservatism is negatively correlated with wealth, it may be that people asserting property-rights-based opposition are less likely to overcome the transaction cost obstacles to forming or joining NGOs in the first place.

ing proceedings; other times it manifests in the geographic distribution of project proposals in the first place. Given the growing ideological polarization and prominent decarbonization campaigns by NGOs during the study period, this is unsurprising.

3. Lower-Carbon Infrastructure and Opposition

What about the other, lower-carbon energy projects: nuclear, wind, solar, transmission, and smart meters? Do we observe the same trends there? As with fossil fuel projects, the existence or nonexistence of NGO opposition in a state roughly tracks the distribution of projects and seems to be somewhat stronger in left-leaning states. A review of the maps in Appendix B confirms that this is the case, with one prominent exception.[218] That exception is the nuclear project category, where the correlation between the intensity of development and of opposition is very strong, irrespective of state ideology. This is perhaps unsurprising given the well-documented risk-based aversion nuclear power inspires.[219] When one considers that most of these projects never neared fruition, the rise of opposition against every proposed project is an impressive testament to that sentiment.[220]

In the transmission and utility-scale solar project categories, we see the effect of development intensity and state ideology on opposition intensity. The most intense opposition to solar projects arises in California, which also has the most intense solar development, and other states with lots of solar development also appear to host a large number of antisolar NGOs. However, we see underrepresentation of NGO opposition in some "red" states, particularly moderately conservative North Carolina, and overrepresentation of opposition in solidly "blue" Maryland, for example. The same is true for transmission: opposition roughly tracks development, with a few exceptions in the ideologically conservative southcentral and southwestern parts of the country. Some of the most intense pockets of transmission development are located in "red" states (Texas, Oklahoma, Kansas, New Mexico, and Arizona) where relatively little opposition has arisen.

In the wind category, correlations between development intensity and opposition intensity weaken further; the correlation between state ideology and opposition is stronger. Opposition to wind projects is strong in the Northeast, middle Atlantic states, and California, all of which have seen some wind development. However, wind development has been particularly strong

218 For smart meters, a small N problem confounds our attempts to draw generalizations about opposition. The map shows that there are several states in which smart meters were installed in more than half the households, yet little or no opposition arose. Similarly, most of the NGOs opposing smart meters are found in blue California and red Texas.

219 *See* Slovic, *supra* note 142.

220 The only two nuclear power projects from our data set to navigate all the regulatory hurdles and reach the construction stage were located in Georgia and South Carolina; those two states offered project sponsors revenue guarantees that improved project economics for those projects just as the business case for nuclear energy declined in the face of the fracking revolution.

in the midsection of the country along a corridor that runs from Texas north to the Canadian border, yet NGO opposition is relatively weak in those states. The intensity of opposition in the middle Atlantic states, as compared to the central plains states, may be traceable to political ideology, or it may reflect the different nature of wind development in those places. In hilly terrain, wind projects are often sited on the tops of ridges, provoking opposition on aesthetic grounds, particularly in areas of higher population density. That may also be why wind comprises only about three percent of electricity generation in New England, home of many windy mountaintops.[221] In the central plains, wind turbines sit in the middle of large farms and ranches characterized by low population density, which may provoke less opposition on aesthetic grounds, all else equal.

Finally, in the low-carbon project categories it is more difficult to generalize about the effects of opposition on project success. The business case for nuclear power took a sharp turn for the worse after 2007, and the failure of most projects after that probably had little to do with NGO opposition or state ideology, though few if any projects were proposed in states that were hostile to nuclear power.[222] NGOs opposing solar projects in California were not particularly successful, probably because the governor's forceful advocacy for utility-scale solar there influenced state regulators.[223] More generally, transmission projects tended to succeed in (a) traditionally regulated markets like the Southeast, where projects were located within utility service areas; (b) Texas, where state law favored development;[224] or (c) in the so-called "MISO" market,[225] where the projects were developed and pushed forward by a transmission-planning stakeholder process. Projects tended to be

221 *Resource Mix*, ISO NEW ENG., https://www.iso-ne.com/about/key-stats/resource-mix/ (last visited Oct. 21, 2019); *see also* UNION OF CONCERNED SCIENTISTS, WIND POWER IN NEW ENGLAND 1 (2007), https://www.ucsusa.org/sites/default/files/2019-09/wpne-overview.pdf ("New England has excellent wind resources . . . .").

222 For a list of state laws opposing nuclear power development, maintained by the National Conference of State Legislatures, see *State Restrictions on New Nuclear Power Facility Construction*, NAT'L CONF. ST. LEGISLATURES, http://www.ncsl.org/research/environment-and-natural-resources/states-restrictions-on-new-nuclear-power-facility.aspx (last updated May 2017).

223 In 2011, Governor Jerry Brown vowed to "crush" local opposition to utility-scale solar projects, and has had a hand in appointing regulators who oversee those projects. Debra Kahn, *Calif. Governor Vows to 'Crush' Foes of Renewable Energy*, N.Y. TIMES (July 26, 2011), https://archive.nytimes.com/www.nytimes.com/gwire/2011/07/26/26greenwire-calif-governor-vows-to-crush-foes-of-renewable-22698.html?pagewanted=all.

224 *See* Robert Bradley Jr., *Texas's CREZ Transmission Line: Wind Power's $7 Billion Subsidy (Ratebase Socialism as 'Infrastructure Improvement')*, MASTER RESOURCE (Feb. 16, 2018), https://www.masterresource.org/cre/texass-crez-transmission-line-wind-powers-7-billion-subsidy/.

225 MISO is the Midcontinent Independent System Operator, an electric grid and market operator whose territory extends from North Dakota and Minnesota south to Louisiana, and comprises a large section of the central plains and Midwest. *See About MISO*, MISO, https://www.misoenergy.org/about/ (last visited Sep. 5, 2019). The MISO planning process for transmission investment is explained in MISO, MULTI VALUE PROJECT

unsuccessful in the left-leaning states of the Northeast. Projects were few in New England, and mostly unsuccessful there, the Northern Pass project being the most noteworthy example.[226] New York has experienced similar problems and delays,[227] and the state is turning toward encouraging distributed energy projects located near demand centers due to the difficulty of siting transmission in that state.[228] In sum, in the low carbon project categories, there was little if any correlation between project success rates and state ideology, though any such effects may be confounded by other variables or our censored sample of projects.

IV. Regulation, Politics, and Barriers to Entry

It seems from the data that conflict over energy market entry reflects our polarized and digitally connected twenty-first-century politics. More specifically, this analysis suggests that: (1) NGO opposition to energy projects most often seeks to focus broad public attention on project risks; (2) when opposing non-fossil-fuel infrastructure, local NGOs are more likely than national NGOs to amplify public perception of risks in their messaging; (3) NGO resistance to energy infrastructure is more likely in "blue" states than "red" states, all else equal; and (4) the prospect of intense NGO opposition may also be dissuading prospective investors from proposing projects in some locations. What do these findings signify for the regulation of energy markets? They seem consistent with the idea that NGOs—even local NGOs—are relatively sophisticated political actors using the tools of persuasion they have available to push decisionmakers toward their desired ends—whether those ends involve stopping a particular project (local NGOs), influencing the larger energy mix (national NGOs), or some combination of the two.

