

REGULATORY ISLANDS

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Policy experimentation in the “laboratory of the states” is a frequently cited benefit of our federalist system, but a necessary condition of thoughtful experimentation is often missing. To conduct useful policy experiments, states and other subfederal actors need baseline information: In order to learn from the successes and failures of their neighbors, state actors must understand the laws and regulations that other jurisdictions have enacted. And, despite the seemingly ready availability of legal and regulatory materials in the information age, subfederal officials often lack this understanding. The literature has recognized that states often fail to share policy results, particularly failures, but few legal scholars have explored the lack of information about the substance of policy—an essential foundation for thoughtful experimentation. This information deficit tends to pervade technical policy areas in particular—those that do not follow uniform codes and require expertise to understand, like hydraulic fracturing and health care. In these areas and others, the states may still be laboratories, but in some cases they are laboratories on islands, with no comprehensive, uniform information exchanged among them. This limits the experimental upside of laboratories—informed, efficient, and innovative regulatory approaches. It also expands laboratories’ known downside—the costs to private entities of complying with different standards.

This Article explores the problem of regulatory islands and the public choice, political economy, and resource-based dynamics that create them. It also explores areas in which states have effectively shared regulatory content—often with federal help—and argues that the federal government is in the best position to work with subfederal institutions to produce and synthesize regulatory information. Even if the government does not do the collection and synthesization itself—indeed, mistrust by state actors may prevent this level of involvement—it should fund and partially manage it. Federal involvement is important because when the federal government allows subfederal experimentation in areas of federal concern, it should already be producing much of this information anyway in order to monitor state regulation to ensure that federal goals are being met and ensure that states are not imposing externalities on their neighbors. Increasing the availability of regulatory information will enable more informed experimentation and allow monitoring

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of policy gaps. In the many areas in which it does not regulate directly, the essential federal government role in modern regulatory experiments is an informational one.

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INTRODUCTION

Policy experimentation in subfederal “laboratories” has long been a key feature of the federal system—and often a justification for it.¹ Indeed, our, or at least the Supreme Court’s, commitment to federalism seems increasingly strong.² At the same time, the United States is embarking upon one of the largest regulatory experiments of our time³ as we rely primarily on states to control the risks of drilling and hydraulic fracturing for fossil fuels.⁴ We have also left largely to

¹ See *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting) (“It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”); Akhil Reed Amar, *Five Views of Federalism: “Converse-1983” in Context*, 47 VAND. L. REV. 1229, 1233–36 (1994) (summarizing justices’ praise of state experimentation); Heather K. Gerken, *Foreword: Federalism All the Way Down, The Supreme Court 2009 Term*, 124 HARV. L. REV. 4, 6, 47–48 (2010) (explaining that under traditional accounts, federalism “promotes choice, competition, participation, experimentation, and the diffusion of power” and that in Gerken’s alternative account, outsiders participate in the federalist system and positively “feed back into national debates”); Larry Kramer, *Understanding Federalism*, 47 VAND. L. REV. 1485, 1499 (1994) (arguing that most claims about the benefits of federalism, including the argument that it allows for innovation, “remain valid today”); Michael W. McConnell, *Federalism: Evaluating the Founders’ Design*, 54 U. CHI. L. REV. 1484, 1493, 1498 (1987) (book review) (concluding that “decentralization allows for innovation and competition in government” and gives subfederal entities “greater opportunity and incentive to pioneer useful changes” as compared to a “consolidated national government,” which is like a monopoly).

² See, e.g., Edward L. Rubin & Malcolm Feeley, *Federalism: Some Notes on a National Neurosis*, 41 UCLA L. REV. 903, 906 (1994) (“We Americans love federalism or, as the Court has called it, ‘Our Federalism.’” (quoting *Younger v. Harris*, 401 U.S. 37, 44 (1971))); see also M. Elizabeth Magill, *The Revolution That Wasn’t*, 99 NW. U. L. REV. 47, 48 (2004) (noting that “[t]he Rehnquist Court has worked important changes in the doctrines relating to federalism” and that “the Court’s rulings plainly restrict the scope of federal power”); Nicole Huberfeld, *Federalizing Medicaid*, 14 U. PA. J. CONST. L. 431, 462 (2011) (concluding that “the Rehnquist Court began a federalism revolution that now has been at least partially adopted by the Roberts Court”). Cf. Ernest A. Young, *“The Ordinary Diet of the Law”: The Presumption Against Preemption in the Roberts Court*, 2011 SUP. CT. REV. 253, 254–56, 344 (2011) (noting that federal preemption of state law is one of the most important aspects of federalism and concluding that the Supreme Court is beginning to properly assess preemption contextually, identifying the unusually large number of preemption cases in 2010, and concluding that “[t]he preemption cases of the 2010 Term reveal a Court that has still not made up its mind about preemption but perhaps one that is asking increasingly basic questions about preemption and its relation to other constitutional issues”).

³ See *infra* notes 151–58 and accompanying text.

⁴ See, e.g., David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 447 (2013) (“[T]he regulation of oil and

subfederal actors the enormous tasks of identifying successful ways to adapt to climate change,⁵ and to rapidly implement certain new federal healthcare requirements,⁶ among other policy goals. A flaw remains in this system, however, which hinders productive regulatory experimentation. Subfederal actors with regulatory or regulatory-type responsibilities, including stakeholder groups,⁷ municipalities,⁸ and states (described collectively as “states” throughout this paper), often lack basic, comprehensive information about the policy experiments being conducted by other states, and it takes legal and policy experts years to collect and synthesize this information. As this Article will show, the degree of information sharing and its effectiveness vary substantially among regulatory areas, however. The somewhat rare areas of effective information sharing provide valuable lessons for the many regulatory fields where states remain on relatively isolated islands of policy experimentation.

We have long known that governments tend not to engage in thorough benchmarking of policy experiments, in that they do not comprehensively assess the policies they have considered, the results of their policy efforts, and whether the policies were in fact effectively

natural gas exploration and production in the United States has always been primarily a state matter.”).

⁵ See, e.g., Hari M. Osofsky, *Suburban Climate Change Efforts: Possibilities for Small and Nimble Cities Participating in State, Regional, National, and International Networks*, 22 CORNELL J.L. & PUB. POL’Y 395 (2012) (analyzing the role of suburban governments in addressing climate change); *State and Local Adaptation Plans*, GEORGETOWN CLIMATE CENTER, <http://www.georgetownclimate.org/node/3325> (last visited July 4, 2014) (listing local plans to adapt to climate change). *But see* Exec. Order No. 13,653, 78 Fed. Reg. 66,819 (Nov. 1, 2013) (ordering federal action to prepare for the impacts of climate change); INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE, FEDERAL ACTIONS FOR A CLIMATE RESILIENT NATION: PROGRESS REPORT OF THE INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE (2011), available at http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011_adaptation_progress_report.pdf (showing federal efforts).

⁶ See, e.g., Abbe R. Gluck, *Intrastatutory Federalism and Statutory Interpretation: State Implementation of Federal Law in Health Reform and Beyond*, 121 YALE L.J. 534, 539–40 (2011) (“Some parts of the [Patient Protection and Affordable Care Act] are unequivocally designed around a presumption favoring state implementation The statute . . . posits concurrent regulation by the states and the lead federal administrative agency . . .”).

⁷ See Gerken, *supra* note 1, at 47–48 (discussing how groups without sovereignty can be important players in a federalist system); Charles F. Sabel & William H. Simon, *Minimalism and Experimentalism in the Administrative State*, 100 GEO. L.J. 53, 79 (2011) (arguing that effective administrative experimentalism can involve a “center” and a set of “local units,” and that “the center could be a government agency, and the local units the private actors it regulates or the public or private service providers with which it contracts”).

⁸ See, e.g., Richard Briffault, “What About the ‘Ism?’” *Normative and Formal Concerns in Contemporary Federalism*, 47 VAND. L. REV. 1303, 1315 (1994) (recognizing the virtues of federalism in local governments); McConnell, *supra* note 1, at 1498–99 (praising “[c]ompetition among communities,” not just states).

implemented through enforcement.⁹ And it is difficult to generate the scientific evidence needed to support good regulation and assess regulatory results,¹⁰ whether at the state or federal level.¹¹ What has not been fully recognized, however, is that even in an age in which the Internet has made so much information so easily available and government officials regularly meet and share information, state officials have trouble identifying, in a thorough and comprehensive manner, the mere *content* of policies.¹² We typically assume that simple, seemingly boring data about the substance of existing policy approaches is easily obtained,¹³ and it is this assumption—often incorrect¹⁴—that

⁹ In her pathbreaking piece on laboratories of government, Susan Rose-Ackerman assumed that little subfederal innovation occurs because subfederal governments can merely free ride by copying first movers' policies—thus assuming some degree of free information flow, although not benchmarking of any sort. She argued that there will be few first movers in policy innovation because states typically cannot patent their risky policy experiments and thus, in a world of “low cost diffusion,” will be quickly copied. Susan Rose-Ackerman, *Risk Taking and Reelection: Does Federalism Promote Innovation?*, 9 J. LEGAL STUD. 593, 610–11 (1980). Others have noted the difficulty of obtaining needed information about subfederal experiments. See, e.g., David A. Dana, *State Brownfields Programs as Laboratories of Democracy?*, 14 N.Y.U. ENVTL. L.J. 86, 97 (2005) (arguing that a true laboratory of the states requires “measurement of experimental outcomes for each test group”); Brian Galle & Joseph Leahy, *Laboratories of Democracy? Policy Innovation in Decentralized Governments*, 58 EMORY L.J. 1333, 1351, 1355 (2009) (questioning the “assumption that jurisdictions can easily obtain information about the experiments of others” and arguing that state officials might have an incentive to conceal information despite technological advances facilitating the sharing of policies); Sabel & Simon, *supra* note 7, at 79 (arguing that, for effective experimentation, “local units must report regularly on their performance and participate in a peer review in which their results are compared with those units employing other means to the same general ends”); Charles R. Shipan & Craig Volden, *The Mechanisms of Policy Diffusion*, 52 AM. J. POL. SCI. 840, 841–42 (2008) (noting that learning—one mechanism that supports diffusion of policy—involves “observing the politics of policy adoption and the impact of those policies,” but that success can be “difficult to measure,” although “shortcuts” or proxies are available); Matthew C. Stephenson, *Information Acquisition and Institutional Design*, 124 HARV. L. REV. 1422, 1423 (2011) (noting that government actors need but often lack optimal information about the “likely consequences of different courses of action”).

¹⁰ See Wendy E. Wagner, *Commons Ignorance: The Failure of Environmental Law to Produce Needed Information on Health and the Environment*, 53 DUKE L.J. 1619 (2004) (detailing the dearth of scientific information in the context of environmental law).

¹¹ See *infra* note 26 (describing the importance of drawing lessons from policy results—including the need for the federal government to learn from state policy experiments).

¹² Cf. Galle & Leahy, *supra* note 9, at 1355 (noting that even in a world where technology makes sharing information easy and cheap, “states still can refuse to compile information that would be valuable to outsiders, or take active steps to conceal information”).

¹³ See, e.g., ANDREW KARCH, *DEMOCRATIC LABORATORIES: POLICY DIFFUSION AMONG THE AMERICAN STATES* 107 (2007) (“The emergence of new information technologies, such as the Internet, increased the ease and speed with which many organizations can provide policy-relevant information.”); *id.* at 122–35 (providing examples of what Karch believes to be relatively widespread information production and sharing by state interest groups); Daniel C. Esty, *Environmental Protection in the*

prevents states from learning from each other. Of course, states need information about both policy content and policy results—data from one category would often have little value without data from the other. This Article focuses on the content piece, however, because of its underappreciated importance.

Under the right circumstances, states building on each other's successes and mistakes can generate more effective and efficient policy approaches¹⁵ and vindicate different groups' preferences for governance.¹⁶ As many scholars have recognized, though, certain conditions must be in place for state laboratories to generate these benefits. Policymakers and agency staff must be willing to experiment with potentially better rules despite their aversion to risk in many circumstances¹⁷—mere copying of other approaches will not necessarily create better policies. Geographic proximity of jurisdictions,¹⁸ the relevance of policies to each jurisdiction,¹⁹ similarities in cultural and religious views,²⁰ the externalities of particular policies,²¹ and even

Information Age, 79 N.Y.U. L. REV. 115 (2004) (expressing optimism about the power of monitoring technologies and the Internet in producing more information about policy results and compliance).

¹⁴ See Galle & Leahy, *supra* note 9, at 1345 (questioning the assumption that information is “costless to acquire”); *id.* at 1355–57 (noting factors that can slow information diffusion).

¹⁵ Amar, *supra* note 1, at 1234 (noting that under the “laboratory” camp of federalism, “federalism permits pragmatic testing of novel policy proposals”); Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race-to-the-Bottom” Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1211–12 (1992) (arguing that competition among states in regulation can produce efficient levels of activity).

¹⁶ *Gregory v. Ashcroft*, 501 U.S. 452, 458 (1991) (concluding that federalism “assures a decentralized government that will be more sensitive to the diverse needs of a heterogeneous society”); McConnell, *supra* note 1, at 1493 (“[D]ecentralized decision making is better able to reflect the diversity of interests and preferences of individuals in different parts of the nation.”).

¹⁷ See Rose-Ackerman, *supra* note 9, at 601–05 (describing various levels of risk aversion or risk neutrality of politicians prior to an election in centralized and decentralized governments).

¹⁸ See EVERETT M. ROGERS, *DIFFUSION OF INNOVATIONS* 276–77 (5th ed. 2003) (describing proximity as one causal factor for the diffusion of innovation); Frances Stokes Berry & William D. Berry, *Innovation and Diffusion Models in Policy Research*, in *THEORIES OF THE POLICY PROCESS* 223, 228–29 (Paul A. Sabatier ed., 2d ed. 2007) (same).

¹⁹ See, e.g., Erik Bleich, *Integrating Ideas into Policy-Making Analysis: Frames and Race Policies in Britain and France*, 35 COMP. POL. STUD. 1054, 1062–63, 1071–72 (2002) (noting how European nations had ample information about U.S. policies, or at least general information about U.S. civil rights struggles, through media coverage, but that these countries drew “different lessons from the same stock of available evidence” and adopted divergent policies due to different framings of race issues within these countries and the relevance of particular race issues to each country).

²⁰ See, e.g., Beth A. Simmons & Zachary Elkins, *The Globalization of Liberalization: Policy Diffusion in the International Political Economy*, 98 AM. POL. SCI. REV. 171, 187 (2004) (noting that shared “religious identity” and culture were consistently strong causal

factors like the years of formal education of government officials²² and the wealth of the states they regulate²³ can also all affect whether and how policy diffuses and innovation occurs.²⁴ But in addition to these many complex factors that affect experimentation and the rate of innovation and diffusion, at least a basic understanding of others' approaches is needed if states are to efficiently experiment toward better policies. States must have information about the laws, regulations, or other measures that other jurisdictions have tried, which I broadly describe here as "policy approaches."²⁵ From this information baseline, states must identify the results of these approaches—which strategies worked or failed, and why²⁶—and adapt accordingly.

The public has abundant baseline policy data, with instantaneous electronic access to the most recent text of regulations and statutes. States and municipalities regularly share their varied policy approaches through meetings of national associations of legislators,²⁷ agency heads,²⁸ or mayors,²⁹ online groups and reports;³⁰ or direct

factors in an empirical study of the causes of trade liberalization and its spread among countries).

²¹ See Katherine Linos, Note, *When Do Policy Innovations Spread? Lessons for Advocates of Lesson-Drawing*, 119 HARV. L. REV. 1467, 1475 (2006) (examining studies demonstrating that policies with fewer cross-border effects tend to diffuse less among competitive jurisdictions).

²² See ROGERS, *supra* note 18, at 288 (concluding that "years of formal education" is a characteristic associated with early innovation adopters as identified in the literature beyond the government context).

²³ See Berry & Berry, *supra* note 18, at 230 (showing that wealthier jurisdictions innovate and that poorer jurisdictions then copy). Galle and Leahy suggest a similar dynamic, noting that many budget-limited states might not be able to risk the potential failure associated with innovation. See Galle & Leahy, *supra* note 9, at 1349.

²⁴ For a helpful summary of the many factors that affect policy diffusion, see Linos, *supra* note 21.

²⁵ See, e.g., Jack L. Walker, *The Diffusion of Innovations Among the American States*, 63 AM. POL. SCI. REV. 880, 897 (1969) ("Before states may respond to new programs adopted in other states their political leaders must be aware of these developments, so interstate communications are an important factor in the process of diffusion.").

²⁶ Or if the federal government is borrowing approaches from states to create better law, it, too, must know what worked. See David L. Markell, *States as Innovators: It's Time for a New Look to Our "Laboratories of Democracy" in the Effort to Improve Our Approach to Environmental Regulation*, 58 ALB. L. REV. 347, 358 (1994) ("[T]he federal government should pay special attention to state and local governments' efforts in determining how best to 'reinvent' itself in terms of environmental regulation."). This Article focuses on the lack of comprehensive and useful information about policy approaches rather than the results of policy experiments.

²⁷ See, e.g., NATIONAL CONFERENCE OF STATE LEGISLATURES, <http://www.ncsl.org> (last visited Sept. 22, 2014).

²⁸ See Walker, *supra* note 25, at 897–98 ("[S]pecialized systems of communication among the states have grown up during the last thirty years, mainly through the creation of professional associations among state administrators."); cf. Miriam Seifter, *States as Interest Groups in the Administrative Process*, 100 VA. L. REV. 953, 958–59 (2014) (noting

communication with other regulators.³¹ These exchanges provide an excellent foundation of baseline information, but it is possible for regulators to die of thirst in this sea of information. The large amount of useful information sharing that already occurs among government officials is often informal or unrecorded.³² Abundant, electronically accessible information about the content of regulations is often not systematically, uniformly compiled and reported, and it takes strenuous effort to collect the massive amount of information available and convert it to a format for productive comparison. A structured baseline from which truly informed policy innovation could occur is lacking.

A recent effort to compare states' regulations in one of these policy areas—the governance of the environmental impacts of oil and gas extraction—best reveals this problem, which also pervades other fields. In 2011, a nonpartisan think tank initiated an ambitious project to describe how states regulate drilling and hydraulic fracturing for natural gas in shale formations—an industry that has recently transformed the American economy.³³ Economists, a research assistant, a

that groups of states could “transfer to [federal] agencies states’ varied knowledge and experience” but that state interest groups, which tend to report “unified” positions, limit this potentially valuable information transfer).

²⁹ See, e.g., Steven Lee, *Mayors Head to Las Vegas for Annual Meeting to Focus on Policy, Engage with National Leaders, Share Best Practices*, U.S. MAYOR, June 17, 2013, at 4, available at http://www.usmayors.org/usmayornewspaper/documents/06_17_13/061713USMayor.pdf (describing items for discussion at a meeting of mayors “from across the country”).

³⁰ See, e.g., States, ENVTL. COUNCIL STS., <http://www.ecos.org/section/states> (last visited July 5, 2014) (“One of ECOS’s primary objectives is to describe the role States play in environmental protection. To achieve this goal, ECOS has collected data, prepared reports, and released publications on State environmental contributions.”); *About Us*, GROUNDWATER PROTECTION COUNCIL, <http://www.gwpc.org/about-us> (last visited July 5, 2014) (“We provide an important forum for stakeholder communication and research in order to improve governments’ role in the protection and conservation of groundwater.”).

³¹ See, e.g., JACQUELYN PLESS, NAT’L CONFERENCE OF STATE LEGISLATURES, NATURAL GAS DEVELOPMENT AND HYDRAULIC FRACTURING: A POLICYMAKER’S GUIDE (2012), available at http://www.ncsl.org/documents/energy/frackingguide_060512.pdf (comparing legislative approaches and explaining recent legislative trends); E-mail from Brigid E. Kenney, Senior Policy Advisor, Md. Dep’t of the Env’t, to author (Feb. 21, 2014, 11:16 AM) (on file with the New York University Law Review) (“Once I read about a [regulatory] development, I follow up on that state’s website. Once I’ve exhausted the online information, the next step is calling the other state’s regulators.”).

³² See, e.g., Seifter, *supra* note 28, at 1004 (explaining that even the votes of associations of state officials on policy positions are sometimes unrecorded).

³³ See Hannah Breul & Linda Doman, *U.S. Expected to be Largest Producer of Petroleum and Natural Gas Hydrocarbons in 2013*, U.S. ENERGY INFO. ADMIN. (Oct. 4, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=13251> (discussing growth of the natural gas industry in the United States); U.S. ENERGY INFO. ADMIN., U.S. CRUDE OIL AND NATURAL GAS PROVED RESERVES (2014), available at <http://www.eia.gov/naturalgas/crudeoilreserves/> (noting that the growth in proved reserves of U.S. natural gas “has been

lawyer, and, later, a law professor,³⁴ collected, analyzed, and compared the regulations. They examined how states require operators to construct oil and gas wells, store waste in pits, dispose of drilling and fracturing materials, and limit air emissions, and they analyzed the regulations to determine how and why they differed.³⁵ Together, these and many other subcategories make up the field of oil and gas regulation, which addresses, *inter alia*, the impacts of drilling and hydraulic fracturing. Despite these individuals' familiarity with the area, the effort of locating and accurately summarizing and comparing the regulations was complex and slow. This might be why some state and local officials, too, observe that collecting oil and gas regulatory information is "difficult and time consuming, and a never ending job,"³⁶ and requires sorting through numerous regulations.³⁷

In just one regulatory subcategory in oil and gas regulation, such as the construction and lining ("casing") of the well to prevent petroleum from leaking into aquifers and other sources of drinking water located underground, state regulations come in many forms. Some states have performance standards (requiring casing "as may be necessary" to isolate the well from water, for example),³⁸ whereas others specify the type of material that must be used to construct and case

especially pronounced in recent years as a result of expanding exploration and development activity in several of the nation's shale formations," which require hydraulic fracturing to be produced); *id.* (noting that the EIA has increased estimates of available reserves of light oil (condensate) "associated in large part with expanding drilling programs in liquids-rich portions of shale and other tight formations").

³⁴ At the time Resources for the Future (RFF) began working on this project, I was collecting state regulations as part of a separate University of Texas project, and I had a conference call with RFF to explore the two projects and avoid duplication. For a discussion of the University of Texas project, including a conflict of interest that later emerged with respect to the professor who led that project, see Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 U. COLO. L. REV. 729 (2013). I later joined RFF's effort to collect and compare regulations.

³⁵ See NATHAN RICHARDSON ET AL., RES. FOR THE FUTURE, THE STATE OF STATE SHALE GAS REGULATION (2013), available at http://www.rff.org/rff/documents/RFF-Rpt-StateofStateRegs_Report.pdf (describing this study and its results).

³⁶ E-mail from Brigid E. Kenney to author, *supra* note 31.

³⁷ See E-mail from Sarah J. Fullenwider, City Att'y, Fort Worth, Tex., to author (Feb. 17, 2014, 10:17 AM) (on file with the New York University Law Review) (noting that when drafting Fort Worth's oil and gas drilling ordinance, a city attorney "started by collecting over 25 city ordinances from across Texas and a few from Oklahoma and California").