If one subscribes to theories of capture and business dominance of the regulatory process, NGOs' emphasis on mobilizing around risk makes sense as a way to overcome resource disadvantages (relative to firms) in the contest to shape decisions. Capture suggests that because of businesses' resource advantages in the policy process, regulators are systematically biased toward

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Portfolio 7 (2012), https://cdn.misoenergy.org/2011%20MVP%20Portfolio%20Analysis%20Full%20Report117059.pdf.

226 *See supra* note 22 and accompanying text.

227 *See* Marie J. French, *Slow Progress on Transmission Lines Worries Energy Industry*, Politico (Jan. 11, 2018), https://www.politico.com/states/new-york/albany/story/2018/01/09/slow-progress-on-transmission-lines-worries-energy-industry-180023 (discussing the "slow pace of progress on new large-scale transmission projects").

228 The New York plan, known as "Reforming the Energy Vision," would attempt to create an institutional and legal environment that encourages smaller, decentralized generators (including households owning generation like rooftop solar) to buy and sell energy directly to one another rather than have consumers buy solely from larger retailers who acquire their power from central stations. For more about the New York plan, see *2015 New York State Energy Plan*, N.Y. St., https://energyplan.ny.gov/Plans/2015.aspx (last visited Sept. 27, 2019).

project sponsors,[229] an idea that seems particularly attractive in the Trump era given the evident corruption and proindustry orientation of some regulators in the Trump administration.[230] It is also an idea that has long enjoyed the support of (mostly right-leaning) public choice scholars,[231] and (mostly left-leaning) revisionist historians.[232] But despite its popularity, the capture hypothesis has not fared particularly well under academic scrutiny. The canonical pieces in the capture literature consist mostly of "theory-plus-anecdote" accounts.[233] In a recent book-length review of the capture literature, entitled "Failures of Capture Scholarship,"[234] political scientist Daniel Carpenter observes that scholars have had considerable difficulty "demonstrating the existence and degree of capture" despite the fact that their "evidentiary standards . . . are rather low."[235] All of this suggests that defaulting to capture explanations for pro-development siting decisions may be unwarranted.

Rather, the more mundane story is closer to reality: namely, that NGOs participate in a system in which regulators seek to discharge their statutory duties and to strike a balance between reliability, affordability, and environmental performance—one that is consistent with their sense of the public interest. That balance, quite understandably, changes across time and space. NGOs and their business adversaries make tactical and issue choices to try to

229 See *supra* notes 12–14 and Section I.A for a summary of recent political science literature on the business dominance hypothesis.

230 Scott Pruitt's reign at the Environmental Protection Agency (EPA) combined unprecedented levels of corruption and apparent probusiness bias. *See* Oliver Milman & Dominic Rushe, *New EPA Head Scott Pruitt's Emails Reveal Close Ties with Fossil Fuel Interests*, GUARDIAN (Feb. 22, 2017), https://www.theguardian.com/environment/2017/feb/22/scott-pruitt-emails-oklahoma-fossil-fuels-koch-brothers. This is to suggest that there is an important conceptual distinction to be made between probusiness decisions driven by corruption and those driven by an ideological preference. For a discussion of why this matters, and of the literature on capture, see *infra* notes 231–35.

231 *See, e.g.*, Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211, 212 (1976); George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3, 3 (1971).

232 The most prominent example is Gabriel Kolko. *See* GABRIEL KOLKO, RAILROADS AND REGULATIONS, 1877–1916 (1965). It may also be enjoying a resurgence of popularity on the political left. *See, e.g.*, MACLEAN, *supra* note 12; MAYER, *supra* note 12.

233 Christopher Carrigan and Cary Coglianese's review of one of capture theory's seminal works concluded recently that it "exaggerate[s] the power of business over regulators, . . . suggest[ing] . . . nearly an iron law of business control that clearly does not exist." Christopher Carrigan & Cary Coglianese, *Capturing Regulatory Reality: Stigler's* The Theory of Economic Regulation, at abstract (Univ. of Pa. Law Sch., Faculty Scholarship, Paper No. 1650, 2016) https://scholarship.law.upenn.edu/faculty_scholarship/1650/.

234 Daniel Carpenter & David A. Moss, *Introduction* to *Failures of Capture Scholarship*, *in* PREVENTING REGULATORY CAPTURE 1, 1–22 (Daniel Carpenter & David A. Moss eds., 2014).

235 Daniel Carpenter, *Detecting and Measuring Capture*, *in* PREVENTING REGULATORY CAPTURE, *supra* note 234, at 57, 57; *see also* Boyd, *supra* note 3, at 1636, 1651–58 (challenging the capture hypothesis as applied to public utility commissions); David B. Spence & Frank Cross, *A Public Choice Case for the Administrative State*, 89 GEO. L.J. 97, 121–23 (2000) (challenging the evidentiary support for capture theory).

influence how regulators strike that balance. Those efforts influence outcomes, but so do other factors, including other intervenors, the legal environment, the preferences of political overseers, and public opinion. Indeed, there is evidence that the general public (as distinguished from NGOs) tends to be mildly supportive of new energy infrastructure,[236] and regulators' decisions in the energy siting disputes studied here seem better explained by the combined influence of these various contextual forces than by pervasive business dominance. Thus, regulators rejected coal-fired power plants in large percentages across the country during the study period, but were less likely to reject other, less risky, energy infrastructure. When politicians intervened to influence regulatory processes, they did so in ways that seemed to reflect regional ideological preferences about the energy future more than capture. While New York politicians changed state laws to prevent local governments from authorizing fracking,[237] Texas and Oklahoma politicians changed their states' laws to prevent local governments from restricting fracking.[238] California's governor took strong action to ensure the development of solar power over the objections of NGOs.[239] President Trump overruled the Obama administration's rejection of the Keystone XL Pipeline.[240] And so on.

This is a tug-of-war model of regulation in a capitalist democracy: a struggle in which regulators exercise bounded discretion[241] subject to rarely used legislative[242] and executive intervention.[243] In that context NGOs serve as sounders of alarms seeking to trigger political pressure on regulators;[244] and the behavior of NGOs in this data set seems consistent with that story. Lead agencies try to balance reliability, affordability, and environmental performance in the energy system in ways that may tilt toward reliability and affordability more often and toward environmental performance less often than NGOs prefer; presumably, industry and proponents of development perceive an opposite bias in the process. Therefore, businesses and NGOs

236 *See, e.g.*, Konisky et al., *supra* note 127, at 27–28.

237 *See supra* note 157 and accompanying text.

238 *See supra* note 156 and accompanying text.

239 *See supra* note 223 and accompanying text.

240 *See supra* note 209 and accompanying text.

241 *See generally* Thomas H. Hammond & Jack H. Knott, *Who Controls the Bureaucracy?: Presidential Power, Congressional Dominance, Legal Constraints, and Bureaucratic Autonomy in a Model of Multi-Institutional Policy-Making*, 12 J.L. ECON. & ORG. 119 (1996); David B. Spence, *Managing Delegation Ex Ante: Using Law to Steer Administrative Agencies*, 28 J. LEGAL STUD. 413 (1999).

242 *See* Matthew D. McCubbins & Thomas Schwartz, *Congressional Oversight Overlooked: Police Patrols Versus Fire Alarms*, 28 AM. J. POL. SCI. 165, 176 (1984) (explaining that Congress does not usually intervene but prefers a "fire alarm" approach); *see also* Barry R. Weingast & Mark J. Moran, *Bureaucratic Discretion or Congressional Control? Regulatory Policymaking by the Federal Trade Commission*, 91 J. POL. ECON. 765, 792 (1983).