³⁸ See, e.g., N.M. CODE R. § 19.15.16.10(A) (2014) (requiring casing "as may be necessary to effectively seal off and isolate all water-, oil- and gas-bearing strata"); N.D. ADMIN. CODE 43-02-03-21 (2014) (requiring casing "at sufficient depths to adequately protect and isolate all formations containing water, oil, or gas or any combination of these"); 16 Tex. Admin. Code § 3.13(b)(1)(B)(i) (2014) (requiring operators to "set and cement sufficient surface casing to protect all usable-quality water strata").

the well,³⁹ how far below groundwater the protective casing must extend,⁴⁰ and the exact method by which cement must be pumped into the well to secure the casing.⁴¹ Even within one state, some of these regulations are located in oil and gas codes,⁴² and others are found in the state's environmental⁴³ or land use rules.⁴⁴ Furthermore, two or more state agencies typically have partial jurisdiction over oil and gas development,⁴⁵ and private standards⁴⁶ and local regulations also

³⁹ See, e.g., MD. CODE REGS. 26.19.01.10(P)(2) (2014) (requiring "American Petroleum Institute Class A ordinary portland cement with not more than 3 percent calcium chloride and no other additives" unless an alternative cement is approved by the state agency); see also RICHARDSON ET AL., *supra* note 35, at 33–34 (describing different regulations of cement type).

⁴⁰ See, e.g., 25 PA. CODE § 78.83(c) (2014) (requiring surface casing "approximately 50 feet below the deepest fresh groundwater or at least 50 feet into consolidated rock, whichever is deeper"); see also RICHARDSON ET AL., *supra* note 35, at 32–33 (showing states that specify minimum casing depths and comparing mandated depths).

⁴¹ See, e.g., OKLA. ADMIN. CODE § 165:10-3-4(c)(7)(A) (2014) (requiring "tubing and pump," "pump and plug," or displacement methods of cementing the casing).

⁴² See 16 Tex. Admin. Code § 3.1–.107 (2014) (providing many of the oil and gas regulations).

⁴³ E.g., *Air Quality Standard Permit for Oil and Gas Handling and Production Facilities*, TEX. COMM'N ON ENVTL. QUALITY, http://www.tceq.texas.gov/permitting/air/newsourcereview/chemical/oil_and_gas_sp.html (last modified Jan. 16, 2014).

⁴⁴ See, e.g., TEX. LOC. GOV'T CODE ANN. § 253.005(c) (West 2005 & Supp. 2013) (providing that wells must be 200 feet from private residences).

⁴⁵ In Texas, for example, the Texas Commission on Environmental Quality (TCEQ) regulates oil spills and spills of fracturing fluids and other substances, whereas the Railroad Commission of Texas (RRC) regulates the safety of well casing, the construction of surface pits at well sites, and certain disposal of oil and gas wastes. See 16 Tex. Admin. Code § 3.8 (2014) (showing oil and gas surface pit regulations administered by the RRC); 16 Tex. Admin. Code § 3.8(d)(3) (2014) (describing authorized disposal methods); 16 Tex. Admin. Code § 3.13 (2014) (showing well casing and cementing regulations administered by the RRC); 16 Tex. Admin. Code § 3.30(b)(1)(A), (2)(A) (2014) (showing the RRC's disposal jurisdiction and a memorandum of understanding between the RRC and TCEQ that gives the RRC most jurisdiction over disposal). The RRC issues permits for certain oil and gas waste landfills, whereas the TCEQ regulates other oil and gas waste landfills. See *Commercial Recycling & Surface Disposal Facilities*, RR COMM'N OF TEX., <http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/commercial-surface-waste-facilities/commercial-recyclingdisposal-permits-list/> (last visited Sept. 22, 2014) (showing RRC-permitted disposal facilities); TEX. COMM'N ON ENVTL. QUALITY, *Transporters and Haulers—Commonly Asked Questions*, <http://www.tceq.texas.gov/assistance/industry/oil-and-gas/oil-and-gas/transporters-and-haulers-commonly-asked-questions> ("Waste generated from oil and gas operations may be disposed of at authorized RRC facilities or certain TCEQ regulated landfills."). The RRC, TCEQ, and Texas Department of Public Safety all have some authority over the transport of oil and gas wastes. See 16 Tex. Admin. Code § 3.8(f) (2014) (requiring an oil and gas waste hauler permit from the RRC); 16 Tex. Admin. Code § 3.30(d)(11)(E) (2014) (showing RRC jurisdiction over some wastes); *Transporters and Haulers—Commonly Asked Questions*, TEX. COMM'N ON ENVTL. QUALITY, <http://www.tceq.texas.gov/assistance/industry/oil-and-gas/oil-and-gas/transporters-and-haulers-commonly-asked-questions> (describing the jurisdiction of the TCEQ, RRC, and Department of Public Safety) (last visited Sept. 22, 2014). The RRC and Department of State Health Services are responsible for regulating

apply.⁴⁷ The scattered location of the regulations, the different types of approaches states take to the same issue (such as casing), and the technical nature of some of the rules transform the seemingly simple effort of identifying and comparing regulations into a herculean task.

This lack of uniform baseline regulatory information tends to pervade technical policy areas in which we generally rely on state and local or private governance. As it is used here, “technical” means areas of the law that involve relatively complex regulated activities that are not addressed within a single portion of a state code, and are often governed by multiple state agencies. These areas require specialized and frequently idiosyncratic knowledge, unlike fields that tend to rely on the common law and model codes. This definition is admittedly a loose one, as “technical” regulations are increasingly the norm in a complex world. Within these areas, associations of state agencies, nonprofit groups, and industry often produce some regulatory information, but various collective action and public choice obstacles mean that this information is often inadequate. These groups sometimes lack the incentives, resources,⁴⁸ or expertise to locate the law governing the activity in each state,⁴⁹ and even if they do find it, they often cannot understand it without acquiring an appreciation of the larger regulatory framework, which would require a substantial time commitment. Furthermore, the growing number of nonprofit groups that commit to produce regulatory information do not always take the time to organize it in easily-accessible or understandable ways. Thus,

handling of oil and gas wastes that contain naturally occurring radioactive materials. 16 Tex. Admin. Code § 4.635 (2014) (showing RRC and DSHS-administered regulations).

⁴⁶ See, e.g., AM. PETROLEUM INST., OVERVIEW OF INDUSTRY GUIDANCE/BEST PRACTICES ON HYDRAULIC FRACTURING (HF) (2012), available at http://www.api.org/~media/Files/Policy/Exploration/Hydraulic_Fracturing_InfoSheet.pdf (summarizing industry-developed voluntary standards that apply to hydraulic fracturing).

⁴⁷ See, e.g., FORT WORTH, TEX., CITY CODE § 15-36(A) (2014) (requiring that wells be set back 600 feet from certain buildings).

⁴⁸ Many state oil and gas agencies have limited staff and budgets. The Railroad Commission of Texas, the State’s oil and gas regulatory agency, notes the following: “Retention of employees in the engineering and technical oilfield disciplines is particularly difficult particularly with the shale boom. Without these employees, progressive regulatory models cannot be implemented, and basic services may begin to deteriorate.” DAVID PORTER ET AL., R.R. COMM’N OF TEX., SELF-EVALUATION REPORT: SUBMITTED TO THE SUNSET COMMISSION SEPTEMBER 2011, at 14 (2011), available at <https://www.sunset.texas.gov/public/uploads/files/reports/Railroad%20Commission%20SER%202011%2083rd%20Leg.pdf>. For further discussion of agency constraints, including staffing challenges in the oil and gas context, see Hannah J. Wiseman, *Remedying Regulatory Diseconomies of Scale*, 94 B.U. L. REV. 235, 255–56, & 255 n.93 (2014).

⁴⁹ For a discussion of the limited information available and the effort that regulatory officials had to invest in order to identify this information, see *infra* Part II.

states can become regulatory islands, each largely unaware of what the others are doing.

As described in the case studies in this Article, various government actors and nonprofit groups have made admirable progress in producing and sharing information, thus providing useful models for improvement. But the remaining information deficit in federalism limits the experimental upside of laboratories—the efficient, effective, and innovative approaches that can emerge from experimentation—and expands the known downside of federalism: the costs to private actors of identifying and ensuring compliance with fifty or more different standards. Without information about the regulations and statutes in place in other states, subfederal policymakers and agency staff lack a necessary foundation from which to experiment. And industry actors moving to a new state face high costs of searching for and complying with varied regulations. Further, these costs do not fall on industry alone. Advocacy groups have to learn many different, relatively inaccessible standards to monitor industry compliance and serve the role of citizen attorneys general.

The best hope for connecting regulatory islands lies in a collaborative effort led by the federal government to produce both carefully organized comparisons of state regulatory approaches and detailed policy summaries, or capsules, of each individual state's regulations.⁵⁰ States will be key actors in this project and should be responsible for contributing much of the data, with the help of universities, nonprofits, and other groups, but the federal government should check the inputs for accuracy and organize them in a uniform and accessible format. Indeed, the federal government should be collecting much of this information for its own use in monitoring state regulatory efforts—and sometimes it already does.⁵¹ When the federal govern-

⁵⁰ Some states and federal agencies already produce these capsules, as noted below. *Infra* notes 314–17 and accompanying text.

⁵¹ See, e.g., BRANDON J. MURRILL & ADAM VANN, CONG. RESEARCH SERV., R42461, HYDRAULIC FRACTURING: CHEMICAL DISCLOSURE REQUIREMENTS (2012), available at <http://www.fas.org/sgp/crs/misc/R42461.pdf> (comparing state policies); U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-874, UNCONVENTIONAL OIL AND GAS DEVELOPMENT: KEY ENVIRONMENTAL AND PUBLIC HEALTH REQUIREMENTS 192–224 (2012), available at <http://www.gao.gov/assets/650/647782.pdf> (summarizing and comparing selected state requirements in six states); DSIRE: DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, <http://www.dsireusa.org> (last visited July 5, 2014) (collecting information on state incentives and policies, through funding by the U.S. Department of Energy). The federal government also collects subfederal regulatory or program data beyond the policy fields discussed here. See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-495R, K-12 EDUCATION: STATES' TEST SECURITY POLICIES AND PROCEDURES VARIED (2013), available at <http://www.gao.gov/assets/660/654721.pdf> (describing survey of educational testing practices in the fifty states and the District of Columbia); *Data Collection: 2006 Census of State Parole Supervising Agencies*, BUREAU JUST. STAT., <http://>

ment elects to allow subfederal experimentation toward varied policy goals or implementation of a centralized goal, it should ensure that experimentation does not negatively impact national, cross-jurisdictional interests.

It is true that the federal government faces substantial resource barriers and that, as shown by the Affordable Care Act website challenges,⁵² building structures for information sharing can be a difficult task. Further, some states have been skeptical of all forms of federal intervention in areas of local authority, including through information collection, and are unlikely to change their position now.⁵³ But despite these obstacles, the federal government is best positioned to direct collaborations among agencies, nonprofit groups, industries, states, local governments, and universities, through which these groups could collectively produce policy information portals and contribute data to them. The federal government's resources, though limited, are greater than any one state's or group's. It is distant from some of the public choice pressures that might discourage information production at the state level, and it has relevant expertise—federal agencies already collect and analyze extensive state-based regulatory information and foster state information sharing.⁵⁴ And although it will be difficult to overcome state opposition to federal involvement in information collection, careful design of this informational effort with procedural protections could help. For example, agencies involved in information

www.bjs.gov/index.cfm?ty=dcdetail&iid=258 (last visited July 5, 2014) (describing federal surveys of state parole supervising agencies to better understand their organizational structures and parole procedures).

⁵² See, e.g., Julie Bataille, *Adding Capacity*, HHS.GOV: DIGITAL STRATEGY (Nov. 25, 2013), <http://www.hhs.gov/digitalstrategy/blog/2013/11/adding-capacity.html> (“It’s likely that as we move forward we’ll find additional glitches and experience intermittent periods of sub-optimal performance, when the system may be slow or not responsive.”).

⁵³ See, e.g., *Examining the Science of EPA Overreach: A Case Study in Texas: Hearing Before the H. Comm. on Sci., Space, and Tech.*, 113th Cong. 14, 16–26 (2014), available at <http://science.house.gov/sites/republicans.science.house.gov/files/documents/HHRG-113-SY-WState-DPorter-20140205.pdf> (providing the written statement of David J. Porter, Tex. R.R. Comm’r, who argues that “[t]he power to regulate [the oil and gas] industry, and many others, has always been an expressed right of individual states, as was the intentions [sic] of our nation’s founding fathers,” and criticizing the EPA’s “overreach” in its investigation of citizen complaints about alleged groundwater contamination from well development in Texas and Pennsylvania).

⁵⁴ See, e.g., Memorandum from Herbert H. Tate, Jr., Assistant Adm’r, U.S. Env’tl. Prot. Agency 4 (May 13, 1992), available at <http://www.epa.gov/compliance/resources/policies/state/multim-agr-mem.pdf> (noting that the Office of Enforcement of the EPA “established staff networks to collect and disseminate information about lessons learned” in order “[t]o encourage the use of innovative enforcement tools” in an effort to improve state enforcement of federal environmental laws and the state-federal enforcement relationship, and that the EPA would “solicit information on States’ use of innovative enforcement approaches and results and w[ould] share these within EPA and among the states”).

collection and reporting could allow regulated actors to protest the accuracy of policy characterizations or alleged omissions in regulatory summaries, which could alleviate some of these concerns. And giving these entities the autonomy to collect and manage the information themselves, with federal involvement only in funding information collection and reporting efforts and auditing their accuracy, could give states and regulated actors more control over the process if they were willing to invest the time in completing the work themselves.

This Article identifies regulatory islands as an impediment to effective regulatory experimentation, explains why and how they arise, explores positive examples of effective information production and sharing, and proposes a federal-state, public-private solution to the many areas that suffer from a deficit of regulatory information. Part I introduces the need for information, defining regulatory experimentation and its aims and explaining why information is vital. Part II explains how a lack of information impedes informed experimentation, highlights the range of information available in four policy areas, and analyzes the likely reasons for the variability in effective information sharing, focusing on the dynamics that might prevent states, industry groups, and nonprofits from consistently producing adequate information. Part II also explores the consequences of this problem, analyzing how the information deficit causes blind experimentation, raises search and compliance costs for regulated actors, and makes it more difficult for concerned stakeholders to monitor compliance. Part III proposes a remedy, suggesting that we need both inter- and intra-state information summaries and exploring the limited extent to which these summaries are currently produced in the four areas introduced in Part II. Part III argues that the federal government, working with subfederal actors, can best overcome the collective action, bias, and resource-based barriers that impede effective collection and production of information by other entities. Indeed, when it chooses to leave issues of federal concern to the states, the federal government has a responsibility to collect and monitor this information to ensure that subfederal experimentation is working.

I

SUBFEDERAL EXPERIMENTATION AND THE ESSENTIAL ROLE OF INFORMATION

The paths of federalism and the state laboratories that it enables have been thoroughly trod in the legal literature. Judges and academics offer up a range of values that are enhanced by subfederal

authority, with liberty, accountability,⁵⁵ and checks on federal authority chief among them.⁵⁶ Another strand of the literature argues that a federalist system is, more simply, functionally useful, allowing subfederal governments with varying climates and populations to achieve uniform national goals.⁵⁷ Similarly, experimentation can create better policies where varied regulatory outcomes and approaches are needed, rather than a uniform national approach. States can look to other policies and decide which are most effective given each state's unique conditions and needs. Policy experimentation can—in certain circumstances—support all of these goals. As defined here, experimentation involves different subfederal actors trying varied policy approaches, including writing and implementing public-private standards, legislation, regulation, or a combination of these. These approaches are in some cases designed to meet one federal standard—such as a requirement that individuals have access to certain types of health insurance—and in other cases are independent efforts toward a similar goal, such as reducing the environmental impacts of oil and gas development. Experimentation requires both an understanding of other goals and policies and innovation from this baseline of information. States are currently involved in a broad range of experiments, but only rarely in a thoroughly informed manner.

This Part provides an account of the actors involved in experimentation and the mechanics of this grand experiment—describing how policy spreads through a combination of innovation and diffusion, and how information is essential to this endeavor.

A. *Actors and Subject Areas*

The reserved powers of the states include broad police powers, which encompass the protection of public health, safety, and welfare: State and local governments regulate the types of activities and buildings allowed within particular zones, inspect buildings for health and safety purposes, and govern a range of other activities that might create a nuisance, harm consumers, or merely offend certain aesthetic

⁵⁵ See DAVID L. SHAPIRO, *FEDERALISM: A DIALOGUE* 91–92 (1995) (arguing that representatives of a smaller electorate are more accountable to the people); Rubin & Feeley, *supra* note 2, at 915 (describing the public participation argument for federalism).

⁵⁶ See, e.g., Jessica Bulman-Pozen, *Federalism as a Safeguard of the Separation of Powers*, 112 COLUM. L. REV. 459 (2012) (observing that states can take up the cause of Congress and challenge executive action).

⁵⁷ Edward Rubin and Malcolm Feeley argue that there are no inherent values of federalism but that this country has long relied on decentralization to solve some policy goals, which is a managerial, rather than value-laden, concept. Rubin & Feeley, *supra* note 2, at 910.

preferences.⁵⁸ States and counties arrest, convict, and imprison far more individuals than does the federal government.⁵⁹ States, with varying degrees of federal oversight, also dictate the terms of corporation formation and dissolution,⁶⁰ regulate the insurance industry,⁶¹ and, along with local governments, drive education policy.⁶² Whether through express statutory language, permissive legislative silence, constitutional provisions, or mere tradition, subfederal entities shape the most fundamental of human values and preferences. This section identifies the actors involved in these extensive subfederal experiments and explores four areas of modern experimentation in rapidly changing fields: oil and gas development, health insurance, energy policy, and climate adaptation.

1. *Who Experiments*

When the federal government preserves or devolves authority to subfederal entities, whether for healthcare policy or oil and gas regulation, a range of subfederal actors become responsible for governance. These actors sometimes have explicit roles: Through partial delegation of authority under cooperative federalism, for example, a federal agency often directs the states to implement a federal standard.⁶³ In some cases, agencies even delegate responsibilities to public-private partnerships. For example, in 1988, the Environmental Protection Agency exempted oil and gas wastes from federal haz-

⁵⁸ See, e.g., *Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 569 (1991) (opinion of Rehnquist, C.J.) (providing a recent definition of states' police powers); *Brown v. Maryland*, 25 U.S. (12 Wheat.) 419, 443 (1827) (affirming the authority of states to exercise police powers and introducing the term for the first time in U.S. Supreme Court jurisprudence), *abrogated by* *Sonneborn Bros. v. Cureton*, 262 U.S. 506 (1923).

⁵⁹ See E. ANN CARSON & DANIELA GOLINELLI, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, PRISONERS IN 2012 - ADVANCE COUNTS 3, available at <http://www.bjs.gov/content/pub/pdf/p12ac.pdf> (listing federal and state prison statistics).

⁶⁰ See Roberta Romano, *The States as a Laboratory: Legal Innovation and State Competition for Corporate Charters*, 23 YALE J. ON REG. 209, 210–11 (2006) (noting state-centric regulation and praising it).

⁶¹ See Elizabeth F. Brown, *Will the Federal Insurance Office Improve Insurance Regulation?*, 81 U. CIN. L. REV. 551, 551 (2012) ("Prior to the financial crisis, insurance was the only financial service that did not have a federal regulator but relied almost exclusively on state insurance regulators.")

⁶² See Robert A. Garda, Jr. & David S. Doty, *The Legal Impact of Emerging Governance Models on Public Education and Its Office Holders*, 45 URB. LAW. 21, 23–28 (2013) (describing state education policies, some delegations to local governments, and largely ineffective attempted federal reforms through the No Child Left Behind and Race to the Top initiatives).

⁶³ See, e.g., 42 U.S.C. § 300h-1 (2012) (describing the delegation of federal protection of underground sources of drinking water to the states); 42 U.S.C. § 7410 (2012) (directing states to write plans to implement federal Clean Air Act standards).

ardous waste regulation.⁶⁴ It noted some gaps in state regulation, however,⁶⁵ and instructed the Interstate Oil and Gas Compact Commission to partner with regulators and industry representatives to examine these gaps and suggest how they could be filled.⁶⁶ Miriam Seifter notes an even starker example of this type of public-private devolution, in which Congress directed the association of state insurance commissioners to agree upon and draft standards for health insurance regulation.⁶⁷ The federal government retained meaningful control—providing that a federal agency would ultimately approve the standards—but left much of the work of rule writing to a private association comprised of public officials.⁶⁸

Finally, local governments have an increasingly important role in the policy areas explored in this section. Many states lack comprehensive climate change adaptation plans,⁶⁹ leaving municipalities to decide how and when to limit coastal development, build sea walls, and update building codes in anticipation of more storm damage, among other efforts.⁷⁰ And for oil and gas development, cities and towns in states like Texas and New Mexico have broad regulatory authority, granting or denying oil and gas permits and issuing lengthy rules relating to environmental protection and nuisance prevention.⁷¹

⁶⁴ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-874, *supra* note 51, intro.

⁶⁵ REGULATORY DETERMINATION FOR OIL AND GAS AND GEOTHERMAL EXPLORATION, DEVELOPMENT AND PRODUCTION WASTES, 53 Fed. Reg. 25,446, 25,446 (July 6, 1988).

⁶⁶ *Our History: Council on Regulatory Needs*, STRONGER, <http://www.strongerinc.org/content/council-regulatory-needs> (last visited July 5, 2014) (“The Council [on Regulatory Needs, formed by the Interstate Oil and Gas Compact Commission.] was charged with reviewing state [exploration and production] waste management programs and with establishing guidelines that would represent minimum acceptable regulatory criteria.”); *Our History: Formation of STRONGER*, STRONGER, <http://www.strongerinc.org/content/formation-stronger> (last visited Sept. 22, 2014) (explaining that STRONGER took over the IOGCC’s Council on Regulatory Needs’ state review process).

⁶⁷ Seifter, *supra* note 28, at 19–21.

⁶⁸ *Id.*

⁶⁹ See Alice Kaswan, *Climate Adaptation and Land-Use Governance: The Vertical Axis*, 39 COLUM. J. ENVTL. L. (forthcoming 2014) (manuscript at 20) (on file with author) (“[A]daptation planning is spotty and specific implementation measures are the exception rather than the rule.”).

⁷⁰ See *id.* at 13 (describing the many measures that local governments must take to address the impacts of climate change); see also CTR. FOR CLIMATE STRATEGIES, CENTER FOR CLIMATE STRATEGIES ADAPTATION GUIDEBOOK: COMPREHENSIVE CLIMATE ACTION (2011), available at <http://www.climatestrategies.us/library/library/download/908> (detailing methodology to develop and implement strategies to adapt to climate change); J.B. Ruhl & James Salzman, *Climate Change Meets the Law of the Horse*, 62 DUKE L.J. 975, 1004–07 (2013) (describing a wide range of approaches for adaptation response).

⁷¹ See FARMINGTON, N.M., CITY CODE §§ 19-3-1 to -12 (2014) (showing detailed local oil and gas ordinances); *infra* note 96 (describing regulation by Texas municipalities).

Thus, as scholars of all stripes of federalism—horizontal, vertical, and iterative—have long recognized, a complex network of actors governs subfederally.⁷² But in addition to identifying the actors that experiment by directly writing and implementing policy, it is equally important to highlight those that *influence* this policy and often drive experimentation. As shown by Miriam Seifter’s and others’ work, private networks of public officials often have substantial influence on subfederal policy—even if they do not write it directly, as with certain healthcare policy.⁷³ Judith Resnik, Joshua Civin, and Joseph Frueh describe these groups as translocal organizations of government actors (TOGAs).⁷⁴ These entities are not wholly “private sector groups,”⁷⁵ as their members are government officials such as mayors, governors, or state agency heads or staff,⁷⁶ yet they are also not “governmental organization[s].”⁷⁷ Rather, they consist of government officials united in a type of nongovernmental organization that is not fully private, and they are often united simply due to who they are (for example, mayors, as in the U.S. Conference of Mayors), or their interests.⁷⁸ As discussed in the case studies in Part II below, these groups have been some of the most active in beginning to produce the types of policy documents that I argue are needed here, as well as in advocating for particular types of policies and thus influencing experimentation.

Other groups discussed in the case studies in Part II, which both produce some subfederal policy information and, to varying degrees, attempt to influence policy, include regulated industries, lawyers and other groups that represent regulated industries, nonprofits, academics, and the federal government.

⁷² See Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW. U. L. REV. 1097, 1139–41 (2009) (describing shifting allocations of authority between federal and state actors); Hari M. Osofsky, *Diagonal Federalism and Climate Change Implications for the Obama Administration*, 62 ALA. L. REV. 237 (2011) (describing governance strategies that incorporate public and private actors at all vertical levels of government (from the subfederal to the federal and international) and that involve coordination among these actors through horizontal relationships); Erin Ryan, *Negotiating Federalism*, 52 B.C. L. REV. 1, 7 (2011) (describing how officials within governments interact across jurisdictional lines).

⁷³ See Seifter, *supra* note 28, at 19–21 (describing the role of the National Association of Insurance Commissioners in healthcare policy).

⁷⁴ Judith Resnik et al., *Ratifying Kyoto at the Local Level: Sovereignism, Federalism, and Translocal Organizations of Government Actors (TOGAs)*, 50 ARIZ. L. REV. 709, 711 (2008).

⁷⁵ *Id.* See also *id.* at 729–30 (discussing these groups’ private and public attributes).

⁷⁶ *Id.* at 711.

⁷⁷ *Id.* at 729.

⁷⁸ *Id.* at 731.

2. *Areas of Experimentation: A Descriptive and Normative Account*

Experimentation is not a universal good, as certain subfederal goals simply are not permitted by the Constitution, and others are unwise. A rich federalism literature already has explored when and why certain policy areas are simply not conducive to subfederal control, suggesting that experimentation should only occur: (1) when no federal constitutional provisions mandate a centralized goal;⁷⁹ (2) when different goals will produce few spillover effects beyond the boundaries of the governing entity;⁸⁰ and (3) when it appears that subfederal entities competing towards different goals will not engage in a negative race to the bottom, wherein nationally we could be worse off as a result of jurisdictions individually competing to attract levels of industrial development that are collectively problematic.⁸¹ We also should disfavor goal-based experimentation when a strong national interest supersedes subfederal policies, although this is a dangerously loose category.⁸²

Regardless of the normative attributes of experimentation, it is currently occurring on a widespread basis. This Article uses four examples of subfederal governance—oil and gas development, climate adaptation, clean energy policy, and health insurance—to demonstrate the importance of information in experimentation, and how it is lacking in some areas. Some of these fields might not be best suited to experimentation. In oil and gas development, for example, to the

⁷⁹ In areas where Commerce Clause issues are clearly implicated, as with, for example, air pollutant emissions from vehicles, federal regulation may be necessary and desirable. Subfederal experimentation, as has occurred with California's regulation of mobile source emissions, can still be helpful in these areas, however. *Cf.* Carlson, *supra* note 72 (discussing the interplay between California and the federal government in regulating mobile source emissions).

⁸⁰ *See, e.g.,* Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 *YALE L.J.* 1196, 1215 (1977) (noting that “spillover impacts of decisions in one jurisdiction on well-being in other jurisdictions generate conflicts and welfare losses not easily remedied under a decentralized regime”). *Cf.* Daniel A. Farber, *Environmental Federalism in a Global Economy*, 83 *VA. L. REV.* 1283, 1301–03 (1997) (noting both environmental and economic spillovers, but arguing that “[a]t best, environmental spillovers provide only a partial justification for much existing multijurisdictional regulation”); Samuel Issacharoff & Catherine M. Sharkey, *Backdoor Federalization*, 53 *U.C.L.A. L. REV.* 1353, 1355 (2006) (noting situations “when the experiments of democracy within one state’s borders have spillover effects that adversely affect citizens of other states”).

⁸¹ *See* Stewart, *supra* note 80, at 1212 (introducing a theory later described as “race to the bottom”); Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking “The Race to the Bottom” Rationale for Federal Environmental Regulation*, 67 *N.Y.U. L. REV.* 1210, 1210–11 n.1 (1992) (explaining that Stewart introduced the race to the bottom theory).

⁸² *See, e.g.,* Spence, *supra* note 4, at 497–504 (describing the national interest justification for federal jurisdiction).

extent that impacts cross subfederal jurisdiction boundaries or implicate national interests, more regional or federal involvement is needed.⁸³ But because of current political realities and, perhaps, a desire on the part of the federal government to encourage oil and gas production by avoiding what might be viewed as intrusive regulation,⁸⁴ states will continue experimenting, and we must make this experimentation as effective as possible. The same is true for the other policy fields explored here. A national energy policy might produce more consistent progress toward cleaner energy sources, for example,⁸⁵ but efforts toward national renewable portfolio standards, feed-in tariffs, or more federal control over transmission line siting⁸⁶—which could support renewable energy—have repeatedly failed.

This section uses these four case studies to highlight why information matters in federalism, and how a lack of information impedes various goals and justifications for subfederal experimentation. A number of other potential case studies are equally relevant. I chose these examples because they appear to be changing quickly—and sometimes chaotically—in part perhaps due to a lack of baseline information. They also share several common themes: All are relatively technical, in that they require some specialized knowledge of science, technology, or finance. The subfederal policies described here also tend to not follow uniform codes, and they differ substantially among jurisdictions, thus making it more difficult for officials to quickly iden-

⁸³ See, e.g., Michael Burger, *Fracking and Federalism Choice*, 161 U. PA. L. REV. ONLINE 150, 162 (2013), <http://www.pennlawreview.com/online/161-U-Pa-L-Rev-Online-150.pdf> (arguing that there is a national interest in supporting rural communities and that we may need to consider more federal regulation of oil and gas development); cf. Spence, *supra* note 4, at 460–68, 478–508 (arguing that, for the most part, federal regulation is not needed because most impacts do not cross state boundaries or affect national interests, and a race to the bottom is not occurring, and providing the factors by which we should normatively assess federal involvement).

⁸⁴ See, e.g., Barack Obama, Remarks by the President on Climate Change at Georgetown University (June 25, 2013), available at <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change> (“Today, we use more clean energy—more renewables and natural gas—which is supporting hundreds of thousands of good jobs.”). But see Interview by Judy Woodruff with Gina McCarthy, EPA Administrator, (Oct. 24, 2013), available at http://www.pbs.org/newshour/bb/government_programs/july-dec13/epa_10-24.html (“[W]e’re not closing our eyes to the challenges associated with that [hydraulic fracturing for natural gas], because while the president touts the advantage of natural gas, as he should, he’s also saying it has to be safe and responsible.”).

⁸⁵ See Lincoln L. Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1339, 1370–71 (2010) (noting that a federal renewable portfolio standard would decrease pollutants).

⁸⁶ See Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1814 (2012) (describing failed efforts at national transmission policy).

tify, understand, and learn from other approaches. Further, the law in these areas tends to be found within many different state or local codes or industry standards and to be administered by several different agencies or organizations, thus further complicating efforts by agency staff, elected officials, industry, and nonprofit groups to understand the law.

These case studies highlight the two types of experimentation introduced briefly above: experimentation toward different goals and experimentation toward effective implementation strategies for a centralized goal. In the realm of oil and gas development, we have given private entities, as well as state and local governments, wide berth in determining whether, when, and where to allow fossil fuel production, as well as how to implement the few federal policies that apply to it.⁸⁷ We have largely done the same for electricity generation—allowing states to choose the best mix of generation resources and to decide whether we should aim to construct “cleaner” resources with fewer pollutants, including renewable resources.⁸⁸ For climate adaptation, too, the United States has yet to identify a full suite of centralized goals, although this is changing.⁸⁹ This leaves to subfederal entities the enormous task of deciding which goals to prioritize—such as protecting coastal populations and reducing fatalities from heat waves and insect-borne diseases—and how to best implement these goals. Thus, in oil and gas development, climate adaptation, and “clean energy” contexts, we largely allow subfederal entities to experiment toward both policy goals and implementation.

In healthcare policy, the federal government has established centralized goals, dictating who must receive coverage for what conditions, for example.⁹⁰ But it has given the states broad discretion in deciding how to design healthcare access and implement these objectives.

⁸⁷ See Wiseman, *Risk and Response*, *supra* note 34, at 737 (describing how the states have most authority over oil and gas regulation).

⁸⁸ See Davies, *supra* note 85, at 1341–42 (describing renewable portfolio standards, states’ adoption of them, and proposals for a federal renewable portfolio standard (RPS)).

⁸⁹ See *infra* notes 105–09 and accompanying text (describing growing federal efforts in the area of climate adaptation, including efforts to coordinate government actors from many levels of government to identify potential priorities and strategies).

⁹⁰ See *infra* note 117 and accompanying text (explaining that states must adopt federal standards or implement their own standards that meet federal requirements).

a. Oil and Gas Development

Since the enterprising driller Colonel Drake first struck oil in Pennsylvania in the 1800s,⁹¹ states have retained nearly full authority over the development of oil and gas.⁹² Early regulations focused on preventing basic nuisances.⁹³ States also began to control the volume of oil and gas that could be produced⁹⁴ and more recently have implemented some environmental regulation, including by requiring that wastes be stored on site and disposed of in a certain manner and specifying well construction standards.⁹⁵ On the other hand, some states have left a good deal of nuisance-prevention and control of environmental impacts to municipalities.⁹⁶

State oil and gas policies are complex, technical, and highly varied. As introduced above, some states have specific performance standards for the casing that lines wells, requiring certain types of metal and cement; others have narrative requirements, simply mandating “adequate” casing, for example.⁹⁷ Oil and gas laws are also found in pieces, scattered throughout states’ land use, environmental, and natural resources codes, and administered in part by oil and gas, natural resources, or environmental agencies. Industry standards play a large role, too: State regulations sometimes require operators to

⁹¹ DANIEL YERGIN, *THE PRIZE: THE EPIC QUEST FOR OIL, MONEY & POWER* 26–28 (1991). *But see* Bruce M. Kramer, *Pooling for Horizontal Wells: Can They Teach an Old Dog New Tricks?*, 55 *ROCKY MT. MIN. L. INST.* 8-1 n.5 (noting that although the Drake well is typically described as the first commercial oil well, another oil well might have been drilled as early as 1814).

⁹² *See supra* note 4 (describing the primacy of the states in this area).

⁹³ *See* GROUND WATER PROT. COUNCIL, *STATE OIL AND NATURAL GAS REGULATIONS DESIGNED TO PROTECT WATER RESOURCES* 12–14 (2009), available at http://www.gwpc.org/sites/default/files/state_oil_and_gas_regulations_designed_to_protect_water_resources_0.pdf (describing the history of oil and gas regulation).

⁹⁴ *See id.* at 13–14 (describing states’ early conservation regulations such as production allowables).

⁹⁵ *See* Wiseman, *Risk and Response*, *supra* note 34, at 792–94 (exploring state regulations and their strengths and deficiencies).

⁹⁶ Texas, for example, has relatively lax environmental regulations from the perspective of managing waste pits, requiring setbacks of wells from natural resources, and requiring protective casing. *See* RICHARDSON ET AL., *supra* note 35, at 16–21 (providing comparisons of stringency); Hannah Wiseman & Francis Gradijan, *Regulation of Shale Gas Development, Including Hydraulic Fracturing* 42 (Jan. 20, 2012) (unpublished manuscript), available at <http://ssrn.com/abstract=1953547>. It has allowed municipalities to write relatively extensive regulations, however, with setbacks, requirements for the use of tanks to contain wastes, prohibitions on the pollution of water, and mandates for environmental liability insurance, among other requirements. *E.g.*, Fort Worth, Tex., Ordinance No. 18449-02-2009 (Feb. 3, 2009); Arlington, Tex., Ordinance No. 07-074 § 6.01 (Oct. 23, 2007).

⁹⁷ *See supra* note 38 (showing narrative casing standards).

follow certain American Petroleum Institute Guidelines, for example.⁹⁸

As federal environmental laws began to expand in the late 1970s, some federal control of oil and gas development emerged. Oil and gas operators, like other industries, now face several substantial environmental regulations.⁹⁹ But the majority of the responsibility for preventing and mitigating environmental and social impacts of well development remains at the state, industry, and municipal level, in part due to several major federal statutory exemptions.¹⁰⁰

b. Climate Adaptation

As with oil and gas development, states, municipalities, and public-private groups are engaging in a fast-moving experiment involving the goals and implementation of climate adaptation policy, which requires understanding and responding to the impacts of climate change. Even more so than with oil and gas development, these policies address multiple activities and risks, from managing public lands in anticipation of changing weather patterns to constructing seawalls, buying up coastal property, limiting the spread of certain diseases, and strengthening electric transmission lines to resist storm damage.¹⁰¹ The problem of climate change is so massive, in fact, that the areas of policy involved in policy adaptation are nearly endless: They include health, social, economic, land use, and environmental

⁹⁸ See, e.g., MD. CODE REGS. 26.19.01.10(P) (2014) (requiring API Class A cement for casing); N.Y. STATE DEP'T OF ENVTL. CONSERVATION, SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS, AND SOLUTION MINING REGULATORY PROGRAM 7.1.4 (2011) (rev. drft.), available at <http://www.dec.ny.gov/energy/75370.html> (proposing to require API Spec. 10A cementing method).

⁹⁹ See, e.g., 16 U.S.C. § 1538(a) (2012) (Endangered Species Act prohibition on harming species); 40 C.F.R. §§ 435.30, 435.50, 435.52 (2013) (Clean Water Act limits on oil and gas waste disposal); Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 77 Fed. Reg. 49490, 49497–98 (Aug. 16, 2012) (to be codified at 40 C.F.R. pts. 60, 63) (limits on air pollutant emissions from fractured and refractured wells).

¹⁰⁰ See 42 U.S.C. § 300h(b) (2012) (showing the Safe Drinking Water Act requirements that other injectors must meet); *id.* § 300h(d)(1) (clarifying that hydraulic fracturing does not count as underground injection under the Safe Drinking Water Act and thus is not regulated by the Act); Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 322–23, 119 Stat. 594, 694 (2005) (exempting hydraulic fracturing from the definition of underground injection from the Safe Drinking Water Act and uncontaminated discharges of runoff from oil and gas well sites from the Clean Water Act); REGULATORY DETERMINATION FOR OIL AND GAS AND GEOTHERMAL EXPLORATION, DEVELOPMENT AND PRODUCTION WASTES, *supra* note 65 (exempting oil and gas exploration and production wastes, even some that have toxic qualities, from federal hazardous waste regulation).

¹⁰¹ See, e.g., Christina Ross et al., *Limiting Liability in the Greenhouse: Insurance Risk-Management Strategies in the Context of Global Climate Change*, 26A STAN. ENVTL. L.J. 251, 255, 259 (2007) (describing the many risks to be addressed).

issues, among many others.¹⁰² Adaptation policy also requires experts in multiple areas. Those examining existing policies in other states and municipalities must have some familiarity with the broad range of complicated scientific questions (such as how to best prevent the spread of West Nile virus) and federal and state law, such as the strengthening of electricity transmission lines—called storm hardening—and the allocation of line improvement and maintenance costs among customers.¹⁰³

The federal government has done relatively little to mitigate climate change or implement policies that ensure the resilience of human populations to climate impacts.¹⁰⁴ This is changing, though: A 2009 executive order directs agencies to coordinate actions relating to climate preparedness and resiliency.¹⁰⁵ President Obama also recently issued an executive order on climate preparedness,¹⁰⁶ which, among other initiatives, forms a State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, which includes a diverse group of subfederal government officials who are to provide recommendations to the federal government on how it can support state and local “resilience to climate impacts.”¹⁰⁷ This order also directs agencies such as the Environmental Protection Agency and Departments of Defense, Agriculture, and Interior to “complete an inventory and

¹⁰² See Ruhl & Salzman, *supra* note 70, at 1004–07 (listing the many legal responses needed).

¹⁰³ The North American Electric Reliability Corporation, overseen by FERC, writes detailed rules for the reliability of electricity generation and distribution, including rules about the maintenance of transmission lines. See, e.g., N. AM. ELEC. RELIABILITY CORP., FAC-003-2—TRANSMISSION VEGETATION MANAGEMENT 3 (2006), available at <http://www.nerc.com/files/fac-003-2.pdf> (providing requirements for tree trimming around transmission lines); N. AM. ELEC. RELIABILITY CORP., TRANSMISSION VEGETATION MANAGEMENT NERC STANDARD FAC-003-2 TECHNICAL REFERENCE 3 (2009), available at http://www.nerc.com/pa/Stand/Project%20200707%20Transmission%20Vegetation%20Management/FAC-003-2_White_Paper_2009Sept9.pdf (providing additional technical information and guidance for this standard). In traditionally regulated states, state public utility or service commissions regulate the costs that utilities may recover from customers, including, for example, the costs of trimming vegetation and maintaining transmission lines. See, e.g., PUBLIC SERVICE COMMISSION OF WEST VIRGINIA CHARLESTON, INVESTIGATION INTO UTILITY RESPONSE AND PRACTICES REGARDING THE RECENT SUMMER STORM 2 (2013), available at <http://www.psc.state.wv.us/scripts/WebDocket/ViewDocument.cfm?CaseActivityID=360967&NotType=%27WebDocket%27> (describing the method for utilities to apply to recover the cost of tree trimming through customer rates, as permitted, with conditions, by W. VA. CODE § 24-1-1, which allows utilities to recover certain reasonable costs).

¹⁰⁴ Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 50 ARIZ. L. REV. 879, 880 (2008) (noting that the federal government has shown little initiative in addressing climate change).

¹⁰⁵ Exec. Order No. 13,514, 3 C.F.R. § 13514 (2009).

¹⁰⁶ Exec. Order No. 13,653, 78 Fed. Reg. 66,819 (Nov. 1, 2013).

¹⁰⁷ *Id.* § 7.

assessment of proposed and completed changes to their land- and water-related policies, programs, and regulations necessary to make the Nation's watersheds, natural resources, and ecosystems, and the communities and economies that depend on them, more resilient in the face of a changing climate."¹⁰⁸ Some federal agencies already consider climate impacts in reviewing and permitting a range of projects, although the extent to which they incorporate climate analysis into their review appears to vary.¹⁰⁹ Although the federal government has taken some piecemeal steps toward addressing climate adaptation needs, the bulk of responsibility for climate adaptation still rests with state and local governments.

c. Clean Energy Policy

A third example of extensive state and local experimentation towards both policy goals and implementation involves government inducement of "clean" energy practices that emit fewer pollutants than fossil sources: reducing energy consumption through energy efficiency programs, changing the timing of energy consumption to avoid the need for dirtier back-up power plants during peak demand, and requiring the construction of renewable and low-carbon generation.¹¹⁰ To continue the theme of the other examples in this Article, this is a policy area that addresses numerous activities. For example, at least one area of clean energy policy—requiring or incentivizing the construction of renewable energy—involves multiple regulatory issues.¹¹¹

¹⁰⁸ *Id.* § 3. See also EXECUTIVE OFFICE OF THE PRESIDENT, THE PRESIDENT'S CLIMATE ACTION PLAN (2013), available at <http://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf> (summarizing President Obama's plans to address climate change).

¹⁰⁹ See Patrick Woolsey, *Analysis of Environmental Impact Statements Shows Widely Varying Treatment of Climate Change Risks*, CLIMATE L. BLOG (Dec. 5, 2011), <http://blogs.law.columbia.edu/climatechange/2011/12/05/analysis-of-environmental-impact-statements-shows-widely-varying-treatment-of-climate-change-risks/> (presenting a study on how federal agencies have incorporated consideration of climate change and greenhouse gas emissions into environmental impact statements).

¹¹⁰ See, e.g., Barry Rabe, *Second Generation Climate Policies in the American States: Proliferation, Diffusion, and Regionalization*, 6 ISSUES IN GOVERNANCE STUDIES 1, 1 (2006) ("[A]t the very time federal institutions continued to thrash about on [climate change], major new initiatives were launched with bipartisan support in such diverse state capitals as Sacramento, Carson City, Santa Fe, Austin, Harrisburg, Albany, and Hartford.").

¹¹¹ See U.S. DEP'T OF ENERGY ET AL., DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, RENEWABLE PORTFOLIO STANDARD POLICIES (2013), available at http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf (summarizing variations on state renewable portfolio standards, which require that a certain percentage of electricity come from renewables, and showing the different percentages of deadlines, as well as some states' requirement that a portion of the percentage come from solar or smaller-scale renewables sited on customers' property).

Should a government mandate that a percentage of total electricity consumed be produced from renewable generation, or provide a total quantity of renewable electricity to be produced annually? How many years should the government allow for utilities to install the needed amount of renewable generation? What types of generation should count as renewable—hydroelectricity, or just solar and wind?

States and localities have a wide variety of answers to these questions, and the federal government does little to influence state and local clean energy policy. Congress in 2005 attempted to give the Department of Energy and the Federal Energy Regulatory Commission the power to require the siting of transmission lines in areas with inadequate transmission service.¹¹² This could have at least indirectly supported transmission for renewable energy projects, but federal courts have largely gutted this provision.¹¹³ Federal law has historically most substantially contributed to clean energy policy through the provision of tax credits¹¹⁴ and federal policies that push forward transmission line planning and competition in electricity generation;¹¹⁵ more recently, federal greenhouse gas regulations have also influenced clean energy policy.¹¹⁶

d. Health Insurance

The Patient Protection and Affordable Care Act of 2010 (ACA) forced a major regulatory experiment among the states. This directive lies more squarely in the experimentation-toward-implementation realm of federalism, as the federal government has clearly defined the agenda: States must offer accessible, affordable health insurance options through exchanges, and if they fail to do so, they must rely on

¹¹² Energy Policy Act of 2005 § 1221 (codified at 16 U.S.C. § 824p(a)).