243 *See, e.g.*, Terry M. Moe & Scott A. Wilson, *Presidents and the Politics of Structure*, LAW & CONTEMP. PROBS., Spring 1994, at 1, 20, 37–42.

244 McCubbins & Schwartz, *supra* note 242, at 166 (articulating this idea).

alike mobilize to try to put a finger on the scale of that balancing process, often enlisting elected politicians to impose pressure from above.

The propensity of NGOs to mobilize around risk may reflect the incentive structure NGOs face in an era of "post-truth" politics, one characterized by insulated communities of belief rather than truth-oriented deliberation.[245] Indeed, it seems almost self-evident that polarization and digital interconnectedness are facilitating (and speeding) the spread and persistence of false belief, though that problem may be easier to recognize in our ideological adversaries than in ourselves.[246] In the regulation of energy market entry, repeated, intense conflict over increasingly disparate and urgent visions of an energy future, fought using modern digital communication techniques, can feed fragmented belief ecosystems in which beliefs harden. Within these ecosystems, members may amplify especially dreaded or unfamiliar risks, and members may consume risk information that has been filtered in biased ways. That tendency toward biased filtering of new information heightens the primacy effect,[247] suggesting a race between NGOs and businesses to shape the public's first impressions of energy projects using appeals most likely to resonate—risk-based appeals.[248]

Troublingly, the data suggest that misperceptions or misrepresentations of risk are fairly commonly injected into siting conflicts. This is not a new feature of siting regulation, but its speed, frequency, and effectiveness may be on the rise. The idea that regulators sometimes reject (or never get the opportunity to consider) projects whose measurable risks are small and benefits large has long troubled the risk regulation community, including commentators like then-Judge Stephen Breyer,[249] Cass Sunstein,[250] John Graham, and Jonathan Wiener.[251] Popular misunderstanding of risks can lead responsive politicians and regulators to misdirect public resources away from larger risks and toward smaller ones.[252] One rejoinder to this concern

245 Antonio García Martínez, *Facebook, Snapchat and the Dawn of the Post-Truth Era*, WIRED (May 25, 2018), https://www.wired.com/story/facebook-snapchat-and-the-dawn-of-the-post-truth-era/.

246 *See* Nickerson, *supra* note 107, at 188 (crediting confirmation bias with helping to preserve false belief and with overestimations of the evidence in support of any belief); *see also* Martínez, *supra* note 245 (crediting digital media platforms for elevating belief over truth).

247 The primacy effect refers to the idea that we give more weight to the information we receive first about a particular issue. *See* Philip E. Tetlock, *Accountability and the Perseverance of First Impressions*, 46 SOC. PSYCHOL. Q. 285, 286 (1983).

248 *See, e.g.*, Vasi et al., *supra* note 29, at 934 ("Local screenings of [the documentary] *Gasland* contributed to anti-fracking mobilizations, which, in turn, affected the passage of local fracking moratoria . . . .").

249 STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE 3–21 (1993).

250 CASS R. SUNSTEIN, LAWS OF FEAR 17, 62, 142 (2005).

251 John D. Graham & Jonathan Baert Wiener, *Confronting Risk Tradeoffs*, *in* RISK VS. RISK 1 (John D. Graham & Jonathan Baert Weiner eds. 1995) (making precisely this point).

252 Following the EPA's earlier recognition that Superfund site risk was overestimated by the lay public, James Hamilton and Kip Viscusi showed that Superfund cleanups spent hundreds of millions of dollars per death averted, which at the time was more than fifty

is that because our ability to quantify (or detect) risk is limited, public alarm is not illogical; indeed, decisionmakers ought to be cautious about permitting land uses that provoke legitimate worries about poorly understood risks.[253] These arguments are essentially invocations of the precautionary principle, admonitions of humility when undertaking actions that affect complex ecosystems.

On the other hand, regulators know that siting decisions also implicate the most common rejoinder to the precautionary principle: namely that in dynamic energy markets *both* action *and* inaction affect the magnitude and distribution of risks[254] depending upon the context. We have already noted that the dearth of natural gas pipeline infrastructure in New York and New England means that energy prices there will be more expensive than they might otherwise be,[255] and that New England will sometimes import Russian LNG and burn dirtier diesel fuel and coal to generate electricity.[256] Stopping an oil pipeline may mean that more oil will be shipped by rail, increasing the risk of a spill.[257] And stopping a utility-scale solar or wind farm, or

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times the figure used in the EPA's own cost-benefit analyses. JAMES T. HAMILTON & W. KIP VISCUSI, CALCULATING RISKS? 1–2, 189–90 (1999). Some scholars worry that basing policy on misperceptions of risk threatens more fundamental values: that when a society allows belief to trump scientific fact in the policy process, the result may be not only bad policy, but oppression. *See, e.g.*, Frank B. Cross, *The Risk of Reliance on Perceived Risk*, 3 RISK 59, 68–69 (1992) (drawing connections between historical preferences for belief over science to the rise of oppressive authoritarian regimes).

253 *See* Cross, *supra* note 252, at 60.

254 SUNSTEIN, *supra* note 250, at 62 ("[A]dverse effects may come from inaction, regulation, and everything between.").

255 April Lee, *January's Cold Weather Affects Electricity Generation Mix in Northeast, Mid-Atlantic*, U.S. ENERGY INFO. ADMIN. (Jan. 23, 2018), https://www.eia.gov/todayinenergy/detail.php?id=34632.

256 *See, e.g.*, Steve Everly, *Why Natural Gas from Putin's Russia Has to Be Imported to New England*, WASH. EXAMINER, (Mar. 24, 2018), https://www.washingtonexaminer.com/opinion/op-eds/why-natural-gas-from-putins-russia-has-to-be-imported-to-new-england; Naureen S. Malik, *Cold Snap Makes New England the World's Priciest Gas Market*, BOS. GLOBE (Dec. 27, 2017), https://www.bostonglobe.com/metro/2017/12/27/cold-snap-makes-new-england-world-priciest-gas-market/ILRzKrRTCtW4uNYRZeEIvK/story.html. This conclusion holds true as long as natural gas remains the marginal fuel in the New England and New York electricity markets, as it is now. *See* DAVID B. PATTON ET AL., POTOMAC ECON., QUARTERLY REPORT ON THE NEW YORK ISO ELECTRICITY MARKETS: THIRD QUARTER OF 2017, at 16 (2017), https://www.potomaceconomics.com/wp-content/uploads/2018/03/NYISO-Quarterly-Report_2017-Q3__11-22-2017_Final.pdf (concluding that natural gas and hydroelectric power were the marginal fuels in the New York market); *Key Grid and Market Stats*, ISO NEW ENG., https://www.iso-ne.com/about/key-stats/ (last visited Aug. 26, 2019) (estimating that natural gas is the marginal fuel in the New England market seventy percent of the time).