¹¹³ See *California Wilderness Coal. v. U.S. Dep't of Energy*, 631 F.3d 1072, 1079 (9th Cir. 2011) (finding that the DOE failed to adequately consult with states in designating National Interest Electric Transmission Corridors in which FERC has limited transmission line siting authority and noting other problems with the DOE's approach); *Piedmont Env'tl. Council v. Fed. Energy Regulatory Comm'n*, 558 F.3d 304, 313 (4th Cir. 2009) (observing that FERC may only permit transmission lines in construction corridors where states have withheld approval and finding that "withheld" does not include state denials of transmission lines).

¹¹⁴ See, e.g., 26 U.S.C. § 45 (2012) (providing a production tax credit for renewable energy, which expired at the end of 2013).

¹¹⁵ See 18 C.F.R. § 35.28 (requiring regional transmission planning).

¹¹⁶ See *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 79 Fed. Reg. 34,829 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), available at <http://gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf> (requiring a "best system of emission reduction" for carbon dioxide emissions from power plants, which includes, among other technologies, more implementation of renewable generating plants).

the federal program.¹¹⁷ For the goals that remain federal, the Act provides uniform guidance for states to follow, but gives states the flexibility to enact a wide range of policy approaches to health reform. Under the Act, States must create and operate exchanges that meet various federal standards for coverage¹¹⁸ or default to a federal exchange.¹¹⁹ States that elect to form their own exchanges must adopt certain federal standards for coverage or enact their own standards that implement the federal requirements.¹²⁰ This requires careful state attention to whether plans offered through the exchanges meet various requirements and offer the necessary coverage.

B. *The Mechanics of Experimentation*

Within the experiments described above, and a number of other policy areas, there is no such thing as one type of subfederal laboratory. Experimentation occurs toward very different ends, and the design of the experiments differ substantially. But regardless of the ends or the experimental structure, information is an essential component of regulatory laboratories.

1. *The Ends of Experimentation: Varied Goals, or Varied Approaches to Implement One Goal*

As shown by the case studies above, experimentation can occur toward two very different ends. First, for pure “federalism,” in which

¹¹⁷ See, e.g., Gluck, *supra* note 6, at 538, 577 (comparing the ACA to the Clean Air Act and other statutes involving cooperative federalism, in which the federal government provides standards and the states implement them, although describing cooperative federalism as involving complex intrastatutory federalism). The Supreme Court has since pushed this experimentation more toward goal-oriented federalism, as states may choose to opt out of the Medicaid expansion—and many of them have chosen to do so. *Nat’l Fed. of Indep. Bus. v. Sebelius*, 132 S. Ct. 2566, 2572 (2012) (describing Medicaid expansion in the ACA).

¹¹⁸ 42 U.S.C. § 18031(b) (2012) (“Each State shall, not later than January 1, 2014, establish an American Health Benefit Exchange”); *id.* at 18031(d) (requiring exchanges to “make available qualified health plans to qualified individuals and qualified employers”); see also 42 U.S.C. § 18022 (2012) (requiring plans to cover “[a]mbulatory patient services,” “[e]mergency services,” “[h]ospitalization,” “[m]aternity and newborn care,” “[m]ental health and substance use disorder services,” “[p]rescription drugs,” “[r]ehabilitative and habilitative devices and services,” “[l]aboratory services,” “[p]reventive and wellness services and chronic disease management,” and “[p]ediatric services”); *State Actions to Address Health Insurance Exchanges*, NAT’L CONFERENCE OF STATE LEGISLATURES (May 9, 2014) <http://www.ncsl.org/issues-research/health/state-actions-to-implement-the-health-benefit.aspx> (describing the status of the health insurance exchanges).

¹¹⁹ 42 U.S.C. § 18041 (2012) (allowing states to elect to prescribe standards for establishing healthcare exchanges and “the offering of qualified health plans through such exchanges,” and requiring states that have elected this option to either “adopt and have in effect” federal standards or state laws deemed to meet federal standards).

¹²⁰ *Id.*

subfederal actors choose a policy goal like addressing climate adaptation or regulating oil and gas development, subfederal entities engage in very broad experimentation. They must select both the policy goal and the best means of implementing it, and experimentation allows them to borrow and adapt other jurisdictions' goals and implementation approaches. For this form of federalism, in particular, state officials will be centrally concerned about the demands of their own constituencies. Certain groups of voters share policy opinions across jurisdictional lines, however, and officials will want to know how and why other states have defined their policy goal in a particular way (by regulating oil and gas development stringently or not, for example).¹²¹ They will also seek information on how these states implemented this goal by limiting oil and gas production to industrial or commercial areas, for example, by placing a high tax on production and redistributing it to affected areas, or requiring municipalities to allow oil and gas production in all zones.

Second, in “decentralized” experimental regimes, subfederal laboratories have more limited ends. A centralized government will have provided their goal, or subfederal and centralized entities will have negotiated and reached a consensus goal. Decentralization simply “gives the states an opportunity to experiment with different programs” to achieve this goal—to find different means to the end.¹²² There are also much more nuanced versions of experimental decentralized regimes, in which only select subfederal actors have the authority to experiment,¹²³ experimentation occurs above a floor or below a ceiling,¹²⁴ or subfederal actors at multiple levels—private,

¹²¹ See Rubin & Feeley, *supra* note 2, at 912 (providing the example of choosing to allow wheat growing or not, as opposed to oil and gas development); Sabel & Simon, *supra* note 7, at 79 (providing the example of choosing to protect water or not). Rubin and Feeley do not believe that experimentation towards goals is relevant or realistic, however. Rubin & Feeley, *supra* note 2, at 924 (arguing that the account of sub-units experimenting with different programs is “not particularly relevant to sub-units whose goals are different from each other” and, to highlight this point, asking “precisely what experiment one would design to tell the French Canadians whether they should retain their language”). Susan Rose-Ackerman also has argued that experimentation rarely occurs, although she notes that more experimentation and innovation is likely if an individual within the central government can “profit by claiming credit for a successful ‘innovation policy,’” particularly if that individual awards prizes after states innovate in various ways. Rose-Ackerman, *supra* note 9, at 615–16. Even this innovation can be weak, however. See *id.* (calling this policy, “unlikely to be successful”).

¹²² Rubin & Feeley, *supra* note 2, at 923.

¹²³ See Carlson, *supra* note 72 (describing California’s efforts to regulate mobile sources under the Clean Air Act—a statute that preempts other states’ regulation of these sources except in limited circumstances where they adopt standards identical to California’s).

¹²⁴ See William W. Buzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 N.Y.U. L. REV. 1547, 1551–52 (2007) (distinguishing between

local, state, and regional, for example—work together or compete in attempting to reach a common result.¹²⁵ Regardless of which type of experimentation occurs, the production of information and states' access to it affects how much and how well states experiment.

2. *The Structure of Experimentation: Copying Versus Innovation, or Copying as an Enabler of Innovation*

Many theories of beneficial subfederal policy experimentation assume that where states have access to information about others' policy approaches, they will merely free ride and copy each other, rather than innovating. Susan Rose-Ackerman constructed and modeled this theory, noting many reasons for a general lack of innovation, with free riding as one of the primary causal factors.¹²⁶ Although she recognized that experimentation required some degree of sharing and learning from other governments' mistakes,¹²⁷ she viewed states' ability to copy as a key impediment to experimentation. Brian Galle and Joseph Leahy build from this observation and largely confirm it: While innovator states fear free riding due to copying by others, they also cannot—as economists have noted—fully internalize the benefits of their innovation, thus providing positive spillovers to other states free of charge.¹²⁸ Galle and Leahy, assuming that copying largely reduces innovation, note that there are limits to copying, and that innovation will thus sometimes occur: States without oil exploration will not copy the policies of those with oil development, for example, as these policies are simply irrelevant to them.¹²⁹ Some

regulatory floors and ceilings); William W. Buzbee, *Interaction's Promise: Preemption Policy Shifts, Risk Regulation, and Experimentalism Lessons*, 57 EMORY L.J. 145, 147–48 (2007) (same).

¹²⁵ See Hari M. Osofsky, *Diagonal Federalism and Climate Change Implications for the Obama Administration*, 62 ALA. L. REV. 237, 267 (2011) (providing a taxonomy of “diagonal regulatory approaches,” which involve different sizes of government actors addressing often large problems (such as climate change); horizontal and vertical interactions of government actors, in which actors at one level, such as local, work together, or actors at different levels, such as local and state, interact; hierarchical interactions, in which policies are driven from the top down or bottom up; and varying conflicting and cooperative interactions).

¹²⁶ Rose-Ackerman, *supra* note 9, at 594.

¹²⁷ See *id.* at 614–16 (describing how centralized models can encourage decentralized innovation, although concluding that even these might not encourage much experimentation).

¹²⁸ Galle & Leahy, *supra* note 9, at 1343–44 (citing Hongbin Cai & Daniel Treisman, *Political Decentralization and Policy Experimentation* (Lab. for Macroeconomic Analysis, Working Paper No. WP13_2007_05, 2007), available at http://policydialogue.org/files/events/Cai_Treisman_Political_Decentralization_and_Policy_Experimentation.pdf; Michael Abramowicz, *Speeding Up the Crawl to the Top*, 20 YALE J. ON REG. 139, 157 (2003)).

¹²⁹ Galle & Leahy, *supra* note 9, at 1347.

states also have an incentive to hide information, reducing the ability of others to free ride.¹³⁰ Further, states need a variety of types of information in order to fully copy each other, and the production and distribution of this information can be costly.¹³¹ Galle and Leahy suggest that these and other factors might lead to more independent innovation, but this innovation might not be particularly beneficial: “[I]nnovation is most likely to occur where it will be least useful to others.”¹³²

It is this type of observation that dominates a related literature on diffusion,¹³³ which, although diverse, often views copying—or at least access to other states’ information—as a factor that can encourage, rather than stymie, innovation.¹³⁴ Andrew Karch, for example, believes, based on qualitative empirical work, that diffusion of policy among states is relatively widespread.¹³⁵ And the diffusion described by Karch does not involve rote copying of other jurisdictions’ approaches. Rather, states borrow and learn from each other in a variety of ways. Academics advocate for certain better policies in a variety of states, as do interest groups. National interest groups often attempt to sell identical language within state or local referenda, but officials might tailor this language to their own conditions, either inde-

¹³⁰ See *id.* at 1351 (although noting at 1352 n.81 that it is unlikely that states are able to keep much information secret).

¹³¹ *Id.* at 1352–53.

¹³² *Id.* at 1352–60.

¹³³ “Diffusion” refers to when a policy decision “by some governments influences the choices made by others,” sometimes causing those governments to adopt similar policies. Beth A. Simmons & Zachary Elkins, *The Globalization of Liberalization: Policy Diffusion in the International Political Economy*, 98 AM. POL. SCI. REV. 171, 171–72 (2004); see also *id.* at 171 n.1 (citing to a rich diffusion literature). For a helpful discussion of various forms of diffusion, see Michael Burger, *Policy Diffusion and the (Re)Federalization of Fracking Regulation*, 2014 MICH. ST. L. REV. (forthcoming 2014) (manuscript at 56–61), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2327898 (citing *Fact Sheet: What We Learned from Pennsylvania*, NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION (July 2011), <http://www.dec.ny.gov/energy/75410.html>).

¹³⁴ Cf. Virginia Gray, *Innovation in the States: A Diffusion Study*, 67 AM. POL. SCI. REV. 1174, 1174 (1973) (noting that although “[a]n innovation is generally defined as an idea perceived as new by an individual,” in which “the perception takes place after invention of the idea,” in some political science studies, “an innovation is more specifically defined as a law which is new to a state adopting it”). This suggests that an idea could disseminate from one state into another and still count as an innovation.

¹³⁵ KARCH, *supra* note 13, at 14, 18 (describing a “resurgence of the states” in policymaking and the diffusion of innovations in education and healthcare policy, although noting that the five policy innovations he uses as case studies “vary in the extent and speed with which they diffused across the states”); Walker, *supra* note 25, at 898 (noting a system that “links together the centers of research and generation of new ideas, national associations of professional administrators, interest groups, and voluntary associations of all kinds into an increasingly complex network which connects the pioneering states with the more parochial ones”).

pendently or with the help of the interest group. Associations of state officials also meet frequently and share ideas, Karch observes, sometimes copying each other's policies but often modifying them to fit their own needs.¹³⁶ And as Frances Stokes Berry and William D. Berry note in empirical research, both internal economic and social mechanisms and external pressures from neighboring states can lead to policy adaptation.¹³⁷ This combination of internal and external factors might cause states to truly innovate, not merely copy, when they have access to information about neighboring states' experiments.

Although it is true that copying can stymie innovation, even those who emphasize the negative impacts of accessible information on innovation would not advocate for blind experimentation, in which states have no knowledge of the content of others' policies. As Galle and Leahy note, in a world of scarce information, where localities innovate independently and often dissimilarly, "each new policy or method will benefit only those in the innovating state."¹³⁸ Subfederal entities need some idea of the suite of potential policy approaches already tried or proposed—not to mention information about implementation processes and the results of policy processes¹³⁹—to govern more effectively.¹⁴⁰ As Matthew Stephenson observes, it is possible for "better information to lead to different (and better) policy decisions,"¹⁴¹ although creating an environment conducive to information production and sharing can be quite difficult. Stephenson makes this observation in the context of state officials needing information about

¹³⁶ KARCH, *supra* note 13, at 122 (suggesting that "government interest groups"—those that "represent individuals who work in the public sector"—engage in widespread information generation and sharing and that lawmakers use this information); *see also* ALAN ROSENTHAL, *THE THIRD HOUSE: LOBBYISTS AND LOBBYING IN THE STATES* 4, 194–97 (1993) (describing lobbyists' role in processing and packaging information for legislators, including information about various states' policy approaches and policy issues).

¹³⁷ *See* Frances Stokes Berry & William D. Berry, *State Lottery Adoptions as Policy Innovations: An Event History Analysis*, 84 AM. POL. SCI. REV. 395, 396 (1990) ("It is unrealistic to assume that a state blindly emulates its neighbors' policies without its public officials being influenced by the political and economic environment of their own state.").

¹³⁸ Galle & Leahy, *supra* note 9, at 1360.

¹³⁹ *See id.* at 1352–53 (noting the importance of information and the variety of different types of information).

¹⁴⁰ These variations, as opposed to widely divergent approaches, can be exceedingly important because voters must vote on "packages." *See* Lee Ann Fennell, *Contracting Communities*, 2004 U. ILL. L. REV. 829, 875 (noting this problem in the context of obtaining information regarding servitudes from homebuyers). All voters might prefer similar things—a minimum level of services and environmental protection, for example—but they might demand different nuance on the edges. Voters choosing among rule sets with slight differences might be able to better signal their preference or distaste for particular rules within a rule package.

¹⁴¹ Stephenson, *supra* note 9, at 1438.

the likely outcomes of various policy approaches,¹⁴² but it is equally relevant to understanding regulatory baselines, and how these efforts could be emulated or improved upon.

C. *The Need for Information*

Information is necessary for policy experimentation because of the need for learning—jurisdictions must glean lessons from others.¹⁴³ This learning can take different forms, but all forms require basic information about the regulatory baseline formed by various state approaches. Much more than basic information is needed, of course. A rich empirical and theoretical political science literature on policy diffusion among states and nations shows that a number of factors contribute to whether jurisdictions will copy or build from each other's innovative policies. These include culture, the apparent success of the policies, potential cross-border effects of policy adoption, levels of trust among government officials, and many other factors. Indeed, this literature shows that sometimes, the mere availability of information has little to do with whether diffusion occurs—in an empirical study of the adoption of trade liberalization by various countries, Professors Beth Simmons and Zachary Elkins found that “[c]ommunication networks,” “private communication via telephone,” and even “[o]fficial contacts” had little influence on the adoption of policies.¹⁴⁴ But this study and many others suggest that the availability of information about other policies—particularly the success of policies or of the jurisdiction generally—is an important causal factor in policy diffusion.¹⁴⁵ A necessary precursor to understanding policy success is information about the content of the policy itself. Indeed, some literature suggests that simpler policies, merely because they are easier for other governments to understand and adopt, might more successfully diffuse.¹⁴⁶ If we want to encourage governments' identification and understanding of others' policies—even complex ones,

¹⁴² See *id.* at 1426 (noting the information needed to make “better predictions about the consequences of different courses of action”); *id.* at 1427 (describing the need for information about consequences).

¹⁴³ See Burger, *supra* note 133 (exploring the literature on diffusion, including the “learning” element, and discussing a lack of learning in the hydraulic fracturing context).

¹⁴⁴ Simmons & Elkins, *supra* note 20, at 182, 185.

¹⁴⁵ See *id.* at 182 (finding in an empirical study that “[g]overnments tend to implement the policies chosen by other ‘successful’ countries”—in the context of trade liberalization, those countries with the highest economic growth rates).

¹⁴⁶ See James W. Coleman, *Unilateral Climate Regulation*, 38 HARV. ENVTL. L. REV. 87, 115–16 (2014) (suggesting in the climate context that “simpler numerical performance standards might be preferable to more flexible multi-factor tests” in part because “domestic regulation can only serve as a model for foreign nations if those nations can determine what that regulation is”).

which are often necessary to address complex problems—then better information flow among states is needed.

Michael Dorf and Charles Sabel have proposed some of the most aggressive sharing of information, learning, and “benchmarking” within subfederal experimentation, in which both federal and subfederal entities would not only be aware of various approaches but would constantly update this awareness and carefully measure performance.¹⁴⁷ This Article focuses on the more basic need of policy awareness—a precursor to Dorf’s and Sabel’s expansive information pooling,¹⁴⁸ and even to the more modest goal of informed policy diffusion through learning.

As an example of the importance of basic information sharing about the content of state policies—an activity often overlooked in the experimentation literature—take two states with the same goal of preventing surface oil and gas pollution from entering shallow surface water. State A might require energy companies to place an expensive plastic liner beneath all of their operations, thus preventing surface pollution from seeping into the groundwater. State B might learn of this approach but worry about its expense. Alternatively, constituents in State B might oppose regulations that specify certain technologies or practices that industries must follow. This state could instead prohibit drilling over shallow groundwater, requiring energy companies to find alternative surface locations. Officials in State B might surmise that the geographical restriction is far cheaper than the technological one—the liner requirement—and would likely create less pollution. Plastic liners can tear or dissolve when subjected to certain pollution, while wells that are located far from groundwater are less likely to cause contamination. And if a federal agency were aware of these and other states’ policies, it might decide that one was so ineffective at environmental protection as to merit a federal backstop regime.

This experiment would of course be far more effective if States A and B—and 48 others—knew the results of each regulation. Data on violations of state water laws at well sites, the amount and type of groundwater pollution that occurred, and the actual expense of installing a liner or selecting an alternative well location would better inform agencies about the best types of regulations and the changes needed to meet local conditions. But mere knowledge of the substantive policies tried is an essential step—regulators must be able to locate and understand other states’ approaches in order to evaluate

¹⁴⁷ Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 287 (1998).

¹⁴⁸ See *id.* at 302 (describing information pooling).

them, let alone adapt them to local use. And it is this step that has often been ignored. Although Karch points to many examples of policy diffusion, wherein interest groups or state agencies share particular policy language,¹⁴⁹ it appears—as discussed in Part II below—that comprehensive and constructive sharing of policy approaches does not happen at the level needed to support truly informed experimentation in a policy area.

Without this information, like inventors on a series of remote islands, regulators will toil without benefiting—or reaping the benefit of—others' work. The Internet and other modern communications technologies have made information sharing far easier than it has ever been, but despite this, in certain fields, keeping apprised of other states' approaches remains a daunting task. For fields like state criminal law or commercial law that have shared roots in the common law and/or uniform codes, this would be a difficult, but perhaps manageable, project for a young lawyer or bright intern. But to understand subfederal policy approaches in a complex, technical, and frequently idiosyncratic area like oil and gas development, health insurance, clean energy policy, or climate adaptation is a monumental undertaking: Regulators must find and understand the many regulations, statutes, agency decisions, case law, and, in some cases, industry standards that together comprise a regulatory approach.¹⁵⁰

II

THE INFORMATION DEFICIT ON REGULATORY ISLANDS

Despite the importance of baseline policy information for quality experimentation—and the widespread assumption that the information age produces abundant policy data—this data is often unavailable, or available yet incomplete. It appears that regulatory officials and legislators lack this type of information in technical policy areas in particular. This Part describes the information available in several of the experimentation case studies introduced. While policy data is rapidly improving in some areas—particularly health care and clean energy—more is needed, and certain information deficits remain. This Part explores the factors that might contribute to this deficit, including limited resources, collective action problems, public choice constraints, and the dual roles, including policy advocacy and information

¹⁴⁹ KARCH, *supra* note 13, at 122–35 (describing how the National Conference of State Legislatures and other groups that represent state officials shared policy language regarding healthcare and education policy).

¹⁵⁰ In a world of costless information, people would also need to know the most recent court interpretations of these statutes and regulations.

collection, of the entities that we currently rely on to produce policy information.

A. *Examples*

This section focuses most closely on two areas of subfederal experimentation that suffer, to some degree, from an information deficit: oil and gas regulation, and climate adaptation policy. The federal government has not been highly involved in producing and assembling policy information in these areas, although subfederal entities and private organizations have taken on this task to varying degrees. Reasonable minds could and do disagree as to the extent of the information deficit in oil and gas development and climate adaptation, including whether there even is a deficit. But the analysis of these two fields, conducted in this section, shows that much progress remains to be made in producing comprehensive, accurate, and accessible information for substate officials that provides quick comparisons of policy approaches.

This section also briefly discusses areas in which the federal government, as well as substate and nonprofit entities, has played more of a role in information collection and assembly, and where comprehensive, comparative policy information is emerging. These case studies are not intended to empirically prove that the federal government is a necessary driver of effective information collection, assembly, and comparison. However, they highlight potential disincentives to information production and sharing in subfederal entities, which the federal government can help overcome.

1. *Oil and Gas Development*

The regulation of oil and gas development is one of the most expansive regulatory experiments within the United States. Domestic development of fossil fuels has grown rapidly in recent years,¹⁵¹ and is a complex regulated activity with a wide range of risks. Drilling and hydraulic fracturing of a well requires at least ten stages: testing for the presence of oil and gas and acquiring mineral rights; constructing a well site and access road; drilling and casing (lining) the well; withdrawing millions of gallons of water from a surface or underground source; transporting chemicals to the site and mixing them with water; injecting the mixture at high pressure down the well; securing the well

¹⁵¹ For a discussion of the growth of the number of wells, see David A. Dana & Hannah J. Wiseman, *A Market Approach to Regulating the Energy Revolution: Assurance Bonds, Insurance, and the Certain and Uncertain Risks of Hydraulic Fracturing*, 99 IOWA L. REV. 1523, 1541–42 (2014).

for production, storing wastes on site and disposing of them; maintaining processing equipment; installing or accessing gathering lines for the produced oil and gas; and eventually plugging the well.¹⁵² Mistakes or bad practices can occur at all of these stages, and numerous risks emerge. Improperly cased wells have polluted groundwater with methane during the well drilling process;¹⁵³ spills and leaks of diesel fuel and wastes have contaminated soil, surface water, and groundwater;¹⁵⁴ and emissions of a variety of air pollutants have grown.¹⁵⁵ Beyond the environmental context, communities, although experiencing major economic benefits,¹⁵⁶ have also seen housing shortages¹⁵⁷ and higher demand for public services like fire response and courts.¹⁵⁸

Because this activity involves so many stages and produces such a broad array of risks and benefits, each state has hundreds of regulations and statutory provisions, housed within hundreds of different

¹⁵² See Wiseman, *Risk and Response*, *supra* note 34, at 757–58, 765–66 (introducing these development stages).