257 That sort of reasoning led the left-leaning editorial page of a major Texas newspaper to support the controversial Trans-Pecos Pipeline because the natural gas it delivers to Mexico will reduce haze pollution in Big Bend National Park by supplying natural gas to Mexico and displacing coal-fired power in the Mexican electric generation mix. *Editorial: Trans-Pecos Pipeline Protest Is Misplaced*, DALL. MORNING NEWS (June 16, 2016), https://

the transmission line necessary to connect it to the grid, will increase spot electricity prices for consumers and benefit competitor technologies, including (perhaps) dirtier fossil-fueled energy or more expensive distributed renewable energy. There may be environmental justice aspects to these opportunity costs as well: when decisionmakers choose a more expensive option—to prioritize reliability or environmental performance over affordability—those higher costs will impose a disproportionate burden on relatively poor energy consumers.[258] These situational consequences of siting decisions may loom larger to regulators than to NGOs. For national NGOs, opposing fossil fuel infrastructure may make sense regardless of these shorter-term environmental costs as they pursue a strategy aimed at avoiding "carbon lock-in," the idea that new fossil fuel infrastructure now slows decarbonization by making fossil fuel cheaper in the future.[259]

Indeed, some commentators argue that risk amplification by NGOs is illogical but harmless. Peter Sandman has noted that even though "the risks that kill people and the risks that upset them are completely different," public alarm and outrage force elites to include the lay public in risk regulation disputes, ultimately yielding more democratically legitimate decisions.[260] Writing in the 1980s, Sandman argued that the truth will eventually win out.[261] But that sort of optimism seems less warranted in today's digital, post-truth environment. The work of Noah Friedkin and Francesco Bullo sheds some light on the spread of true versus false beliefs in the connected digital world. They find that when a false belief predominates in nested groups (groups that communicate with one another) the truth about risk eventually tends to win out if "any individual who understands the relevant science or mathematics must come to the [truthful] conclusion."[262] However, Friedkin

www.dallasnews.com/opinion/editorials/2016/06/16/editorial-trans-pecos-pipeline-protest-is-misplaced/.

258 This effect is particularly ironic (perverse?) when one considers the wealth effects of NIMBY opposition. If wealthy communities veto energy infrastructure, thereby foreclosing energy service options or increasing the cost of energy, the wealthy will be better able to adjust to this state of affairs. Opposition to natural gas infrastructure in New York has hampered gas utilities' ability to import cheap, plentiful natural gas from out of state, which has led one New York utility to deny new natural gas hookups to residential customers. Wealthier homeowners are responding by installing more expensive, geothermal home heating systems, an option that is unavailable to poorer residents. *See* Kaya Laterman, *Converting to Geothermal Energy*, N.Y. TIMES (Aug. 9, 2019) https://www.nytimes.com/2019/08/09/realestate/converting-to-geothermal-energy.html.

259 For discussions of this idea, see Adelman & Spence, *supra* note 59, at 3483–86; R.T. Dahowski & J.J. Dooley, *Carbon Management Strategies for US Electricity Generation Capacity: A Vintage-Based Approach*, 29 ENERGY 1589, 1596–97 (2004); and Steven J. Davis et al., *Future CO_2 Emissions and Climate Change from Existing Energy Infrastructure*, 329 SCIENCE 1330, 1333 (2010).

260 PETER M. SANDMAN, RESPONDING TO COMMUNITY OUTRAGE 2, 3–5, 112–13 (2012 ed.) (1993), http://petersandman.com/media/RespondingtoCommunityOutrage.pdf.

261 *Id.* at 49–60.

262 Noah E. Friedkin & Franceso Bullo, *How Truth Wins in Opinion Dynamics Along Issue Sequences*, 114 PROC. NAT'L ACAD. SCI. 11,380, 11,384 (2017).

and Bullo caution that this finding does not hold "when social movements or social media elevate the adoption of a particular set of false facts and logic."[263] In the Trump era, the elevation of false facts and logic seems more common, suggesting that filter bubbles may be insular, and that many groups are not "nested" in larger social networks. Our data revealed some examples of multiple NGOs sharing common false or dubious messaging, including claims about wind turbine syndrome, radio frequency radiation from transmission lines and smart meters, and exaggerations of risks associated with nuclear power and fracking.[264] We cannot know from the limited information we have whether those observations reflect the kind of filter-bubble-generated false belief described by Friedkin and Bullo, but they may.

Regardless, if regulators have access to the scientific and mathematical expertise that Friedkin and Bullo say enables truth to win out,[265] perhaps the amplification of risk will not matter because regulators will not let it skew their decisions.[266] But this is an unsatisfying answer for two reasons. First, our data support an inference that investors are less likely to propose projects in places where NGO opposition is strong.[267] Stated differently, when NGO opposition apparently deters proposal of some energy projects, society loses the net benefit of those never-proposed projects that regulators would otherwise have approved. If one assumes that regulators pursue (their sense of) the public interest, that net benefit would most often be positive; if not, it may often be negative. Second, it may be that the transition to a reliable, affordable, and cleaner energy future depends upon more than independent regulators: it may ultimately depend on broader public consensus about how to balance reliability, affordability, and environmental performance. Apparently, given existing policy and market incentives, any transition to a cleaner energy mix will not happen fast enough to avert serious adverse climate

263 *Id.*

264 *See* discussion *supra* Section III.B.

265 That might not be so in situations involving highly technical energy projects where there could arise large information asymmetries between regulators and the regulated. For example, in deepwater offshore oil and gas production, regulators might not be able to assess risk nearly as well as companies can. That seems less likely to be the case in the project categories studied here.

266 This may be another reason why our data suggest that local NGOs more often resorted to hyperbolic risk arguments than national NGOs because the latter may have more access than the former to scientific expertise.

267 This is a more general version of the dynamic documented in parts of the environmental justice literature. Hamilton, *supra* note 150, at 128–29 (attributing a race and poverty bias in siting hazardous waste facilities to firms' avoidance of politically active communities). A wind developer in upstate New York claimed to be able to estimate the intensity of local opposition to proposed projects this way: "If the number of vacation homes in that town were high, there was going to be a high level of opposition there. . . . If it was low, there would be low opposition. That was true town to town across upstate New York." RUSSELL GOLD, SUPERPOWER 105 (2019).

impacts.[268] Speeding the transition will require collective decisions about how to incentivize lower- or zero-carbon technologies. Those decisions, in turn, implicate a suite of difficult value judgments about how to manage energy reliability and affordability during the transition.

That kind of broader agreement seems particularly elusive in today's political environment, and speculating about how that might come to pass is beyond the scope of this article. The demise of Clean Line Energy, a merchant transmission firm dedicated to building transmission to support midwestern wind farms, illustrates this risk. Its mission was to build the transmission network that would allow cheap, clean wind power from the plains states to reach eastern markets.[269] Despite the clear positive net benefits of its proposed projects, most have been stymied by local opposition, much of it based on the dissemination of false information by local groups.[270] The kind of affordable rapid green transition necessary to forestall the worst impacts of global warming implies the need to build interstate transition to support utility-scale wind and solar projects, and soon. The Clean Line experience does not offer much hope in that regard.

Nevertheless, this analysis suggests some constructive steps that NGOs could take to further that agenda. If, as the data suggest, NGOs are cooperating with one another effectively to coordinate their opposition to fossil fuel infrastructure, those same NGOs[271] ought to be able to cooperate to promote less expensive, utility-scale clean energy infrastructure as well. Actively supporting proposals to build clean energy infrastructure may require NGOs to do some organizational (and cultural) retooling, since most were built to oppose rather than support development. It may also sometimes pit national NGOs against local NGOs (including local affiliates) when the latter oppose clean energy infrastructure. Sierra Club, for example, has struggled to advocate for clean energy projects over the opposition of its local chapters,[272] and required "lengthy internal discussion" in order to decide to support a major transmission line project that would carry wind power to market in Missouri,

268 Davenport, *supra* note 10 (summarizing experts' conclusion that the pace of change is too slow to meet global warming targets established in the Paris Agreement on climate change).

269 See GOLD, *supra* note 267, for a book-length chronicle of the company's rise and fall.

270 Gold chronicles numerous false and misleading statements by various project opponents, from local organizers to Senator Lamar Alexander of Tennessee. *Id.* at 249–51.

271 There are, of course, research-oriented national environmental NGOs, like Resources for the Future (economic analysis) or the Environmental Defense Fund (scientific research) already working to address energy tradeoffs and promote workable solutions to tradeoff problems. They almost never intervene in siting proceedings. This suggestion is aimed at NGOs with stronger histories of opposing energy development legally and politically; they could put their legal and political expertise to work supporting individual proposed clean energy projects, even over local opposition.

272 *See* Corkery, *supra* note 22 (discussing the Northern Pass transmission line); Owens, *supra* note 168 (discussing the Mojave Desert solar projects).

Arkansas, and other states.[273] Nonetheless, if national NGOs become more active in support of green energy infrastructure projects, their more conservative approach to risk-based claims in cases involving non-fossil-fuel infrastructure may act as a counterweight to local NGOs' claims about risks of clean energy infrastructure, neutralizing local opposition and improving the probability of project success. National NGOs may wish to look to a new initiative by Columbia University's Sabin Center for Climate Change Law called the "Renewable Energy Legal Defense Initiative," which organizes legal assistance to defend renewable energy projects against opposition attacks.[274] A broader NGO effort to support green energy infrastructure might blunt the effects of local mobilization in opposition to these sorts of projects.

In the meantime, the regulation of market entry will continue along the familiar course depicted in this analysis, one in which holders of private capital propose projects on which they think they can earn attractive returns. Some combination of national and local NGOs then use mostly risk-based arguments to mobilize the broader public in political opposition to those project proposals. Then regulators decide whether or not the projects are consistent with their respective statutory mandates. That process allows room for ideological heterogeneity to drive different choices in different contexts: pursuing decarbonization at some places and times and traditional energy infrastructure at other places and times. Viewed one way, however, that process reflects the dysfunction, emotion, and polarization of American politics. Viewed another way, it looks almost Madisonian—a system in which passions collide in the application of siting regimes, and it is up to regulators to strike the balance that reflects the permanent and aggregate interests of the community.[275]

273 GOLD, *supra* note 267, at 141, 166, 183.

274 *See* Michael Gerrard & John Dernbach, *How Lawyers Can Help Save the Planet*, LAW360 (May 21, 2019), https://www.law360.com/articles/1160147/how-lawyers-can-help-save-the-planet.

275 THE FEDERALIST NO. 10, at 72 (James Madison) (Clinton Rossiter ed., 1961) (defining factions as agents of temporary passions, and foes of the "permanent and aggregate interests of the community").

APPENDIX A: DISTRIBUTION OF NGOS' TACTICAL AND ISSUE ARGUMENT CHOICES ACROSS PROJECT TYPES

TABLE A-1: NGO TACTICAL CHOICES (% USING)

	Total	**Tactics** % all groups (% nat'l / % local)			
Technology	**# of Orgs (nat'l / local)**	**Legal Interven'n**	**Political Mobiliz'n**	**Protest**	**Econ Pressure / Boycott**
Fossil-Fueled Plants	56 (8/48)	52 (75/48)	50 (50/50)	36 (25/38)	0 (0/0)
Pipelines	79 (30/49)	86 (80/89)	82 (70/89)	61 (56/63)	11 (23/4)
Fracking	93 (20/73)	16 (15/16)	52 (75/45)	37 (35/38)	5 (0/6)
LNG	67 (30/37)	30 (23/35)	83 (96/73)	58 (60/56)	4 (6/3)
Utility-Scale Solar	46 (8/39)	39 (50/36)	63 (87/57)	20 (25/18)	6 (25/2)
Wind	82 (16/66)	37 (37/37)	54 (58/44)	2 (0/3)	2 (0/3)
Transmission Lines	57 (16/41)	19 (13/21)	74 (50/83)	1 (0/2)	0 (0/0)
Nuclear	26 (9/17)	58 (77/47)	62 (67/59)	8 (11/6)	0 (0/0)
Smart Meter	20 (3/17)	30 (33/29)	80 (100/76)	15 (0/18)	0 (0/0

TABLE A-2: NGO ISSUE CHOICES

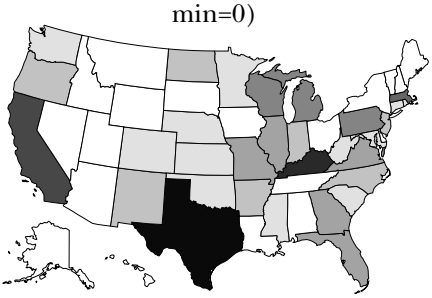
	Total	**Issues** % all groups (% nat'l / % local)			
Technology	**# of Orgs (nat'l / local)**	**Economic**	**Envt'l**	**Health**	**Justice / Fairness**
Fossil-Fueled Plants	56 (8/48)	34 (25/35)	73 (88/71)	57 (62/56)	23 (13/25)
Pipelines	79 (30/49)	34 (33/35)	92 (90/94)	73 (70/76)	23 (20/24)
Fracking	93 (20/73)	20 (25/19)	67 (80/63)	67 (80/63)	4 10/3)
LNG	67 (30/37)	46 (50/43)	55 (52/43)	55 (24/31)	21 (33/11)
Utility-Scale Solar	46 (8/38)	24 (13/26)	76 (100/71)	15 (0/18)	7 (0/8)
Wind	82 (16/66)	48 (43/49)	73 (63/76)	53 (37/58)	10 (13/9)
Transmission Lines	57 (16/41)	56 (65/31)	63 (56/65)	30 (13/36)	0 (0/0)
Nuclear	26 (9/18)	31 (33/29)	96 (77/100)	65 (78/59)	4 (0/6)
Smart Meters	20 (3/17)	25 (33/23)	10 (33/5)	100 (100/100)	0 (0/0)

APPENDIX B: GEOGRAPHIC DISTRIBUTION OF NGOS AND PROJECTS

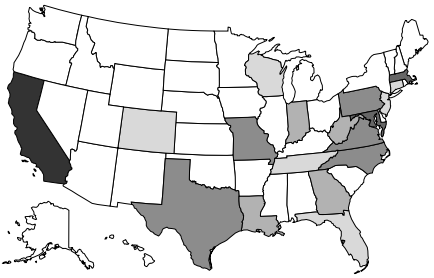
Fossil-Fueled Power Plants

Fossil-fueled power plants can be constructed wherever a suitable site can be found and are not relegated to particular regions of the country. During the study period, projects were proposed all over the country.