¹⁵³ See E. RES., INC., DELCIOTTO NO. 2, Subsurface Natural Gas Release Report: Roaring Branch, McNett Township, Lycoming County, Pennsylvania 4–5, 10 (2009) (on file with the New York University Law Review) (describing, in document obtained by the author through a public records request, a methane leak and why it occurred); Wiseman & Gradijan, *supra* note 96, at 50–51, n.230 (documenting methane leaks based on state enforcement reports and letters).

¹⁵⁴ See Daniel J. Rozell & Sheldon J. Reaven, *Water Pollution Risk Associated with Natural Gas Extraction from the Marcellus Shale*, 32 RISK ANALYSIS 1382, 1384 (2012) (describing likely total volume of spills in the Marcellus shale); Wiseman, *Risk and Response*, *supra* note 34, at 788–92 (documenting spills).

¹⁵⁵ See N.Y. STATE DEP'T OF ENVTL. CONSERVATION, *supra* note 98, at 6-110 to 6-183, available at http://www.dec.ny.gov/docs/materials_minerals_pdf/rdsgeisch6a0911.pdf (describing air pollution); ALAMO AREA COUNCIL OF GOV'TS & TEX. COMM'N ON ENVTL. QUALITY, Oil and Gas Emission Inventory Improvement Plan, Eagle Ford, Technical Proposal (2012), available at <https://www.aacog.com/DocumentCenter/View/8286> (same); PA. DEP'T OF ENVTL. PROT., NORTHCENTRAL PENNSYLVANIA MARCELLUS SHALE SHORT-TERM AMBIENT AIR SAMPLING REPORT 2 (May 6, 2011), available at http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/docs/Marcellus_NC_05-06-11.pdf (same).

¹⁵⁶ See, e.g., Duke University, *Eagle Ford Boosts Government Revenue Across Southern Texas*, SHALE PUBLIC FINANCE (Jan. 17, 2014, 4:38 PM), <http://sites.duke.edu/shalepublicfinance/2014/01/17/eagle-ford-boosts-government-revenue-across-southern-texas> (describing economic benefits from shale gas and oil production in Texas).

¹⁵⁷ Cf. WILLISTON ECON. DEV., WILLISTON IMPACT STATEMENT 6 (2014), available at http://www.willistonnd.com/usrimages/Williston_Impact_Statement.pdf (in an area experiencing a shale oil boom, describing numerous land use cases in which applicants have requested permission to build multi-family and single-family units as well as mobile homes).

¹⁵⁸ See CITY OF WILLISTON, IMPACT STATEMENT 7 (2012), available at http://issuu.com/ubetwon/docs/williston_impact_statement (showing rising demand in fire and emergency response services).

portions of codes and statutes.¹⁵⁹ Many local governments, too, have detailed oil and gas codes.¹⁶⁰ No organization has yet comprehensively identified the oil and gas statutes and regulations that apply to each stage and each risk in the fifty states or at the substate level, although some are getting close. The Interstate Oil and Gas Compact Commission has prepared documents that describe the primary agency responsible for regulating oil and gas in 38 states, the contact that can provide regulatory updates, the agency's docketing procedure, and summaries (sometimes brief) of agencies' rules.¹⁶¹ But these summaries often indicate simply whether or not particular types of regulations are in place (whether energy companies may use retaining pits to dispose of flowback from wells, for example, answered in a "yes" or "no" fashion), and leave some spaces blank rather than answering "yes" or "no." Other summaries contain more detail.¹⁶² And while such summaries provide an essential first-step resource, further research is typically required to obtain concise and detailed comparative regulatory information.

Other nonprofit and quasi-public institutions have partially overcome the barriers to collecting and organizing information in oil and gas policy, but not fully. The Ground Water Protection Council (GWPC), a private nonprofit group comprised of state agency heads, published a report for the Department of Energy, which concluded (controversially¹⁶³) that regulation of drilling and fracturing is ade-

¹⁵⁹ For a summary of some of these state codes, see *Regulations by State*, FRACFOCUS, <http://fracfocus.org/regulations-state> (last visited Sept. 23, 2014); Wiseman & Gradijan, *supra* note 96 at 25–125.

¹⁶⁰ See, e.g., *infra* note 204 (describing portions of the codes of the cities of Farmington, New Mexico and Arlington and Fort Worth, Texas).

¹⁶¹ *Summary of State Statutes and Regulations*, INTERSTATE OIL AND GAS COMPACT COMMISSION, <http://iogcc.ok.gov/state-statutes> (last visited Sept. 23, 2014).

¹⁶² See, e.g., INTERSTATE OIL & GAS COMPACT COMMISSION, TEXAS 26, available at http://iogcc.ok.gov/Websites/iogcc/images/2013_SOS/Texas2012.pdf (showing "5. Disposal of flowback fluids: a. Retaining pits: Authorized (on-lease) or permitted (off-lease or centralized or commercial)"); INTERSTATE OIL & GAS COMPACT COMMISSION, WEST VIRGINIA 5, available at http://iogcc.ok.gov/Websites/iogcc/images/2013_SOS/WestVirginia2012.pdf (showing "5. Disposal of Flowback Fluids: a. Retaining pit: Yes," and including many blank spaces next to, for example, "Cementing log required," "Pressure testing," and "Pressure monitoring").

¹⁶³ I describe this conclusion as controversial because sources then and since have questioned the adequacy of certain regulations. See, e.g., William J. Brady & James P. Crannell, *Hydraulic Fracturing Regulation in the United States: The Laissez-Faire Approach of the Federal Government and Varying State Regulations*, 14 VT. J. ENVTL. L. 39, 68 (2012) (concluding that state regulations "vary widely in their complexity and level of protection of human health and the environment"); Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 127–28, 139–40 (2009) (describing an earlier Ground Water Protection Council survey, suggesting caution in drawing broad conclusions from

quate.¹⁶⁴ To support this argument, the group compared several types of regulations in twenty-seven states, but focused only on certain well-development stages (e.g., casing) and risks (e.g., underground leakage of methane).¹⁶⁵ The group also did not fully describe the substance of the regulations in its comparisons.¹⁶⁶ The GWPC states in its report that “[o]ne of the most important accomplishments of the study was the development of a regulations reference document” with “excerpted language from each state’s oil and gas regulations related to the programmatic areas included in the study,” and “[h]yperlinks to web versions of each state’s oil and gas regulations.”¹⁶⁷ This additional document is arranged in a table format, with tables for each of the twenty-seven states considered.¹⁶⁸ Each state table provides the text of that state’s regulations with respect to oil and permitting, hydraulic fracturing, well construction, temporary abandonment and shut-in of wells, well plugging, tanks, pits, waste handling, and spills.¹⁶⁹ While this is not a comprehensive description of regulations that apply to various stages of well development—it does not include seismic testing for the presence of oil and gas underground or water withdrawals for fracturing, for example—it is a helpful start. The document is not available online, but the GWPC provides it upon request.¹⁷⁰

Resources for the Future (RFF), another nonprofit group, invested nearly two years and multiple expert resources in collecting, summarizing, comparing, and analyzing state oil and gas regulations

the survey’s results, and noting that the Council had formally opposed federal regulation of fracturing); Wiseman, *Risk and Response*, *supra* note 34, at 755–808 (describing a variety of potential risks of shale gas development, exploring varied regulatory responses to these risks, and concluding that regulation is currently weak in some areas from the perspective of preventing and mitigating risks).

¹⁶⁴ GROUND WATER PROTECTION COUNCIL, *supra* note 93, at 7 (“State oil and gas regulations are adequately designed to directly protect water resources through the application of specific programmatic elements such as permitting, well construction, well plugging, and temporary abandonment requirements.”).

¹⁶⁵ *See id.* at 10, 18–21 (discussing the scope of the report and focusing on the casing of wells).

¹⁶⁶ Rather, it simply graphed the percentages of states that had particular forms of casing regulation and did not specify, for example, how deep the casing had to go below groundwater in each state, or how strong the casing had to be. *See, e.g., id.* at 19 (showing the percentage of states surveyed that have various types of casing requirements).

¹⁶⁷ *Id.* at 6.

¹⁶⁸ GROUND WATER PROTECTION COUNCIL, STATE OIL AND NATURAL GAS REGULATIONS DESIGNED TO PROTECT WATER RESOURCES, REGULATIONS REFERENCE DOCUMENT (May 27, 2009) (on file with New York University Law Review).

¹⁶⁹ *Id.* at 1.

¹⁷⁰ *See* E-mail from Mike Nickolaus, Special Projects Dir., Ground Water Protection Council, to author (Apr. 23, 2014, 2:00 PM) (on file with New York University Law Review) (providing the Regulations Reference Document upon the author’s request).

and was able to address only twenty-five regulatory elements.¹⁷¹ And because state regulations are evolving so quickly, some already have changed since the report's cutoff date for research.¹⁷² Furthermore, RFF had to enlist several experts for this task—they could not fully rely on research assistants or interns, although a research assistant did much of the valuable information-gathering.¹⁷³

This is not due to disinterest on the part of states, municipalities, and the public at large. A journalist recently contacted me hoping to identify the number of states that require the testing of groundwater prior to drilling or fracturing.¹⁷⁴ Unfortunately, no one had at that time collected all the information necessary to answer this question, nor had anyone compared baseline testing requirements across each state in a manner that would allow for quick identification of how many wells must be tested, which chemicals must be tested for, and which labs count as valid testing companies. A report from a Harvard Law School clinic recently filled this gap.¹⁷⁵ Yet state officials writing new oil and gas regulations and the public seeking data on the best regulations have often lacked needed policy information. Indeed, Michael Burger concludes that little policy diffusion has occurred in the hydraulic fracturing regulatory process, and anecdotal evidence seems to support this.¹⁷⁶ Learning and information sharing seems to be slowly increasing, but this improvement requires substantial effort on the part of state agency staff.

When Texas's Railroad Commission (its oil and gas agency) proposed amendments to the state code that addressed the management

¹⁷¹ RICHARDSON ET AL., *supra* note 35, at 1, 22–75.

¹⁷² See *id.* at 1 (explaining that the report analyzed regulations in place as of March 2013).

¹⁷³ See E-mail from Nathan Richardson, Resident Scholar, Resources for the Future, to author (Nov. 12, 2013, 3:55 PM) (on file with New York University Law Review) (explaining that the assistance of experts was necessary even though a talented research assistant did “the hardest legwork”).

¹⁷⁴ See E-mail from Jim Efstathiou, Jr., Energy & Env't Reporter, Bloomberg News, to author (June 6, 2013, 4:08 PM) (on file with New York University Law Review) (“I think we're going to end up taking [the baseline testing] part out of the story until we get a more complete list.”).

¹⁷⁵ See WILLIAM CRANCH ET AL., HARVARD LAW SCHOOL, RESPONDING TO LANDOWNER COMPLAINTS OF WATER CONTAMINATION FROM OIL AND GAS ACTIVITY: BEST PRACTICES 15–16 (2014), available at http://blogs.law.harvard.edu/environmentallawprogram/files/2014/05/Landowner-Complaints-Water-Contamination-Oil-and-Gas-Activity_FINAL.pdf (identifying and comparing baseline testing requirements).

¹⁷⁶ See Burger, *supra* note 133, at 58 (citing N.Y. STATE DEP'T OF ENVTL. CONSERVATION, FACT SHEET: WHAT WE LEARNED FROM PENNSYLVANIA (2011), available at http://www.dec.ny.gov/docs/administration_pdf/pafactsheet072011.pdf (showing New York's use of lessons from Pennsylvania but finding few other examples of learning or diffusion)).

of oil and gas wastes in 2002, it relied “primarily on its experience” with existing rules, as well as knowledge gained from the state’s Oilfield Cleanup Program and comments from stakeholders.¹⁷⁷ These are very important factors to consider in writing new rules—prior enforcements at well sites tend to show incidents that have occurred and polluted environmental resources, and thus indicate how to best avoid these incidents through regulation. Investigations of contaminated oilfields, including sites where major spills occur, provide similar, useful data. But information about how other states have chosen to regulate potential contamination from oil and gas sites is also highly relevant and important in crafting rules.

In drafting regulations, Texas’s agency also referenced guidelines written by the Interstate Oil and Gas Compact Commission (IOGCC).¹⁷⁸ This commission surveys state regulations, particularly regulations relating to oil and gas waste management, and publishes resulting regulatory guidelines in the Green Book, which is periodically updated.¹⁷⁹ But in addition to serving as a group that disseminates information on implementing safe oil and gas production, the IOGCC is an oil and gas advocacy organization.¹⁸⁰ Due to its multiple roles as convener of the states, lobbyist for state-centric oil and gas policy, and regulatory information gatherer and publisher, the IOGCC’s regulatory summaries and resulting guidelines could potentially leave out certain beneficial regulations, even if inadvertently.

The current Chief Geologist of the Texas Railroad Commission, Leslie Savage, indicates that the Commission also looks to other individual state codes when drafting its rules, exploring regulations in “states with similar geology or practices,” and sometimes doing its own research into many states’ regulations (depending on the subject of regulation).¹⁸¹ For example, for its recently-finalized rules requiring disclosure of chemicals used in hydraulic fracturing,¹⁸² Ms. Savage researched Pennsylvania’s, Ohio’s, and Oklahoma’s recently-finalized

¹⁷⁷ 27 Tex. Reg. 4265, 4282 (May 17, 2002).

¹⁷⁸ See *id.* (listing the EPA/IOGCC Study of State Regulation of Oil and Gas Exploration and Production Waste—the Green Book—as a reference).

¹⁷⁹ See *Our History*, STRONGER, <http://www.strongerinc.org/content/council-regulatory-needs> (last visited June 22, 2014) (noting that the EPA/IOGCC Study of State Regulation of Oil and Gas Exploration and Production Waste is “commonly known” as the “Green Book” and that this book was the product of an IOGCC regulatory survey and includes comprehensive summaries of state programs).

¹⁸⁰ See *What We Do*, IOGCC, <http://iogcc.publishpath.com/what-we-do> (last visited June 29, 2014) (noting that the Commission “advocates states’ rights to govern petroleum resources within their borders”).

¹⁸¹ Telephone Interview with Leslie Savage, Chief Geologist, Oil & Gas Div., R.R. Comm’n of Tex. (Mar. 5, 2014).

¹⁸² 16 Tex. Admin. Code § 3.29 (2014).

regulations as potentially instructive models, although the Railroad Commission had to tailor its regulations to specific statutory mandates.¹⁸³ Ms. Savage also shared her draft rules with Colorado's Oil and Gas Conservation Commission,¹⁸⁴ which adopted rules somewhat similar to Texas's.¹⁸⁵

Although some information sharing and diffusion occurred in the chemical disclosure rule-writing project, Ms. Savage's efforts show the time and resources required for this type of information collection and sharing—what she describes as “kind of a research project.”¹⁸⁶ Those efforts also show the many avenues through which pieces of regulatory information are gathered, sometimes in a piecemeal way. Ms. Savage notes that the IOGCC annually provides a summary of states' regulations and encourages states to update their own information.¹⁸⁷ In addition, the IOGCC and the GWPC meet several times a year to discuss regulations that are “coming down the pike” and to share information on “how [states are] addressing issues.”¹⁸⁸ But the regulations are changing so quickly that maintaining a comprehensive understanding of states' approaches can be difficult.¹⁸⁹ Ms. Savage explains that to keep up with the regulatory landscape, in addition to relying on the IOGCC and GWPC documents, she subscribes to news services and “keeps track of newspapers.” If she sees a blurb about a new regulation in North Dakota, for example, and Texas is updating similar regulations and “might want to take a look at” North Dakota's approach, she researches the regulation in more depth.¹⁹⁰

As oil and gas development has spread due to expanding use of updated technologies—particularly horizontal drilling and hydraulic fracturing—many other states have also begun to update their environmental regulations, and they increasingly look to other states' approaches as part of these updates. But additional anecdotal evidence again suggests that this can be a challenging task that requires expensive help—sometimes from a consulting firm or expert researcher. Brigid Kenney, Senior Policy Advisor at the Maryland Department of the Environment, observes:

Finding out what other states are doing can be difficult and time consuming, and a never ending job, because the laws and regula-

¹⁸³ Interview with Leslie Savage, *supra* note 181.

¹⁸⁴ *Id.*

¹⁸⁵ COLO. CODE REGS. § 404-1:205A (2014).

¹⁸⁶ Interview with Leslie Savage, *supra* note 181.

¹⁸⁷ *Id.*

¹⁸⁸ *Id.*

¹⁸⁹ *See id.* (explaining that because of rapid changes to state regulations, Ms. Savage must go directly to the regulations to know what the current rules are).

¹⁹⁰ *Id.*

tions are amended frequently. To help us write our draft recommended best practices report, we let a contract to a researcher to look into the regulations of 5 states and report back to us on best practices that might be appropriate for Maryland.¹⁹¹

From this starting point, Ms. Kenney obtains information about laws and regulations from a federal listserv compiled and distributed daily by the U.S. Geological Survey, as well as from Bloomberg BNA's Daily Environmental Report.¹⁹² Ms. Kenney then goes to the state website to get as much information as possible, and she indicates that "[o]nce I've exhausted the online information, the next step is calling the other state's regulators."¹⁹³

New York, in an effort to comprehensively identify risks and assess the adequacy of its own existing regulations, as well as to explore other states' approaches, published a 1000-plus page report.¹⁹⁴ This report thoroughly (though not concisely) summarized New York's own regulations and referenced other states' approaches. However, state officials did not embark upon this challenging effort alone: New York hired several consulting firms for assistance.¹⁹⁵ And nowhere in the report does the state fully describe other states' policy approaches.

Some officials have a different perspective. James Martin, Chief of West Virginia's Office of Oil and Gas, does not view routine research and review of pertinent external regulations as a particularly difficult task in light of the expanding availability of internet information and states' ability to obtain information through direct agency contacts.¹⁹⁶ He notes that certain free regulatory compilations are available from the GWPC and IOGCC and that some organizations have compiled the regulations in a searchable format that may be provided through a subscription, concluding that "[t]here are exceptions but for the most part with modest effort, the information is obtainable."¹⁹⁷

¹⁹¹ Email from Brigid E. Kenney to author, *supra* note 31.

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ N.Y. STATE DEP'T OF ENVTL. CONSERVATION, *supra* note 98.

¹⁹⁵ *Id.* (listing the consulting companies on the title page).

¹⁹⁶ E-mail from James A. Martin, Chief, Office of Oil & Gas, W. Va. Dep't of Env'tl. Prot., to author (Feb. 17, 2014, 5:08 PM) (on file with New York University Law Review).

¹⁹⁷ *Id.*; see also E-mail from James A. Martin, Chief, Office of Oil & Gas, W. Va. Dep't of Env'tl. Prot., to author (Feb. 21, 2014, 9:04 AM) (on file with New York University Law Review) (noting that RegScan may offer a searchable compilation of regulations); RegScan, <https://www.regscan.com/> (explaining that "RegScan One is a regulatory research and alert system that allows you to access U.S. and international data on the same platform").

However, it appears that there is so much information in some of these free compilations—including, in some cases, extraneous data—that sifting through them requires substantial background expertise. FracFocus, for example, run by the GWPC and IOGCC, allows viewers to click on a state to access its oil and gas regulations.¹⁹⁸ Selecting a state brings up the state’s entire oil and gas code, requiring viewers to do their own sorting and organizing of information if they want to make comprehensive comparisons. Ms. Kenney, who also uses FracFocus’s “State Regulations” website for her regulatory research, notes that “[i]t is a good resource, but sometimes the set of regulations one is directed to seems over-inclusive (lots of extraneous regulations) or so limited that I suspect it is not complete.”¹⁹⁹ And as introduced above, certain oil and gas regulations are found outside of oil and gas codes in many states.²⁰⁰ Further, some regulatory links on websites used by regulators, such as the IOGCC website mentioned by James Martin, include normative statements that contribute little to the effort of comparing the content of state regulations when searching for potential models: Selecting the link “Learn more about regulations” leads viewers to a statement that “[t]he best-suited regulators of hydraulic fracturing are the states.”²⁰¹

One regulatory compilation, the University of Colorado’s Intermountain Oil and Gas BMP [Best Management Practices] Project, includes federal and state agencies as partners²⁰² and has begun to address the problem of overabundant, disorganized, or incomplete regulatory information by categorizing regulations by the types of risk they address.²⁰³ This demonstrates the potential effectiveness of university-based regulatory projects carried out in collaboration with the federal government, which are proposed as a solution to regulatory islands in Part III.

¹⁹⁸ *Regulations by State*, FRACFOCUS, <http://fracfocus.org/regulations-state> (last visited June 29, 2014).

¹⁹⁹ Email from Brigid E. Kenney to author, *supra* note 31.

²⁰⁰ See, e.g., TEX. LOC. GOV’T CODE ANN. § 253.005(c) (West Supp. 2013) (providing a required oil and gas well setback within the state’s land use code).

²⁰¹ *Hydraulic Fracturing Regulations*, IOGCC GROUNDWORK, <http://groundwork.iogcc.org/topics-index/hydraulic-fracturing/hydraulic-fracturing-regulations> (last visited June 29, 2014).

²⁰² See *About Us*, INTERMOUNTAIN OIL & GAS BMP PROJECT, http://www.oilandgasbmps.org/about_us/index.php (last visited June 22, 2014) (listing as partners state agencies from Colorado, Montana, New Mexico, Utah, and Wyoming, in addition to the U.S. Forest Service and the Bureau of Land Management).

²⁰³ See INTERMOUNTAIN OIL & GAS BMP PROJECT, <http://www.oilandgasbmps.org> (last visited June 22, 2014) (collecting a variety of regulations and standards that address many different risk areas).

At the local government level, more diffusion of oil and gas policy appears to have occurred than in the states—suggesting perhaps that local government officials are more aware of other jurisdictions’ approaches (alternatively, local governments might be more open to using and adapting other governments’ regulations, particularly from within one state, than are state governments).²⁰⁴ One organization that appears to aid the diffusion of information about local codes is the Municipal Code Corporation, or Municode, which, in a more comprehensive fashion than FracFocus’s state project, has placed thousands of municipal codes online.²⁰⁵ This organization is funded in part by local government subscribers but also provides codes online free of charge and encourages governments to submit the text of their ordinances by providing a special email address for these submissions, as well as a web portal for submissions that cannot be emailed.²⁰⁶ Municode does not categorize or compare codes, however, thus requiring local officials who want to compare municipalities’ oil and gas policies to search through each local code. When now-City Attorney Sarah Fullenwider of Fort Worth, Texas was assigned to draft the City’s gas drilling ordinance, she “started by collecting over 25 city ordinances from across Texas and a few from Oklahoma and California,”²⁰⁷ largely using Municode. Obtaining further details on these ordinances was challenging. Fullenwider notes: “Once I reviewed the ordinances, I would attempt to call the City if I had questions. Many of the ordinances had been in place for many years and the persons who actually drafted them no longer worked for the City.”²⁰⁸ Fully understanding the Texas ordinances, however, was easier, as Fullenwider was already familiar with Texas laws.²⁰⁹

Regulatory information in oil and gas remains abundant but still difficult to sort through and comprehensively understand, thus contributing to problematic regulatory islands within this field.

²⁰⁴ See, e.g., FARMINGTON, N.M. CODE OF ORDINANCES § 19-2-102 (2014), available at <http://library.municode.com/index.aspx?clientId=10760>; ARLINGTON, TEX., ORDINANCES GOVERNING GAS DRILLING & PRODUCTION § 6.01(C)(4) (2011), available at <http://www.arlington-tx.gov/cityattorney/wp-content/uploads/sites/15/2014/05/GasDrilling-Chapter.pdf>; FORT WORTH, TEX., CODE OF ORDINANCES § 15-41(C)(4) (2014), available at <http://www.amlegal.com/library/tx/ftworth.shtml> (requiring, in each city, \$5 million in environmental liability insurance and containing other similar provisions).

²⁰⁵ See MUN. CODE CORP., <http://www.municode.com> (last visited June 22, 2014) (noting that MuniCode provides more than 2900 online codes).

²⁰⁶ *Company History*, MUN. CODE CORP., <http://www.municode.com/About-Us> (last visited June 22, 2014).

²⁰⁷ Fullenwider, *supra* note 37.

²⁰⁸ *Id.*

²⁰⁹ *Id.*

2. *Climate Adaptation*

In the area of climate adaptation, the legal literature has documented how local, state, and regional governments have shouldered the bulk of responsibility, taking a variety of piecemeal approaches.²¹⁰ In some cases, governments, along with NGOs, are sharing policy data and perhaps contributing to the sharing of information and the diffusion of certain aspects of policy deemed useful within various jurisdictions. But as with oil and gas development, this is such a complex regulatory field, with so much variation, that in spite of the abundance of policies there is no comprehensive information that would allow for quick comparison of those policies within any given issue area, such as sea-level rise, disaster response, or public health efforts to control disease-carrying insects. As with oil and gas, however, some groups have begun to provide better data that will provide foundational models for improving policy information.

The State of California has embarked upon one of the most ambitious informational projects in this area. The California Emergency Management and Natural Resources Agencies, supported by federal funding and technical assistance from California Polytechnic State University, released a detailed *California Adaptation Planning Guide* in 2012.²¹¹ The guide suggests a step-by-step process that local governments can follow to assess vulnerabilities to climate change and develop an adaptation strategy.²¹² A supplemental document categorizes vulnerabilities and associated adaptation strategies by “impact sectors,” thus allowing quick comparison of policy approaches within individual sectors.²¹³ These sectors include “Public Health, Socioeconomic, and Equity,” “Oceans and Coastal Resources,” “Water Management,” “Forest and Rangeland,” “Biodiversity and Habitat,” “Agriculture,” and “Infrastructure.”²¹⁴ The Guide then identifies strategies and the impact sectors to which they apply. For example, the strategy of “[d]evelop[ing] an urban heat island reduction program that includes an urban forest program or plan,” cuts across the public health, socioeconomic, and equity; forest and rangeland; and biodiver-

²¹⁰ See *supra* notes 69–70.

²¹¹ CAL. EMERGENCY MGMT. AGENCY & CAL. NATURAL RES. AGENCY, CALIFORNIA ADAPTATION PLANNING GUIDE: PLANNING FOR ADAPTIVE COMMUNITIES (2012), available at http://www.ca-ilg.org/sites/main/files/file-attachments/lapg_planning_for_adaptive_communities_1.pdf.

²¹² *Id.* at i.

²¹³ CAL. EMERGENCY MGMT. AGENCY & CAL. NATURAL RES. AGENCY, CALIFORNIA ADAPTATION PLANNING GUIDE: IDENTIFYING ADAPTATION STRATEGIES, at i (2012), available at http://resources.ca.gov/climate_adaptation/docs/APG_Identifying_Adaptation_Strategies.pdf.

²¹⁴ *Id.* at 3.

sity and habitat sectors.²¹⁵ For each strategy, the report also lists several examples of local policies; for heat island reduction, the report cites New York City's heat island reduction plan, Santa Monica's urban forest management plan, and Portland, Oregon's urban forestry program.²¹⁶ While these examples are not comprehensive summaries of strategies to respond to particular climate impacts, they provide models governments can work from.

Other state governments have taken similar steps toward informing local officials and other groups of potential climate adaptation policy options. The Colorado Governor's Office and other Colorado agencies funded work by state universities and consultants²¹⁷ to develop a database describing the people and groups involved in climate adaptation strategies and offering links to the actual content of climate adaptation plans.²¹⁸ This database does not yet provide easy methods of comparing one element of a climate adaptation plan across municipalities and states, however; one cannot quickly search the database to identify each jurisdiction's policy, or nonprofit group's recommendation, regarding sea walls, for example. The State of Florida, which has a "goal of integrating sea level rise adaptation into current planning mechanisms in Florida,"²¹⁹ encourages local governments to address sea-level rise within their comprehensive land use plans. The state government supports these efforts by providing a compendium of local adaptation plans as well as other countries' and states' adaptation plans, mitigation plans, and other efforts to address climate adaptation.²²⁰ While this is a compilation of policies and does not provide a quick, comparative view of how each local government or state has specifically addressed sea-level rise, it provides useful models for policy officials looking to build from other examples.

Although the federal government has taken few substantive actions to directly address adaptation needs, it does provide states and

²¹⁵ *Id.* at 5.

²¹⁶ *Id.* at 17.

²¹⁷ See W. WATER ASSESSMENT, COLORADO CLIMATE PREPAREDNESS PROJECT: FINAL REPORT (2011), available at http://www.coloadaptationprofile.org/templates/ClimateDB-New/images/CCPP_final_report.pdf (listing authors from the University of Colorado-Boulder and Stratus Consulting).

²¹⁸ COLO. CLIMATE PREPAREDNESS PROJECT, <http://www.coloadaptationprofile.org> (last visited June 30, 2014).

²¹⁹ Fla. Dep't of Health, *State and Regional Resources*, FLA. HEALTH, <http://www.floridahealth.gov/healthy-environments/climate-and-health/state-and-regional-resources.html> (last visited July 6, 2014).

²²⁰ FLA. DEP'T OF ECON. OPPORTUNITY, *HOW COUNTRIES, STATES, AND FLORIDA ADDRESS SEA LEVEL RISE*, available at <http://www.floridajobs.org/fdcp/dcp/AdaptationPlanning/CompendiumNationalStateLocalAdaptationProjects.pdf>.

local governments with some policy tools.²²¹ The National Oceanic and Atmospheric Administration (NOAA) maintains a Coastal Climate Adaptation website that allows users to search for model adaptation policies either by category, such as “Adaptation and Action Plans” or “Case Studies and Strategies,” or to search by state.²²² The database allows users to sort various policies by issues and impacts, such as precipitation, sea level, erosion, and air temperature, thus allowing for policy comparisons within a particular impact area.²²³ It also categorizes policies by the sector through which they would be implemented, such as water resources or human health, and provides links to reports or other documents describing these policies in detail.²²⁴ The EPA offers some of the most comprehensive climate adaptation policy comparisons in limited areas, particularly for heat islands. Its Urban Heat Island Community Actions Database “provides information on more than 75 local and statewide initiatives to reduce heat islands and achieve related benefits,” allowing users to search by “State & Locality,” “Initiative Type”—such as an “ordinance, building code, [or] outreach program”—and type of mitigation strategy—such as “trees and vegetation, green roofs, cool roofs, [or] cool pavements.”²²⁵

A growing number of nonprofit groups have taken up broader, national efforts to collect, synthesize, and report on climate adaptation efforts, although not always in a way that allows for quick and effective knowledge of subfederal policy approaches. The Climate Adaptation Knowledge Exchange (CAKE), founded by a 501(c)(3) organization²²⁶ and a nonprofit publisher of environmental books,²²⁷ maintains a searchable database that “profiles on the ground adaptation projects and links to complete project information.”²²⁸ The Climate Impacts Group similarly creates and maintains the CASES

²²¹ See *supra* notes 105–08 and accompanying text (describing limited federal climate adaptation actions).

²²² *Coastal Climate Adaptation*, NOAA COASTAL SERVS. CTR., <http://collaborate.csc.noaa.gov/climateadaptation/default.aspx> (last visited July 6, 2014).

²²³ *Adaptation/Action Plans*, NOAA COASTAL SERVS. CTR., <http://collaborate.csc.noaa.gov/climateadaptation/Lists/Resources/AdaptationAction%20Plans.aspx> (last visited June 23, 2014).

²²⁴ *Id.*

²²⁵ *Heat Island Effect: Where You Live*, EPA, http://yosemite.epa.gov/gw/heatisland.nsf/webpages/HIRI_Initiatives.html (last visited June 23, 2014).

²²⁶ See *About*, CAKE, <http://www.cakex.org/about> (last visited June 23, 2014) (explaining that the Exchange was founded by EcoAdapt and Island Press and is run by EcoAdapt); *About EcoAdapt*, ECOADAPT, <http://www.ecoadapt.org/about> (last visited June 23, 2014).

²²⁷ *About Island Press*, ISLAND PRESS, <http://www.islandpress.com/press/about.html> (last visited June 23, 2014).

²²⁸ *Case Studies*, CAKE, <http://www.cakex.org/case-studies> (last visited July 6, 2014).

(Climate Adaptation Case Studies) Database and Adaptation Library, which relies on governments and other entities to voluntarily input information about their adaptation projects.²²⁹ Although easy comparison of policy approaches across governments is not available, users with enough time to conduct individual searches and collect information—a resource luxury that many state agencies lack—can search the database for specific policy elements, such as public health, flooding, or coasts.²³⁰

3. *Clean Energy Policy*

The policy areas of oil and gas development and climate adaptation have seen information production from a variety of entities, although still not to a degree that fully fills the knowledge gaps described in this Article. In oil and gas development, nonprofit groups, including translocal organizations of government actors²³¹ as well as more traditional nonprofits, have led the information collection and production effort. For climate adaptation, states have been very involved in the information effort,²³² perhaps in part due to increasingly dire warnings about the impacts of climate change.²³³ States, unless they upset long-held local land use control, will have to rely heavily on local governments to address adaptation concerns, and they may be incentivized to provide local governments with policy models in order to spur action. In clean energy policy, the federal government has played a more visible role in the information collection and production effort. The government has collaborated with universities and other groups to produce some of the most valuable information available on sub-state policies, providing potential models for other areas.²³⁴ The federal government, nonprofit groups, universities,

²²⁹ *CASES Database and Adaptation Library*, CLIMATE IMPACTS GRP., <http://cses.washington.edu/cig/cases> (last visited July 6, 2014).

²³⁰ *Search the CASES Database*, CLIMATE IMPACTS GRP., <http://cses.washington.edu/cig/cases/search> (last visited July 6, 2014).

²³¹ Resnik et al., *supra* note 74, at 711.

²³² See *supra* notes 211–20 and accompanying text (describing state efforts to collect and disseminate municipal and state climate adaptation approaches).

²³³ See, e.g., Poh Poh Wong et al., *Coastal Systems and Low-Lying Areas*, in CLIMATE CHANGE 2014, at 4 (2014), available at http://ipcc-wg2.gov/AR5/images/uploads/WGIAR5-Chap5_FGDall.pdf (“The GMSL (global mean sea level) rise is projected to be 0.28–0.98 m by 2100 . . . although with regional variations and local factors the local sea level rise can be higher than the projected [sic] for the GMSL. This has serious implications for coastal cities, deltas and low-lying states.”).

²³⁴ See *infra* notes 244–48 and accompanying text (describing the DSIRE effort).

and state and local actors have also contributed independently to information production regarding clean energy policy.²³⁵

Any state or municipal government wanting to adopt a clean energy policy—or a nonprofit group wanting to encourage one—will, as with climate adaptation, have to dredge up voluminous policy data and organize it meaningfully for it to be useful. And the individuals conducting this information collection and organization effort must have a reasonable degree of in-depth knowledge about electricity generation, the many types of renewable energy that governments might consider, and the factors that typically go into a calculation of the time needed to transition to more renewable generation. States and municipal governments often include many of these factors within one code or act, thus making the search somewhat easier than in other contexts.²³⁶ Typically, though, one must still search state statutes and utility regulations to fully understand a state's renewable energy policy.²³⁷

As in other areas of state experimentation, several non-federal institutions have begun to collect and compare policy approaches. Indeed, some are even beginning to collaborate and agree upon standards. The U.S. Conference of Mayors endorsed a Climate Protection Agreement and has since published guides with model regulations and other approaches for energy conservation and greenhouse gas reduction.²³⁸ Suburban governments are engaging in creative, networked efforts to reduce carbon emissions and address other climate issues,²³⁹ while there has been a “proliferation of regional initiatives” that

²³⁵ See *infra* notes 238–40, 249 (describing contributions of state and local governments to disseminating climate mitigation policy information and an EPA database of climate policies).

²³⁶ See, e.g., COLO. REV. STAT. § 40-2-124(c) (2013) (requiring that qualifying retail utilities generate a minimum of thirty percent of retail electricity sales in Colorado for the years 2020 and thereafter from certain types of recycled and renewable energy resources).

²³⁷ See, e.g., COLO. CODE REGS. §§ 723-3:3650 to 723-3:3668 (2014) (prescribing regulations implementing Colorado's renewable energy requirements). DSIRE helpfully provides links to all relevant renewable energy legislation and regulation in Colorado, including this renewable energy mandate. *Colorado Renewable Energy Standard*, DSIRE (last updated June 25, 2013), http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CO24R.

²³⁸ See Resnik et al., *supra* note 74, at 718 (detailing some of the efforts of local government actors to promulgate climate protection strategies).

²³⁹ See Hari M. Osofsky, *Suburban Climate Change Efforts: Possibilities for Small and Nimble Cities Participating in State, Regional, National, and International Networks*, 22 CORNELL J.L. & PUB. POL'Y 395, 441 (2012) (describing the participation of a number of Twin Cities suburbs in voluntary networks that assisted the suburbs in developing climate change policies).

address climate mitigation policies.²⁴⁰ Lesley McAllister suggests that these regional initiatives, through which states share information about policies and sometimes adopt regional approaches, emerged in part because states acting within a federal policy void had the opportunity to gain political recognition. In particular, states could act as leaders at the regional level, where diffusing policies could have meaningful relevance and force.²⁴¹

The Georgetown Climate Center has developed a detailed tool that allows states to compare other jurisdictions' clean energy and energy efficiency policies, as well as those jurisdictions' energy production and consumption and other factors that likely affect the substance and effectiveness of these policies.²⁴² But the federal government—working with universities—is the most important actor in this area, demonstrating how federal-university collaboration in collecting, synthesizing, and comparing individual state policies will likely be the most effective means of filling regulatory information gaps.

In an unusual example of extremely comprehensive collection, synthesis, and comparison of state (and some municipal) policy approaches, the federal government has partnered with university actors to produce information about clean energy (renewables and energy efficiency) policy—perhaps in part because it has at times considered implementing a federal renewable energy standard.²⁴³ To spark this effort, the Department of Energy funded a project at North Carolina State University that created a detailed Database of State Incentives for Renewables & Efficiency (DSIRE).²⁴⁴ DSIRE provides comparative maps that show various energy policies in each state side-by-side,²⁴⁵ and summarizes and provides links to each state's (and in some cases, municipalities') policies and regulations in these areas.²⁴⁶ This unusually comprehensive and detailed collection of information

²⁴⁰ Lesley K. McAllister, *Regional Climate Regulation: From State Competition to State Collaboration*, 1 SAN DIEGO J. CLIMATE & ENERGY L. 81, 99 (2009).

²⁴¹ See *id.* at 99–100 (describing historical examples of pioneering state climate change policies that were later adopted at the national level).

²⁴² *State Energy Analysis Tool*, GEORGETOWN CLIMATE CTR., <http://www.stateenergyanalysis.org> (last visited July 6, 2014).

²⁴³ See *infra* note 334 (describing efforts by government agencies to evaluate the viability of adopting renewable energy standards).

²⁴⁴ N.C. State Univ., DSIRE, <http://www.dsireusa.org> (last visited July 6, 2014).

²⁴⁵ See, e.g., DSIRE, RENEWABLE PORTFOLIO STANDARD POLICIES (2013), available at http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf (mapping states' requirements for the percentage of electricity that must come from renewable energy sources).

²⁴⁶ See, e.g., *Arizona Renewable Energy Standard*, DSIRE, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=AZ03R&re=1&ee=0 (summarizing and linking to Arizona's renewable energy regulations) (last updated July 17, 2013).

allows for a quick understanding of jurisdictions' different approaches through summary maps²⁴⁷ and provides more details about state policies within comparative tables.²⁴⁸ As discussed in Part III, DSIRE can serve as a model for a broader federal effort to collect and organize state regulatory data. There are also other strong federal information efforts in the area of clean energy policy. The EPA maintains a detailed database of state and regional climate policy, which provides maps that compare state policies, including energy supply policies, and links to each state's policy.²⁴⁹

The information available to subfederal governments looking for models of clean energy policy from which to build is unusually comprehensive, accessible, and relatively easy to understand quickly, with helpful side-by-side comparisons of clean energy policies within particular subject areas.

4. Health Insurance

As introduced in Part I, the Patient Protection and Affordable Care Act of 2010 gives the states a central role in implementing federal healthcare policy, requiring them to offer a variety of plans that meet federal standards, either by implementing their own exchanges or defaulting to a federal program.²⁵⁰ States operating their own exchanges must reform their insurance laws to meet federal standards or adopt the federal standards directly.²⁵¹ The process of building exchanges and modifying insurance codes is a complex and technical one, requiring extensive knowledge of the federal requirements—contained within more than 900 pages of code—and the various approaches that states may use to meet these requirements. Forming exchanges and other tools that will better inform consumers of their healthcare options may be even more difficult, requiring careful calculations of the cost of running various systems and the types of databases likely to most accurately and efficiently inform consumers of their choices.

²⁴⁷ See, e.g., DSIRE, *supra* note 245 (mapping states' requirements for the percentage of electricity that must come from renewable energy sources).

²⁴⁸ See, e.g., *Financial Incentives for Renewable Energy*, DSIRE, <http://www.dsireusa.org/summarytables/finre.cfm> (last visited July 6, 2014) (comparing government, utility, and non-profit policies incentivizing renewable energy in each state).

²⁴⁹ *State & Regional Climate Policy Tracking*, EPA, <http://epa.gov/statelocalclimate/state/tracking/index.html>. (last updated Apr. 2, 2014).

²⁵⁰ See *supra* notes 117–20 and accompanying text (describing the insurance exchange requirements imposed on the states).

²⁵¹ See *supra* note 118 and accompanying text (summarizing the requirements for states operating their own exchanges).

As states rush to make these and other changes by the federal deadlines, they lack full and easily-accessible information about approaches other states are taking. But it appears that institutions are beginning to address this issue—perhaps more effectively than in the oil and gas development context. This may be because of the federal role: Facing accusations of overreaching and excessive burdens on states, the government has made an effort to aid the states in implementing their new requirements.²⁵² Perhaps in light of the tight deadlines for implementing modified policies and new health exchanges, state organizations, too, are contributing to the effort. The National Conference of State Legislatures (NCSL) provides maps summarizing (through coded colors) whether states have created their own exchanges, engaged in federal-state partnerships, or rely on a federal exchange as a default.²⁵³ It also provides tables comparing state benefits requirements and exchanges, with links to the details of each state policy.²⁵⁴ Further, an industry-state collaborative has begun to collect regulations and provide links to regulations on a central webpage,²⁵⁵ as has the federal government.²⁵⁶ Although these groups are beginning to generate the information necessary for effective state experimentation in health care, more detail—and better formatted comparisons—are needed if states, industry, and nonprofit groups are to be fully informed of the panoply of emerging policy reforms.

Considered together, some of the most prominent areas of modern subfederal experimentation show that the information collected in these areas is nearly as varied as the policies themselves. Some groups have begun the laborious process of information collection, comparison, and synthesis, but only federally funded (or partially funded) projects in the areas of clean energy and oil and gas regula-

²⁵² See *State Marketplace Resources*, CTRS. FOR MEDICARE & MEDICAID SERVS., <http://www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Marketplaces/State-Marketplace-Resources.html> (last visited June 23, 2014) (noting that funding under federal State Planning and Establishment Grants enabled by the Affordable Care Act “will give states the resources to conduct the research and planning needed to build a better health insurance marketplace and determine how their marketplace will be operated and governed”).

²⁵³ See Richard Cauchi, *State Actions to Address Health Insurance Exchanges*, NAT'L CONFERENCE OF STATE LEGISLATURES (May 9, 2014), <http://www.ncsl.org/research/health/state-actions-to-implement-the-health-benefit.aspx> (summarizing, in map form, the type of exchange each state has chosen to run).

²⁵⁴ See *id.*

²⁵⁵ See *Regulations by State*, FRACFOCUS, <http://fracfocus.org/regulations-state> (last visited June 26, 2014) (providing regulatory summaries in addition to a chemical disclosure tool).

²⁵⁶ See *State by State*, U.S. DEP'T OF HEALTH & HUMAN SERVS., <http://www.hhs.gov/healthcare/facts/bystate/statebystate.html> (last visited June 26, 2014) (organizing information about the Affordable Care Act by state).

tion—and the efforts of the NCSL in the very “hot” policy area of health care—seem to have produced information that is relatively comprehensive and well organized.

B. *Impediments to Information Production*

Although many groups have begun to produce the type of baseline information needed for policy experimentation, the examples above—particularly in oil and gas and climate adaptation—show that much more could and must be done if states engaging in regulatory experiments are to be fully informed. Several factors suggest why the production of subfederal regulatory information remains inadequate despite recent improvement. A growing literature on information production and sharing by governments, in terms of states’ sharing or hiding both experimental processes²⁵⁷ and results, suggests incentives and disincentives that state officials might face in producing the mere content of regulations. These lessons also extend to efforts by non-public actors to produce, share, or hide information.