No. of Major Fossil-Fueled Power Plant Projects Proposed During the Study Period, by State (max=10; min=0)



No. of Anti-Power-Plant NGOs in the Data Set (max=10; min=0)

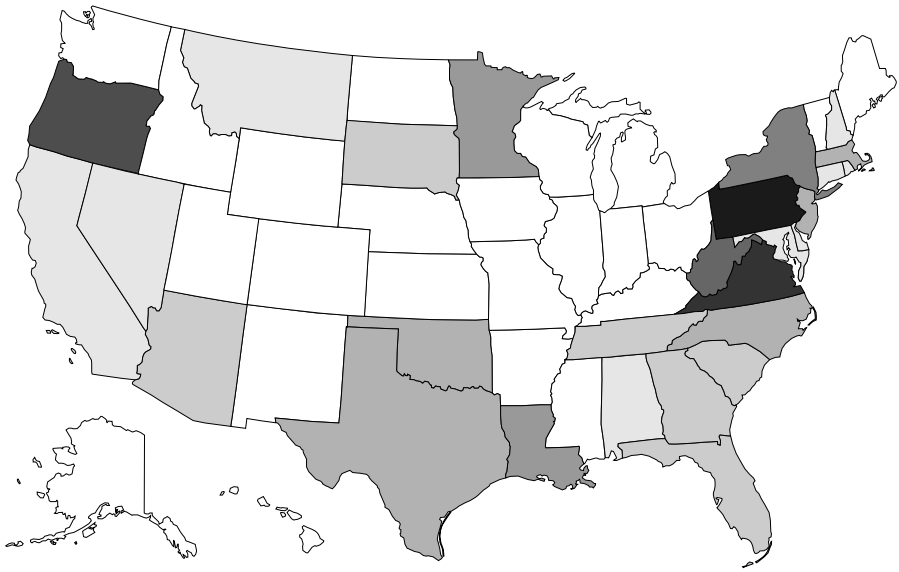


Data Source: U.S. Energy Information Administration

Pipelines

During the study period, pipeline project proposals centered in the new oil and gas production regions running north-south through the center of the country from Texas to North Dakota (including Colorado), heading to markets in the Northeast, mid-Atlantic region, and Southeast. The highest concentration of pipeline projects sought to bring oil from the production areas in Alberta to connect to existing pipelines in the north central United States or to bring natural gas into New England. One anti-pipeline NGO, the Fractracker Alliance, produced a 2014 map of pipeline projects that is illustrative of the distribution of projects geographically. That map is available on the FracTracker Alliance website.[276]

No. of Antipipeline NGOs in the Data Set, by State (max=12; min=0)



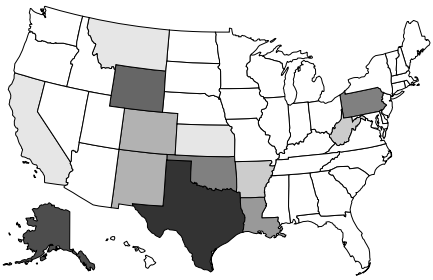
276 Ted Auch, *North American Pipeline Proposal Map*, FRACTRACKER ALLIANCE (Mar. 14, 2014), https://www.fractracker.org/2014/03/proposed-pipelines/.

Fracking

Major Oil & Gas Shale Plays

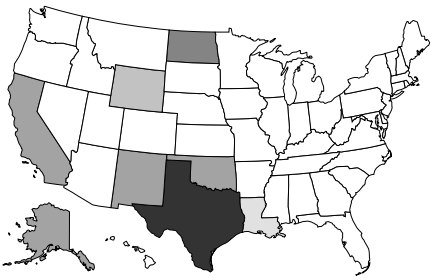
Fracking can only occur where deposits of hydrocarbon-containing shale layers exist. Sizeable American shale plays exist in the following states (moving west to east): California, Colorado, Wyoming, North Dakota, Texas, Oklahoma, Arkansas, Louisiana, Ohio, Pennsylvania, and New York. For more data on existing shale plays in the United States, see the U.S. Energy Information Administration's current map of shale plays in a conference paper written by Aaditya Khanal, Mo Khoshghadam, and William John Lee.[277] The states of Vermont, New York and Maryland have imposed statewide bans on fracking.[278]

Natural Gas Production, Top Producing States (% U.S. Production; max=26%; min=0%)



Data Source: U.S. Energy Information Administration

Oil Production, Top Producing States (% U.S. Production; max=26%; min=0%)

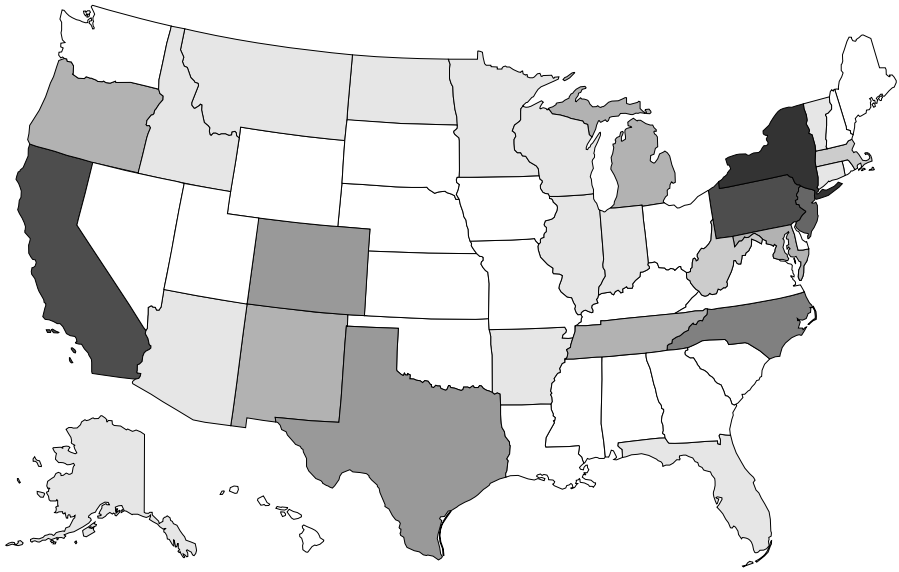


Data Source: U.S. Energy Information Administration

277 Aaditya Khanal et al., *Effect of Well Spacing on Productivity of Liquid Rich Shale (LRS) Reservoirs with Multiphase Flow: A Simulation Study*, SOC'Y PETROLEUM ENGINEERS, Sept. 2015, at 3, https://www.researchgate.net/publication/283490429_Effect_of_Well_Spacing_On_Productivity_Of_Liquid_Rich_Shale_LRS_Reservoirs_With_Multiphase_Flow_A_Simulation_Study.

278 Hurdle, *supra* note 157.

No. of Antifracking NGOs, by State, in Data Set[279] (max=13; min=0)



279 Note that the State of New York sits atop a large shale gas deposit, and banned fracking within its borders during the study period. For that reason it is not a large producing state, but it might have been had it not imposed the statewide ban.

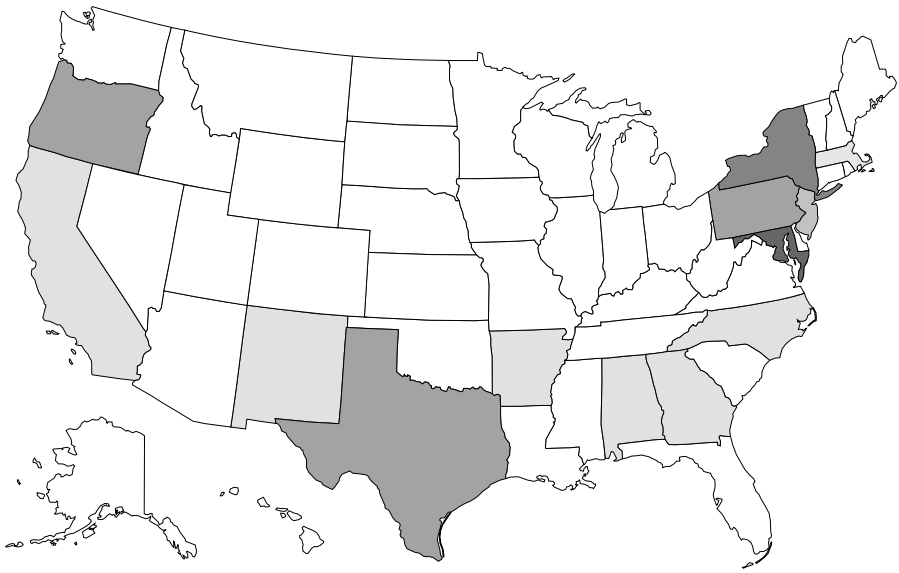
LNG Terminals

Geographic Distribution of Projects

Because LNG terminals involve filling or emptying ocean-going tankers, they must be situated on the coast or just offshore. The largest concentration of proposed LNG terminals was on the Gulf Coast in Texas and Louisiana (9 proposed projects in each state). Additional Gulf Coast projects were proposed in Mississippi (2) and Florida (1). And there were projects proposed during the study period on the Atlantic Coast in Massachusetts (2), Maryland (1), Pennsylvania (1), New York (1) on the Pacific Coast in Oregon (1), and in Alaska (1).