Resource constraints are a primary culprit. Agency officials are busy writing and modifying regulations, responding to public comments, and enforcing the rules once they are finalized. Incentives for producing policy information are likely the highest in policy areas where the regulated activity is rapidly changing, new industry actors are entering the state, and new regulations are emerging (as is occurring with oil and gas development, for example, and health insurance). States will want to know how others are approaching the issue, and they will want to advertise policies to new actors’ compliance. But these very conditions of change overwhelm agencies, and agency officials responding to various stakeholder demands and operating with limited resources are likely to prioritize the drafting and enforcement of new regulations over the writing and publicizing of policy information. There is an opportunity cost as a result.²⁵⁸

²⁵⁷ See Galle & Leahy, *supra* note 9, at 1352–53 (noting that there are several types of information sharing, including, first, “the basic idea of the experiment itself,” such as the use of a cap and trade scheme to address pollution; second, “the processes underlying the experiment,” such as “the way in which relationships between police and community are structured” in a community policing scheme; and third, “outcome measurement”). This piece focuses on a fourth type of information that is finer-grained than the “basic idea of the experiment” yet sweeps more broadly than the detailed processes underlying the experiment, such as how officials operated on the ground. It explores the extent to which actors produce comprehensive information about the regulations and policies that form an experiment. Galle’s and Leahy’s lessons about the factors that drive officials to share or hide information in other areas, however, is highly relevant to this Part.

²⁵⁸ See Stephenson, *supra* note 9, at 1430 (“Research, however, is costly: It requires a decisionmaker (or her staff) to devote time, resources, and mental effort to studying a particular issue rather than to something else.”).

Because the individual incentives of agency officials to collect, compile, compare, and report information meaningfully influence informational efforts, throwing more resources at the information deficit will not necessarily solve the problem. Matthew Stephenson describes the likelihood that officials will conduct policy research as a cost-benefit tradeoff, wherein the social costs and benefits of collecting information to create better policy often do not match the utility to the researcher.²⁵⁹ Society will benefit from better informed policy, but the individual doing most of the research that creates this policy will internalize only some of these benefits, while she will bear the “lion’s share” of the research costs.²⁶⁰ Resource constraints and disincentives, combined with collective action problems, make it highly unlikely that states will produce comprehensive policy information. As Galle and Leahy have noted, any information prepared and publicized by a state agency or legislative office will be immediately snapped up by other free riding states, at no expense to them.²⁶¹ In the absence of property rights in policies and policy data—a creative solution suggested by Stephen Clowney²⁶²—the likelihood of information collection and diffusion will be low.²⁶³ Galle and Leahy also note that even if state officials collect certain policy information, they might have an incentive to conceal it if the policy was largely motivated by rent-seeking, for example, or could benefit in-migrants that could be perceived as draining state resources.²⁶⁴

Associations of state agencies and other state groups can create economies of scale and reduce the disincentives and free rider problems that create the under-production and inadequate distribution of information about the content of state policies, thus making information collection and production more feasible. Indeed, numerous organizations of state actors have convened in part for these very purposes of understanding state policies and communicating about policy strategies and updates. The NCSL has extensively

²⁵⁹ See Stephenson, *supra* note 9, at 1430–31 (concluding that in most cases, a researcher’s efforts will be too low, given that she is likely to internalize most of the research and not the social benefits of the research).

²⁶⁰ Stephenson, *supra* note 9, at 1431.

²⁶¹ See Galle & Leahy, *supra* note 9, at 1352 (noting that just as innovation might be discouraged by the threat of free riding by other states, so too might information production).

²⁶² See generally Stephen Clowney, *Property in Law: Government Rights in Legal Innovations*, 72 OHIO ST. L.J. 1 (2011) (expounding the benefits of granting state and local governments intellectual property protection for their statutory texts).

²⁶³ See Galle & Leahy, *supra* note 9, at 1352 (explaining that “[i]n theory, other jurisdictions could pay the innovator to share its knowledge accurately” but that the free rider effect would offset this).

²⁶⁴ Galle & Leahy, *supra* note 9, at 1354–55.

collected and disseminated information about states' policy approaches to the Affordable Care Act²⁶⁵ and hydraulic fracturing risks,²⁶⁶ for example, among other policy challenges. The NCSL and other state groups, however, will not act in all areas where information is needed. These groups will most likely fill informational gaps in relatively new, high-profile areas, but this does not cover the many mundane, technical areas in which state information sharing is also essential.

In gathering and publicizing policy information, organizations of state actors also might frame the content of policies by highlighting certain regulations for political reasons, even if inadvertently. This stymies the goal of producing comprehensive, formal information—more specifically, information that is systematically collected and objectively reported, rather than, for example, in a piecemeal fashion at internal meetings. As Miriam Seifter has extensively documented, associations of state officials do not only wear an information collection hat.²⁶⁷ Many are also lobbyists pushing for more state authority, and, in some cases, for the regulatory status quo.²⁶⁸ The Ground Water Protection Council, a group of state oil and gas and groundwater regulators, for example, provides valuable information about state regulatory programs and suggests how regulation can improve.²⁶⁹ In its lobbying role, it has also opposed federal regulation of hydraulic fracturing, arguing that state agencies will best supervise

²⁶⁵ *Health Reform and State Health Legislative Initiatives*, NAT'L CONFERENCE OF STATE LEGISLATURES, <http://www.ncsl.org/issues-research/health/2012-health-insurance-reform-state-laws.aspx> (last visited June 26, 2014) (introducing and summarizing reports).

²⁶⁶ See generally PLESS, *supra* note 31 at 4–7 (highlighting the legislative trends and policies across states regarding hydraulic fracturing risks).

²⁶⁷ See Seifter, *supra* note 28, at 20–21 (noting that much communication between states and agencies takes the form of advocacy).

²⁶⁸ *Id.* at 4 (introducing a myriad of associations of state officials that lobby agencies).

²⁶⁹ Among other programs, the GWPC runs a risk-based data management system (RBDMS)—a computer database with thousands of fields into which states can input oil and gas well information and enforcement information. States select an RBDMS tailored to their individual circumstances and choose the fields that they wish to include. The GWPC also recommends state policy changes. See, e.g., Scott R. Kell, President, Ground Water Protection Council, Address Before the H. Comm. On Natural Res., (May 27, 2009), in DEP'T OF ENVTL. CONSERVATION, REVISED DRAFT SGEIS ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM app. 15 (2011), available at http://www.dec.ny.gov/docs/materials_minerals_pdf/rdsgeisapp150911.pdf (suggesting regulatory updates). In collaboration with the Interstate Oil and Gas Compact Commission, it also created a website in which oil and gas operators can disclose the chemicals used in hydraulic fracturing; this website also tracks certain state regulatory changes. See *Regulations by State*, FRACFOCUS, <http://fracfocus.org/regulations-state> (last visited June 26, 2014) (providing regulatory summaries in addition to a chemical disclosure tool).

this practice.²⁷⁰ In testimony collected for Congress by the GWPC, some regulatory official members of GWPC highlighted recent changes to their regulations, thus providing useful regulatory information.²⁷¹ But other officials focused on the fact that they have long regulated oil and gas effectively and argued, without providing regulatory details, that their regulation is adequate from an environmental perspective.²⁷² Further, when the GWPC summarized state regulations in documents prepared for the federal government, its approach was somewhat broad brush.²⁷³ This was, in part, likely due to space limita-

²⁷⁰ Ground Water Protection Council Resolution 03-05, Requesting Legislative Clarification of the Definition of “Underground Injection” in the Safe Drinking Water Act, Sept. 17, 2003 (resolving “that the Ground Water Protection Council does hereby continue to encourage Congressional legislation clarifying . . . the definition of underground injection in Part C of the Safe Drinking Water Act to exclude the practice of hydraulic fracturing”).

²⁷¹ See, e.g., Letter from Scott R. Kell, Deputy Chief, Ohio Dep’t. of Natural Res., Div. of Mineral Res. Mgmt., to Mike Paque, Exec. Dir., Ground Water Protection Council (May 27, 2009), in DEP’T OF ENVTL. CONSERVATION, *supra* note 269 (describing recent “substantive changes” in Ohio regulations to protect groundwater from pollution from oil and gas operations).

²⁷² See Letter from Victor G. Carrillo, Chairman, R.R. Comm’n of Tex., to Mike Paque, Exec. Dir., Ground Water Protection Council (May 29, 2009), in DEP’T OF ENVTL. CONSERVATION, *supra* note 271 (“Most oil and gas state [sic] have had effective programs in place for decades. Regulating hydraulic fracturing as underground injection under the federal Safe Drinking Water Act would impose significant additional costs and regulatory burdens and could ultimately reverse the significant U.S. domestic unconventional gas reserve additions of recent years”); Letter from David E. Bolin, Deputy Dir., State Oil and Gas Bd. of Ala., to Mike Paque, Exec. Dir., Ground Water Protection Council (May 27, 2009), in N.Y. Dept. of Envtl. Conservation app. 15, *supra* note 271 (“The point to be made here is that the State of Alabama has a vested interest in protecting its drinking water sources and has adequate rules and regulations, as well as statutory mandates, to protect those sources from oil and gas operations.”).

²⁷³ See Kell, *supra* note 271 (describing the GWPC’s reports for the federal government as discussing “the regulatory framework, policy issues, and technical aspects of developing unconventional shale gas resources” and evaluating “regulations implemented by state oil and gas regulatory agencies as they relate to the protection of water,” including a study of “each state’s regulatory requirements”). In the reports, however, the GWPC did not provide enough detail for a state seeking regulatory models to understand other states’ regulatory programs. The reports also reflected the GWPC’s views regarding the adequacy of its member states’ regulations. See GROUND WATER PROTECTION COUNCIL, *supra* note 93, at 11 (proposing changes to certain state regulations, but beginning its summary with the statement: “[s]tate oil and gas regulations are adequately designed to directly protect water resources through the application of specific programmatic elements such as permitting, well construction, well plugging, and temporary abandonment requirements”); *id.* at 17–18 (describing state permitting programs, including examples of situations in which states can deny permit applications, and describing the number of states that require an engineer to review drilling permit applications, but providing only examples of state regulatory language); *id.* at 19 (describing the percentage of sample states that require cement, which holds in protective well casing, to set for a certain period or be tested, and that require surface casing to extend below the lowest groundwater, among other requirements, but not providing more regulatory details). These types of summaries are very helpful in initially suggesting regulatory models and this article does not suggest that

tions, but also, perhaps, to highlight what it sincerely believes are highly effective regulations.²⁷⁴ This potential infusion of policy preferences within information reporting does not only arise in reporting of policy by organizations of state officials. Academics and other non-profit group staff who collect and report on regulations often also add a normative perspective, suggesting that regulations are adequate or weak, for example.²⁷⁵ As discussed in Part III, federal portals designed solely for the uniform collection and reporting of policy information will help alleviate, although not fully neutralize, the normative perspectives that creep into reports regarding the content of policy.

Despite the potential for omissions and normative framing of policies in information reporting, and the combined lobbying and information collection hats that many state organizations wear, the important role of these organizations in collecting and publicizing state policy information should not be underemphasized. Indeed, as explored in Part III, these organizations will be vital participants in federally-run subfederal policy information portals that will be largely populated by subfederal actors. A strong example of the type of extensive policy information and comparison that these organizations can provide is the NCSL's comprehensive website entitled "State Actions to Address Health Insurance Exchanges."²⁷⁶ This site provides summaries of all state actions, a fifty-state comparison table and map showing state and federally-mandated benefits,²⁷⁷ and a similarly

documents like the GWPC's summary *should* always contain extensive regulatory details. Indeed, the sheer volume of such a document would likely be unmanageable. Rather, the argument here is that many entities—organizations of states, nonprofit organizations, and academic authors—might in part skew collection and selective reporting of data based on their view regarding the adequacy of regulation. While federal involvement in state policy data collection and reporting will not solve this problem—in fact, the GWPC reports were prepared for the Department of Energy—uniform requirements for policy reporting into a centralized database might help encourage the production of more information that is also more accurate.

²⁷⁴ See, e.g., Ground Water Protection Council, *supra* note 93 (describing state regulations and concluding that they adequately protect water).

²⁷⁵ See, e.g., Wiseman, *supra* note 34 (describing regulations and arguing that there are gaps); Jacquelyn Pless, *Fracking Update: What States are Doing to Ensure Safe Natural Gas Extraction*, NAT'L CONFERENCE OF STATE LEGISLATURES, <http://www.ncsl.org/research/energy/fracking-update-what-states-are-doing.aspx> (last updated July 2011) (in providing legislative updates, suggesting through its title that states are ensuring "safe natural gas extraction").

²⁷⁶ Richard Cauchi, *State Actions to Address Health Insurance Exchanges*, NAT'L CONFERENCE OF STATE LEGISLATURES (Sept. 8, 2014), <http://www.ncsl.org/research/health/state-actions-to-implement-the-health-benefit.aspx>.

²⁷⁷ *State Health Insurance Mandates and the ACA Essential Benefits Provisions*, NAT'L CONFERENCE OF STATE LEGISLATURES, <http://www.ncsl.org/research/health/state-ins-mandates-and-aca-essential-benefits.aspx> (last visited June 28, 2014).

detailed comparative table of state exchanges with links to the laws creating the exchanges and health plan choices and premiums available,²⁷⁸ among many other resources.

Despite the important work of groups of state actors in gathering and reporting policy information, inadequate information production remains likely. Low levels of information production by states—or the production of select information partially influenced by states’ political views—might also arise from public choice dynamics that affect agency incentives to comprehensively gather and publicize regulatory information.²⁷⁹ In states where certain regulated industries are dominant, or fast-growing,²⁸⁰ agency officials face certain familiar motivations. Officials in many states, simply due to the nature of their jobs—which includes issuing permits—interact frequently with incumbent industries. These are the industries that have built the state economy and have developed long-term relationships with agency officials. Through these long-term relationships, which can consist of meetings to discuss officials’ enforcement of a rule or denial of a permit, or to oppose the language proposed within a new rule, for example, the local industry has learned the ropes.²⁸¹ Industry staff are familiar with

²⁷⁸ *Health Insurance Exchanges or Marketplaces: State Actions*, NAT’L CONFERENCE OF STATE LEGISLATURES, http://www.ncsl.org/Portals/1/Documents/Health/Health_Insurance_Exchanges_State_Profiles_OCT18.pdf (last updated Oct. 11, 2013).

²⁷⁹ David A. Dana & Hannah J. Wiseman, *A Market Approach to Regulating the Energy Revolution: Assurance Bonds, Insurance, and the Certain and Uncertain Risks of Hydraulic Fracturing*, 99 IOWA L. REV. 1523, 1555 (2014) (discussing potential problems of capture in the oil and gas context); Mike Soraghan, *Industry Pours Campaign Cash into State, Local Races*, E&E PUBL’G LLC (Dec. 9, 2011), <http://www.eenews.net/stories/1059957451> (concluding that “[o]f the \$264 million the [oil and gas] industry’s executives and political action committees spent on candidates since 2001, 46 percent went to state candidates,” describing contributions to state oil and gas agency commissioners, and describing the Interstate Oil and Gas Conservation Commission’s “rewards” given to industry donors, such as complimentary registrations at its conference and “logo placement on the ‘conference promotional giveaway,’” but not providing conclusive proof of a situation in which industry influence changed an agency official’s decision); *but see* David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 507 (2013) (concluding that “[t]here is no evidence to suggest that the states’ varying approaches to these questions of [environmental regulation of oil and gas development] reflect industry capture”). *See also* Clayton P. Gillette & James E. Krier, *Risk, Courts, and Agencies*, 138 U. PA. L. REV. 1027, 1066–67 (1990) (concluding that “interest groups express their views by these means [including monetary contributions] . . . does not necessarily imply tawdry politics” but that “some groups enjoy a comparative advantage in catering to administrative needs and desires”).

²⁸⁰ *See, e.g., Bakken Helps North Dakota Surpass Oil Production Record*, BILLINGS GAZETTE, Nov. 25, 2011, available at http://billingsgazette.com/news/state-and-regional/montana/bakken-helps-north-dakota-surpass-oil-production-record/article_fa857924-1788-11e1-902a-001cc4c03286.html (describing unprecedented levels of oil production in North Dakota due to a shale oil boom).

²⁸¹ *See, e.g.,* Matthew J. McKinney, *Negotiated Rulemaking: Involving Citizens in Public Decisions*, 60 MONT. L. REV. 499, 523 (1999) (noting that for general state agency

the complicated terminology of the technical regulations, they can rattle off a seemingly endless list of acronyms, and they know the many areas of the code in which the regulation is located.²⁸² These incumbent actors have already invested extensive resources in learning this complex regulatory area and how to comply with its rules. They therefore have at least moderate incentives to discourage agencies from giving future competitors easier access to this knowledge. They might oppose an agency's effort to provide more information, suggesting that the agency was prioritizing the wrong tasks and should be focusing on streamlining rules and enforcement procedures to support the industry.²⁸³

Incumbent industry actors and their law firms are likely similarly disincentivized from producing regulatory information for anyone but themselves,²⁸⁴ and incoming industry actors desperate for this information will produce it only for their own benefit.²⁸⁵ Distributing the information would give competitors an advantage, and at no cost to the competitor. While physical equipment, property rights, and labor tend to be the dominant costs in the energy industry,²⁸⁶ the burdens of keeping up with rapidly changing law, understanding its nuances, and complying with it are also significant. Thus, as a company headquarter-

interaction with industry and other stakeholders (not specifically in the oil and gas context), "many agencies do rely on informal consultations to involve citizens and stakeholders in the process of drafting administrative rules").

²⁸² Cf. Mark Seidenfeld, *Why Agencies Act: A Reassessment of the Ossification Critique of Judicial Review*, 70 OHIO ST. L.J. 251, 303–04 (2009) (noting that for substantial rulemaking efforts, a team of agency staff is usually responsible for proposing and honing down policies). This repeated process can generate expertise within this team and familiarity with agency rules. See Thomas O. McGarity, *The Internal Structure of EPA Rulemaking*, 54 LAW & CONTEMP. PROBS. 57, 92–93 (Autumn 1991) (describing the team model, often used within the EPA, in which lower-level staff members are typically tasked with identifying the menu of possible policy options—something the author of the article views negatively). *But see id.* at 61 (noting that many environmental policy issues are so complex that no one individual within the agency fully understands them, although each person has "pure expertise" on certain limited policy issues).

²⁸³ On the other hand, in industries where one bad actor could substantially damage the entire industry—as with offshore drilling—industry actors might be highly incentivized to share various state and local policies to encourage all actors to comply. I am grateful to Professor David Spence for providing this "bad apple" insight in this context.

²⁸⁴ *But see generally* THOMAS E. KURTH ET AL., *AMERICAN LAW AND JURISPRUDENCE ON FRACING - 2012*, HAYNES AND BOONE, available at http://www.haynesboone.com/files/Uploads/Documents/Attorney%20Publications/CURRENT_RMMLF%20Fracing%202012%20Paper_Formatted.pdf (providing some regulatory summaries and a description of which agencies governed in oil and gas states in 2012).

²⁸⁵ *But see supra* note 283 (describing the "bad apple" theory in this context).

²⁸⁶ See, e.g., ERNEST J. MONIZ ET AL., *THE FUTURE OF NATURAL GAS: AN INTERDISCIPLINARY MIT STUDY* app. 2D, at 4, available at http://mitei.mit.edu/system/files/NaturalGas_Appendix2D.pdf (describing the importance of "[I]ease rates and the capital costs involved in drilling and completing wells").

tered in the Midwest or West²⁸⁷ sends trucks and rigs to Pennsylvania to begin drilling and fracturing for natural gas,²⁸⁸ it might hire a large law firm or ask its in-house counsel to produce regulatory information. But it would likely share this information only with close associates—contractors or subsidiaries, for example. An industry trade association could potentially overcome the barriers to information sharing among energy companies, but this would still leave state officials and the public in the dark. The exception to this rule is the law firm that potentially hopes to attract clients, or general good will, through gathering and comparing information. Several have done this in the oil and gas area.²⁸⁹ These documents tend to give clients a taste of the firms' knowledge of varying regulation without providing full detail, but some are surprisingly comprehensive.²⁹⁰

National nonprofit groups, too, have a clear incentive to understand state policies, and, unlike industry groups, to share this information with the public. Nonprofit groups with adequate funding can often overcome the collective action problems faced by certain states and industry actors. After all, the mission of nonprofit groups is often specifically to produce public goods—that is, to generate information and make arguments that individual stakeholders would not bother to pursue.²⁹¹ But although nonprofits are in the business of generating public information, they sometimes create this information based on the guidance of donors, and donors want particular results.²⁹² If the

²⁸⁷ See, e.g., *Chesapeake's Oklahoma City Campus*, CHESAPEAKE ENERGY, <http://www.chk.com/About/Campus/Pages/Information.aspx> (last visited Oct. 10, 2014) (showing that Chesapeake is headquartered in Oklahoma).

²⁸⁸ There are approximately 620 Chesapeake wells in Pennsylvania. See *PA DEP Oil & Gas Reporting Website*, PA. DEP'T OF ENV'T'L PROT., <https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/Production/ProductionByOperator.aspx> (last visited Oct. 10, 2014) (select "Unconventional Only," then "Chesapeake Appalachia LLC" for "Operator Name" and "Jul-Dec 2013 (Unconventional wells)" for Reporting Period) (showing 620 records).

²⁸⁹ See *The Vinson & Elkins Shale and Fracking Tracker*, VINSON & ELKINS, <http://fracking.velaw.com> (last visited Oct. 10, 2014) ("Our Shale and Fracking Tracker focuses on legal, regulatory and other newsworthy developments that affect our clients involved in recovering oil and gas from the emerging shale plays."); KURTH ET AL., *supra* note 284 (describing the many state agencies involved in regulating fracturing in the states with the largest amounts of shale oil and gas development and describing regulations).

²⁹⁰ See KURTH ET AL., *supra* note 284.

²⁹¹ See, e.g., Henry B. Hansmann, *The Role of Nonprofit Enterprise*, 89 *YALE L.J.* 835, 848 (1980) (noting "the prevalence of nonprofits as private-market producers of what economists term 'public goods'").

²⁹² See Evelyn Brody, *Agents Without Principals: The Economic Convergence of the Nonprofit and For-Profit Organizational Forms*, 40 *N.Y.L. SCH. L. REV.* 457, 470 (1996) (noting that "[i]n many cases, no donor or group of donors effectively influences nonprofit policy" because these nonprofits do not rely on donations, but that in other cases donors influence nonprofit choices); Dana Brakman Reiser, *Enron.org: Why Sarbanes-Oxley Will*

Pennsylvania office of the Sierra Club, for example, took on the time-consuming task of collecting all hydraulic fracturing regulations and summarizing and publishing them, it would be a first mover in producing a public product. It would bear all of the costs of research and production, and everyone else arguing for more or better regulation could free ride, reaping only the benefits. While the Sierra Club would likely hope for such cascade effects (for example, its policy document driving policy changes), donors might want to see more direct results, such as specific lobbying by the Sierra Club for updated regulations.