The LNG data set featured an unusually large number of national NGOs (30/67). The state NGO numbers are reported in the figure below. However, certain projects attracted specific opposition from national NGOs as well. Among the NGOs in our data set the 3 LNG projects attracting the largest number of NGO opponents (including national NGOs) were: (1) the Cove Point Terminal in Maryland (31 NGOs), (2) the Jordan Cove Project in Oregon (15 NGOs), and (3) the Port Ambrose Project in New York (12 NGOs).

No. of Local Anti-LNG NGOs in Data Set, by State (max=8; min=0)



Solar Power Projects

Geographic Distribution of Projects

Solar power potential in the United States is highest in the desert southwest. All else equal, one would expect development to be concentrated in area stretching east from southern California through Nevada, Arizona, New Mexico, and West Texas, and neighboring states to the north. Utility-scale solar development elsewhere can be spurred by state policy incentives irrespective of solar power potential.

There is no compendium of utility-scale solar projects (failed and successful) covering the study period. The states with the most installed solar capacity (most of which was built during the study period) are[280]:

- California (>20GW)
- North Carolina (>5GW)
- Arizona (>3GW)
- Nevada (>3GW)
- Florida (>3GW)
- Texas (~3GW)
- New Jersey (~3GW)
- Massachusetts (>2GW)
- New York (>1.5GW)
- Utah (~1.5GW)

The projects opposed by the NGOs in our data set were located in:

- California (26)
- Nevada (6)
- New Jersey (3)
- Massachusetts (2)
- Arizona (1)
- Maryland (1)
- Tennessee (1)
- North Carolina (1)

The NGOs in our data set were distributed similarly: 17 were located in California, 8 in New Jersey, with 1 or 2 each in 6 other states.

280 These data come from *Top 10 Solar States*, SOLAR ENERGY INDUSTRIES ASS'N, https://www.seia.org/research-resources/top-10-solar-states-0 (last visited Aug. 27, 2019).

Wind Farms

All else equal, the best locations for wind farms are in the central plains and offshore where winds are strong and steady. In addition, some states offer policy incentives for wind development.

Wind Projects and Capacity in the Lower Forty-Eight States

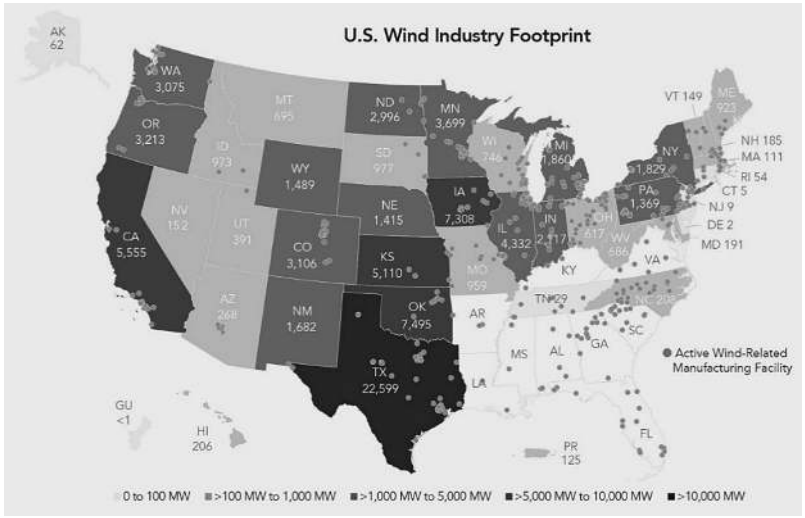
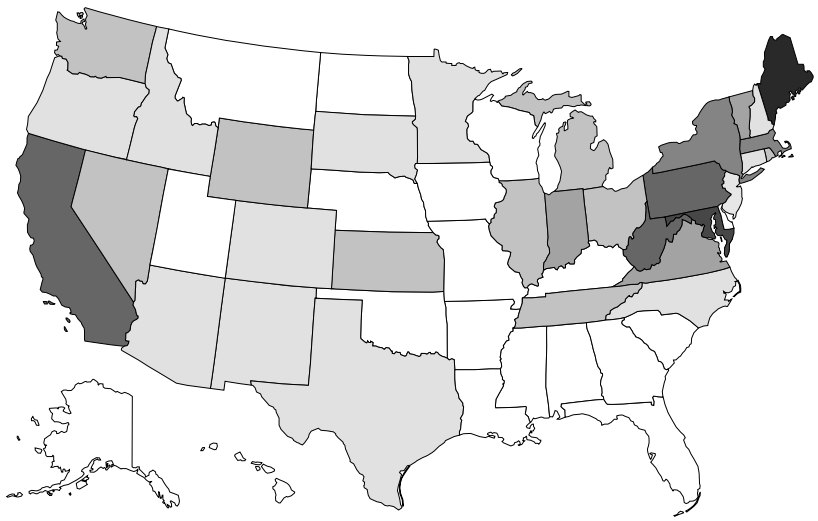


Figure Source: American Wind Energy Association

Types of Projects Opposed by NGOs in the Data Set
Ridgeline: 22
Plains: 20
Coastal or Offshore: 9

No. of Antiwind NGOs in Data Set, by State
(max = 7; min = 0)

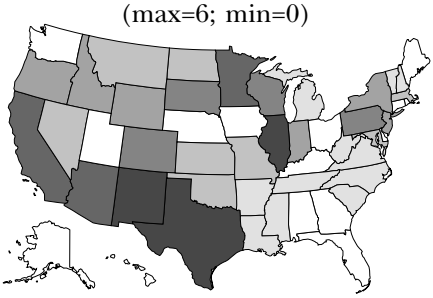


Transmission Lines

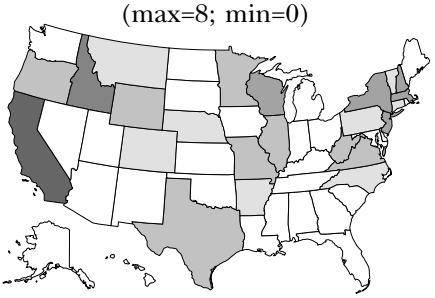
Geographic Distribution of Projects

For this analysis we were able to identify all major transmission projects proposed in the lower forty-eight states during the study period. Many were designed to alleviate congestion in the market and improve system reliability in parts of the U.S. grid that were overcrowded, but many others aimed to bring renewable power from the windy central plains, or solar power from the desert southwest, to urban areas.

No. of Major Transmission Projects Proposed During the Study Period, by State
(max=6; min=0)



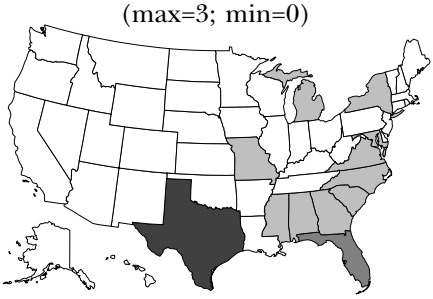
No. of Antitransmission NGOs in the data set, by State
(max=8; min=0)



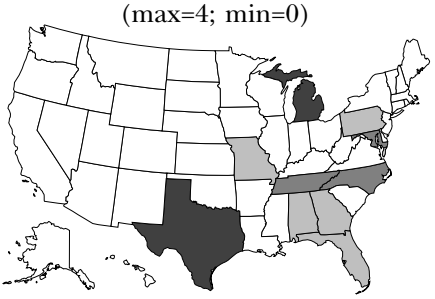
Nuclear Power Plants

Nuclear power plants require a sizeable source of water for cooling and are typically located in rural areas. The Energy Policy Act of 2015 offered powerful incentives for the construction of new nuclear power plants, triggering proposals for more than a dozen new plants, most of them in the Southeast.[281]

Distribution of Nuclear Power Plant Project Proposals, by State
(max=3; min=0)



Distribution of Antinuclear NGOs in Data Set, by State
(max=4; min=0)



The project economics of nuclear power took a turn for the worse during the study period leading to most of the proposals being abandoned. The only proposed plants that made it to the construction phase were in Georgia and South Carolina.

281 Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005).

Smart Meters

The rollout of smart meters to residential customers occurred almost entirely within the study period, at various locations across the country.

Smart-Meter Deployment Among Residential Customers, 2016

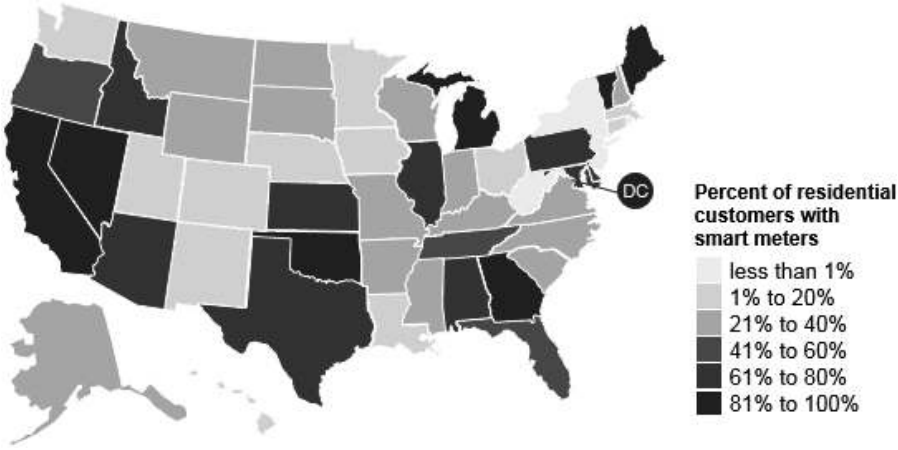
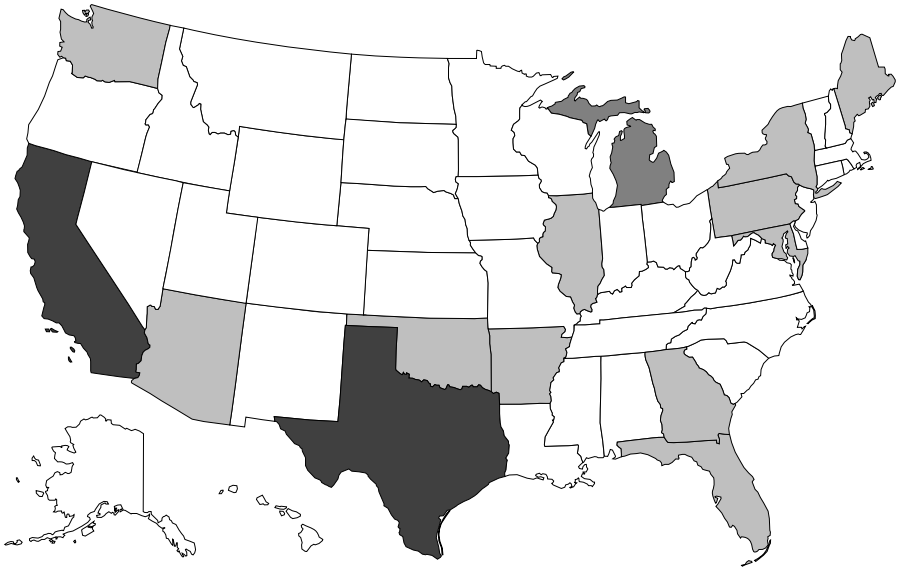


Figure Source: U.S. Energy Information Administration[282]

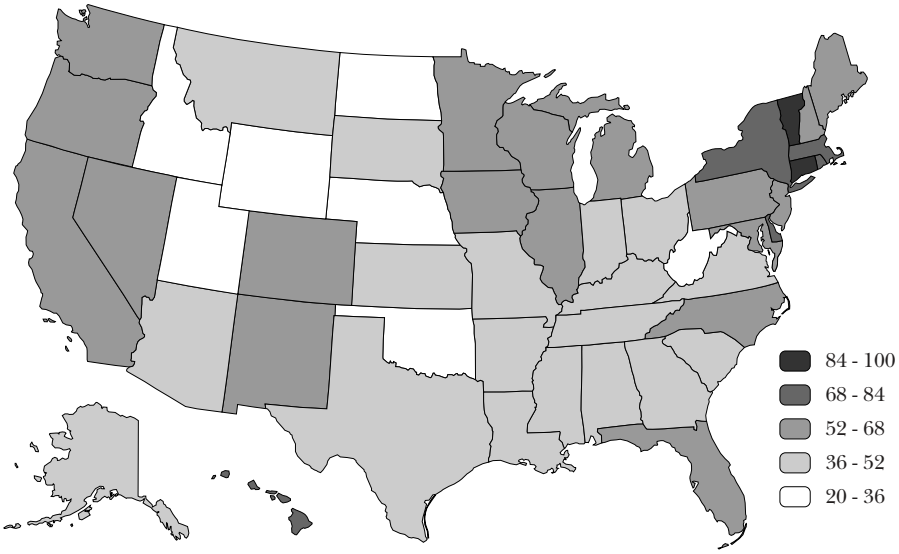
Anti-Smart-Meter NGOs in Data Set, by State (max=3, min=0)



282 *Nearly Half of All U.S. Electricity Customers Have Smart Meters*, U.S. ENERGY INFO. ADMIN (Dec. 6, 2017), https://www.eia.gov/todayinenergy/detail.php?id=34012.

Citizen Ideology, by State, 2016[283]

Higher scores indicate more liberal ideology



283 Citizen ideology data taken from *Updated Measures of Citizen and Government Ideology*, RICHARD C. FORDING, https://www.dropbox.com/s/nwinaepsjltoshq/stateideology_v2018.xlsx?dl=0 (last updated June 18, 2018). These scores are calculated as described in William D. Berry et al., *Measuring Citizen and Government Ideology in the American States, 1960–93*, *42* AM. J. POL. SCI. 327 (1998).