Like states, nonprofit groups face resource limitations, and may prefer more overtly goal-oriented activities and more controversial issues. As with organizations of state officials, nonprofit groups that are sufficiently well-funded and motivated to collect, synthesize, and share information about state policies might also produce, even if inadvertently, selectively reported information, or policy information framed in a particular way.²⁹³

Legal academics, unlike states and nonprofits, often have the time and expertise to produce a wide range of public goods, including seemingly mundane regulatory information.²⁹⁴ Like nonprofit groups, academics might believe that better regulatory information will highlight leaders and laggards in governance and create better policy. They may thus be incentivized to collect and report information. But these individuals may often lack the motivation to invest the hundreds of hours needed to produce mundane policy documents.²⁹⁵ The age in which the treatise was one of the most highly valued forms of scholarship has passed, and purely descriptive endeavors have largely fallen out of vogue in the academy.²⁹⁶ And, as Galle and Leahy note, aca-

Not Ensure Comprehensive Nonprofit Accountability, 38 U.C. DAVIS L. REV. 205, 210–11 (2004) (“Failure to follow through on donors’ explicit demands, or even on their implicit understandings, can spark intense feelings on the part of donors who feel duped.”).

²⁹³ See, e.g., MATTHEW MCFEELEY, STATE HYDRAULIC FRACTURING DISCLOSURE RULES AND ENFORCEMENT: A COMPARISON, NATURAL RES. DEF. COUNCIL (2012), available at <http://www.nrdc.org/energy/files/Fracking-Disclosure-IB.pdf> (describing state regulations and recommending changes).

²⁹⁴ See, e.g., Galle & Leahy, *supra* note 9, at 1356 (describing “academics” as an avenue through which policies spread and describing the tendency of academics to produce certain policy information, promote certain policies, and contribute to policy diffusion).

²⁹⁵ See Risa L. Lieberwitz, *Faculty in the Corporate University: Professional Identity, Law and Collective Action*, 16 CORNELL J.L. & PUB. POL’Y 263, 270 (2007) (noting faculties’ “social role of promoting the public good by educating future leaders, employees, and participants in civil society and by engaging in research that contributes to progress in the sciences and the humanities”). *But cf.* Galle & Leahy, *supra* note 9, at 1356 (noting that “academics seem likely to want to obtain their subjectively most-preferred policy” and that this will contribute to policy diffusion).

²⁹⁶ See, e.g., Randy E. Barnett, *Foreword: Judicial Conservatism v. A Principled Judicial Activism*, 10 HARV. J.L. & PUB. POL’Y 273, 283 n.32 (1987) (“Because theoretical legal

demics are, like certain innovative states, policy “evangel[ists]”²⁹⁷ and are likely to express a normative preference for certain policies over others, thus potentially influencing reporting.

In summary, few entities have adequate resources and/or incentives to take on the onerous task of creating and updating comprehensive, relatively objective information about state policies. State regulators have limited budgets and may be captured by incumbent firms wishing to raise the costs of entry for competitors. Even if advocacy groups are incentivized to collect and synthesize reams of information within the state, various political preferences might influence the resulting summary document. For example, those who want more stringent policy might tend to focus only on the strictest aspects of the state’s policy approach. And if industry groups or individual firms produce these summaries for themselves, or hire a law firm to take on this tedious task, they are unlikely to share the information with state regulators.

C. *The Impacts of the Information Deficit*

Benefitting from other states’ experiences requires knowing what other jurisdictions, particularly those with similar conditions, have tried. But as the above sections have suggested, states appear to often lack this knowledge. This ignorance has real consequences.

1. *Constraining Informed Experimentation*

Like real laboratories sharing experimental data, the laboratories of the states would likely function more efficiently and effectively if state officials could access and compare comprehensive information about the content of every jurisdiction’s regulations, policy, and standards. When state or municipal officials endeavor to write new, comprehensive oil and gas codes, for example, or to build a state healthcare exchange, informal conversations at conferences or meetings of state commissioners might not be enough. A full suite of information about each approach tried, and under what conditions, would provide far more data about the full range of options available. State officials could pick and choose pieces of other states’ policies—or build from these pieces—to create the best possible approach, specifically one that might better fit the preferences of the electorate or better achieve a federal goal. If this information were organized and

scholarship is so greatly rewarded today among the faculties of the ‘elite’ law schools, young academics at these institutions may not have adequate incentive to commit themselves to the life-long tedium of treatise writing and the constant updating that doctrinal legal scholarship requires.”)

²⁹⁷ Galle & Leahy, *supra* note 9, at 1356.

compared comprehensively, officials would have an easier time locating which existing approaches are the most stringent or lax; flexible or command and control-based; or narrative versus prescriptive.

In the climate adaptation context, the challenges that states and municipalities face are varied and daunting. More and better information about the content of other jurisdictions' approaches would be helpful in terms of providing models and ideas, as well as suggesting how states have tailored approaches to differing climates and topographies. In health care, as states race to implement various federal requirements, information about others' approaches would be particularly relevant, as all states must ultimately meet the same federal requirements, with limited exceptions.²⁹⁸ Without comprehensive policy information, these benefits will not emerge.

2. *Practical Consequences: Impeding Regulatory Compliance and Monitoring*

Just as the information deficit limits informed experimentation, it also expands the known cost of federalism. It makes it more difficult for regulated entities to comply with a diverse and ever-changing array of local, state, and private-public standards. Regulated industries must hire law firms to summarize regulations, or conduct this research themselves, and this is repetitive and inefficient.²⁹⁹ One centralized entity could provide much of the data that multiple firms or trade associations currently simultaneously collect.

The current lack of information about different subfederal regulations in a number of regulated areas also might make the regulations less effective at achieving their goals, such as environmental protection or high rates of healthcare coverage. Some regulated actors are simply unaware of regulations in different jurisdictions. When a natural gas drilling company from Texas moved rigs to Pennsylvania to drill and hydraulically fracture for gas, for example, its employees withdrew water without first getting a withdrawal permit from a

²⁹⁸ See Kristin Madison, *Building a Better Laboratory: The Federal Role in Promoting Health System Experimentation*, 41 PEPP. L. REV. 765, 767 (2014) (describing waivers in the Affordable Care Act that allow states to "adopt alternative means of ensuring coverage for their residents" (citing Patient Protection and Affordable Care Act § 1332, 42 U.S.C. § 18052 (2012))).

²⁹⁹ Cf. David B. Spence, *The Shadow of the Rational Polluter: Rethinking the Role of Rational Actor Models in Environmental Law*, 89 CALIF. L. REV. 917, 932–33 (2001) (noting that "environmental regulations are difficult to understand" and that "[e]ven if the firm understands the words, it must ensure that its understanding of the meaning of those words is similar to the agency's understanding, lest it risk liability based on its mistaken understanding").

regional water-based regulatory agency³⁰⁰—a regulatory system that was perhaps somewhat unfamiliar in Texas, where a state agency issues water withdrawal permits.³⁰¹ While these employees might have thought that they could get away with shirking their regulatory duties, they might also have simply been unaware of this requirement.

While limits on the availability of regulatory information make it more difficult for industry to comply, they also constrain the ability of citizen monitors to identify violations when they occur—a function that could ordinarily make regulation more effective.³⁰² Without detailed and up-to-date knowledge of the law in each jurisdiction, nonprofit groups will have trouble noticing compliance issues and bringing these to the attention of subfederal officials.

III

SOLUTIONS: INTERSTATE COMPARISONS, INTRASTATE CAPSULES, AND FEDERAL INVOLVEMENT

As introduced above, nonprofit and academic institutions, and in some cases federal agencies, are starting to collect and compare information and post it online in the form of maps and tables comparing state regulatory approaches. But there are several reasons to think that these initial efforts will not be enough to overcome the information deficit facing state regulators. Indeed, the most extensive effort to collect individual state policies and compare them—in the area of renewable energy and energy efficiency—was funded in part by the federal government.³⁰³

A state regulator wishing to survey the entire range of options before deciding to adapt another jurisdiction's approach or forge a new regulatory path faces a daunting challenge. She must locate and gain at least a basic understanding of the laws of perhaps fifty other jurisdictions, a task that could take months. Instead, she is far more likely to look to one or a few jurisdictions with which she is already

³⁰⁰ Press Release, Susquehanna River Basin Comm'n, SRBC Orders Natural Gas Driller to Stop All Water-Related Work at Drilling Site in Cameron County, PA (Nov. 10, 2010), available at http://www.srb.net/pubinfo/press/docs/Project%20Review%20Natural%20Gas%20JW%20Op%20Cease%20Order%20_11_10_2010_.pdf.

³⁰¹ See TEX. COMM'N ON ENVTL. QUALITY, COMMON ENVIRONMENTAL REQUIREMENTS FOR REGULATED OIL AND GAS OPERATIONS 3 (2013), available at http://www.tceq.state.tx.us/publications/rg/rg-482.html/at_download/file (describing the surface water withdrawal permit required).

³⁰² See Spence, *supra* note 299, at 933 (noting “a variety of compliance problems in which a plain reading of the regulations leads to a misunderstanding of the law”).

³⁰³ See DSIRE: DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 51 (describing a database funded in part by the United States Department of Energy).

familiar. To overcome this problem, regulators need comprehensive, interstate comparisons of each state's approach to a particular area organized in an understandable format like a spreadsheet, table, or a set of maps comparing various aspects of a policy in each state. Yet resource constraints, public choice challenges, and collective action problems often disincentivize the production of these comparisons in the subfederal policy areas discussed in this Article.

Even if these comparisons were easier, however, and the regulator found a state with regulations she wished to use as a model or starting point, she would still be forced to gain a more in-depth appreciation of that state's approach in order to successfully build from it. This requires copious, time-consuming information collection and synthesis at the intrastate level, and again, the regulator, facing significant resource constraints, would be far more likely to choose a model from a familiar state, or risk missing important aspects of the "foreign" state's scheme.³⁰⁴ To address this problem, subfederal actors need detailed and comprehensive intrastate summaries, or "policy capsules," of the statutes and regulations in a given field within each state, yet these rarely exist.

This Part argues that the federal government, in collaboration with subfederal and private entities, must lead the formation of information portals that provide both intra- and interstate information about subfederal policies.

A. *Interstate Comparisons*

Suppose a state regulator is considering new regulations addressing hydraulic fracturing. The regulations cover how deep well casing must be, the required strength of the cement surrounding the well casing, the wildlife and water quality surveys that must be conducted before drilling, the required thicknesses of pit liners, the limits on air pollutants from drilling and fracturing rigs, and so on. Rather than reinvent the wheel or stumble into the same problems that have troubled neighboring states, this regulator wishes to survey other states' approaches. Armed with a Westlaw account, one might think this would be a relatively quick, if tedious, task. But, as those who attempt these surveys in complex, technical, and state-specific fields learn the hard way, it may be tedious, but it is not quick.

³⁰⁴ Cf. Galle & Leahy, *supra* note 9, at 1387 ("Novel policies are likely more resource intensive, as they require more research and groundwork, and require the agency to answer more questions."); Paul S. Weiland, *Federal and State Preemption of Environmental Law: A Critical Analysis*, 24 HARV. ENVTL. L. REV. 237, 276 (2000) (noting a variety of challenges associated with regulatory "patchworks").

Table 1 provides an example of a small slice of information that could better inform this experimentation—showing the type of data, currently largely unavailable, that would be useful to state officials considering how to better protect surface and groundwater from oil and gas wastes that are stored in surface pits.

TABLE 1

Current regulations that would be useful reference points for officials considering new oil and gas waste pit liner regulation.

Colorado	Illinois	Louisiana	Pennsylvania	Texas	Public-private standard
Synthetic liner 24 millimeters thick; “imper-vious, has high puncture and tear strength”; “resistant to deteriora-tion” ³⁰⁵	Synthetic liner minimum thickness 24 millimeters; high puncture and tear strength, resis-tant to deteri-oration ³⁰⁶	Liner equivalent of 3 feet of clay with hydraulic conductivity not more than 1×10^{-7} cm/sec ³⁰⁷	“Synthetic flexible liner with a coeffi-cient of per-meability of no greater than 1×10^{-7} cm/sec”; “resistant to physical, chemical and other failure,” and adjoining liners “shall be sealed together to prevent leakage” ³⁰⁸	For pits with recycled fluids, must “have hydraulic con-ductivity that is 1.0×10^{-7} cm/sec or less”; “suffi-cient chemical and physical properties . . . to prevent failure” ³⁰⁹	“Liners should be required in certain instances based upon fluid type and site-specific characteristics” ³¹⁰

The same type of comparison shown in Table 1, which shows an interesting level of convergence as well as some variation among regu-lations, could be repeated more than 100 times over for the many other regulated stages of oil and gas development, such as how much free space there must be in waste pits to prevent overflow, how wells must be lined with cement, and how far below ground this casing must extend. These comparisons would provide more comprehensive, and perhaps more useful, information to agencies or legislators consid-

³⁰⁵ COLO. CODE REGS. § 404-1:904(b)(1) (West 2014).

³⁰⁶ 225 ILCS 731/1-75 (Jan. 3, 2014), available at <http://www.dnr.illinois.gov/OilandGas/Documents/ProposedHydraulicFracturing62-245.pdf>.

³⁰⁷ LA. ADMIN. CODE tit. 43:XIX, § 307 (2013).

³⁰⁸ 25 PA. CODE § 78.56 (2001).

³⁰⁹ 16 TEX. ADMIN. CODE § 3.8 (2014).

³¹⁰ STATE REV. OF OIL & NAT. GAS ENVTL. REGS., 2013 STRONGER GUIDELINES 5.5.3(e), available at (2013), <http://www.strongerinc.org/sites/all/themes/stronger02/download/2013%20Guidelines%20with%20HF%20revisions%20approved%205-13-2013.pdf>.

ering new regulation. For example, Pennsylvania appears to be one of the few states to address the fact that the lining of pits that store oil and gas wastes might be done in segments.³¹¹ Several different plastic sheets might be placed on the bottom of a pit to line it, and the spaces between the sheets could leak.³¹² Other states might not have thought of this potential problem and would benefit from knowledge of this regulation. Furthermore, some states might not have considered the possibility that they could put in place a more flexible standard—such as a requirement, for example, that a pit be lined with the “equivalent” of three feet of clay—in lieu of a command and control technology-based requirement, such as a synthetic liner. Although states might ultimately decide that technology-based requirements are easier to monitor and enforce, and might be more effective, they would benefit at least from the awareness that more flexible regulations were in place in some jurisdictions.

Interstate comparisons would add similar value in the other policy contexts discussed here. Indeed, the information provided by the NCSL and the federal government in the healthcare area³¹³ is beginning to resemble the type of interstate comparison envisioned here—one that should be produced for each type of subfederal experimentation.

B. *Intrastate Policy Capsules*

To further understand the challenge of producing and disseminating quality comparative regulatory information, take the state oil and gas regulator from the example in Subpart III.A. Suppose she finds the Resources for the Future interstate comparison, and, after surveying the existing options in other states, decides to consider incorporating a modified version of a portion of another state’s hydraulic fracturing regulations. In order to further consider, and ultimately adapt, that state’s approach, she would need more in-depth information than would likely be found in even a very thorough interstate comparison. Beyond the substance of the regulations, with their idiosyncratic jargon, she would need to understand the various agencies and staff members responsible for implementing them. Then, once the regulator had identified a model state (or states) from the interstate comparison, she would require convenient access to a detailed encapsulation of the model state’s regulations. Detailed

³¹¹ See *supra* Table 1 (showing that only Pennsylvania’s regulation contemplates segmented lining).

³¹² See *id.* (identifying leakage as a risk of segmented lining).

³¹³ See *supra* notes 253–56 and accompanying text (describing the information provided).

policy summaries, or capsules, that bring all of this information together give other jurisdictions easily accessible models to work from and reduce private entities' costs of entry.

Those who remember their first drivers' education test might recall a helpful booklet distributed in the class leading up to the test: a state-written drivers' manual summarizing the state's traffic laws, with pictures of signs and symbols and descriptions of their meanings—an encapsulation of the law, in other words. In the oil and gas context, Pennsylvania and Kentucky have operators' manuals available online that describe in detail their respective rules that apply to oil and gas operations, as well as permits that are required.³¹⁴ Other states have more limited information, like lists of forms that operators must fill out in order to get permits and links to those forms.³¹⁵ And in the area of renewable energy policy, a university, in partnership with the federal government, provides detailed explanations of each state's energy efficiency requirements and renewable portfolio standards.³¹⁶ Further, as David Markell notes, the Environmental Protection Agency prepares “‘sector notebooks’ for twenty-eight major industries” to promote compliance with environmental laws through “‘plain-English’” policy guides, in addition to other compliance assistance efforts.³¹⁷ These policy capsules serve as models for the documents that need to be consistently produced for areas of subfederal experimentation.

³¹⁴ See *Oil & Gas Operator's Manual*, PENN. DEP'T OF ENVTL. PROT., <http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-8295> (last visited June 28, 2014); Commonwealth of Kentucky, *Oil and Gas Well Operator's Manual*, <http://oilandgas.ky.gov/Documents/Oil%20and%20Gas%20Operators%20Manual.pdf>. A number of other states have compilations of regulations compiled in “rule books” or “goldbooks.” See, e.g., ARK. OIL & GAS COMM'N, *GENERAL RULES AND REGULATIONS* (2014), available at <http://www.aogc.state.ar.us/onlinedata/forms/rules%20and%20regulations.pdf>; STATE OIL & GAS Bd. OF ALA., *STATE OIL & GAS BOARD OF ALABAMA ADMINISTRATIVE CODE* (2014), available at http://www.gsa.state.al.us/documents/misc_ogb/goldbook.pdf.

³¹⁵ See, e.g., *Oil & Gas Filing Checklist from Prospect to Production*, R.R. COMM'N OF TEX., <http://www.rrc.state.tx.us/oil-gas/forms/oil-gas-filing-checklist-from-prospect-to-production> (last visited July 30, 2014); *Oil & Gas Conservation Division Forms*, KAN. CORP. COMM'N, <http://www.kcc.state.ks.us/conservation/forms> (last visited Oct. 21, 2014).

³¹⁶ See, e.g., *Connecticut, Incentives/Policies for Renewables & Efficiency*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CT04R (last updated July 19, 2013) (presenting such information in partnership with North Carolina State University).

³¹⁷ David L. Markell, *The Role of Deterrence-Based Enforcement in a “Reinvented” State/Federal Relationship: The Divide Between Theory and Reality*, 24 HARV. ENVTL. L. REV. 1, 26 (2000) (quoting OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE, U.S. ENVTL. PROT. AGENCY, *PROTECTING YOUR HEALTH & THE ENVIRONMENT THROUGH INNOVATIVE APPROACHES TO COMPLIANCE: HIGHLIGHTS FROM THE PAST 5 YEARS*, at 10 (1999)).

C. *Federal-State-Private Policy Information Portals*

The federal government seems best positioned—and indeed, might have a duty—to produce the type of policy information that the public and subfederal governments so badly need. Specifically, this Article proposes that the federal government, working closely with subfederal actors, universities, and regulated entities, establish online policy information portals that provide interstate policy comparisons and intrastate capsules. Government would—and, in a limited fashion, already does³¹⁸—prepare these portals for a particular policy area like unconventional oil and gas development or health care. These portals, accordingly, would introduce the policy issue and provide the inter- and intrastate comparisons described above in a readable, accessible format.

1. *Portal Design*

As Part II of this Article demonstrated, nonprofit groups, government entities, and universities already collect and report a great deal of baseline information about state policies. But in order to be fully effective, the information must be collected and organized in a certain way. If the goal is to allow state policy makers and regulatory staff, regulated industry, and nonprofit groups that monitor the industry to quickly understand regulations and compare them across jurisdictions, certain elements of portal design are quite important.

The categorization of policy information is the first and perhaps most important factor that must be considered in portal design. Subfederal policies should be organized and reported in various categories, grouped either by a particular aspect of the policy area or regulated activity, or by the risk or problem addressed by various regulations. And within each category, all states' regulations should be compared, as should a sampling of municipal ordinances and industry standards, if applicable. In oil and gas, for example, a state official, well driller, or environmental group might want to know how states and local governments regulate the construction of surface pits that store oil and gas wastes. In this case, an oil and gas policy portal should have a category of "surface pit construction," such as a row within a table of regulations, that shows different policy approaches in columns as the reader moves across the row. Alternatively, these same individuals might want to know how states and local governments prevent surface water contamination from oil and gas development, in which case one row ("surface water contamination") would show in

³¹⁸ See *infra* notes 334–37 (describing how the EPA does this).

various columns how states regulate pits (to avoid leakage into surface water), prevent spills of drilling and fracturing wastes, and so on. The same type of categorization is important for the other policy areas used as examples here. Climate adaptation policies might best be organized by the impact they address, such as sea level rise, or the activity that must be conducted or avoided to mitigate that impact, such as limiting construction in coastal zones or building sea walls.

The visual depiction of the categories and policies, regulations, and standards within the categories is nearly as important as categorization. If readers want to be able to quickly compare policies within a particular category across jurisdictions, policies must be visually grouped within a category. This will often require a table format, as suggested above, in which each jurisdiction has its own column.³¹⁹ Alternatively, policy information could be organized in a map format, as some already is. A portal could provide a comparative map for each policy category. A map comparing state or local policies that addressed sea level rise, for example, could briefly indicate within the boundaries of the jurisdiction whether the government used building restrictions, sea walls, or other tools to mitigate this impact.³²⁰

Visual depictions provide limited space for information, and even the most sophisticated readers who are generally familiar with a policy topic can become overwhelmed and confused by a barrage of words. A final important consideration in portal design is therefore the quantity of information provided. To allow for initial, quick comparison, portals should include relatively brief information on the initial map or table that compares policies. Policies should, if possible, be summarized within one sentence, such as “oil and gas waste pit must be lined with synthetic material at least 40 millimeters thick,” or even with a number and unit (40 millimeter liner in one state, as compared to 30 millimeter liner in another). Hovering a cursor over a particular cell within a table or area of a map should then produce an intermediate quantity of information—several sentences, for example—and these short descriptions should be hyperlinked to the full text of the policy

³¹⁹ Several portals already use this method. *See, e.g.*, GROUND WATER PROT. COUNCIL, *supra* note 168.

³²⁰ Several portals use this method as well. *See, e.g.*, *A Review of Shale Gas Regulations by State*, Res. for the Future, http://www.rff.org/centers/energy_economics_and_policy/Pages/Shale_Maps.aspx#maps (last visited Sept. 28, 2014); *3rd-Party Solar PV Power Purchase Agreements*, DATABASE OF STATE INCENTIVES OF RENEWABLES & EFFICIENCY, available at http://www.dsireusa.org/documents/summarymaps/3rd_Party_PPA_map.pdf. For DSIRE summary maps in other policy categories, *see Summary Maps*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, <http://www.dsireusa.org/summarymaps> (last visited June 28, 2014).

with a description of the source of the text, including the chapter and section of a state or local code, for example.³²¹

While the federal government alone will not likely be able to create and maintain these types of information portals—as highlighted by the recent problems with the federal healthcare website³²²—it will be an important driving force behind them. The federal government should provide the basic vision for information collection, specifying the policies and regulations in a given area that are priorities for information collection, summarizing, and reporting, and the categories into which these policies and regulations are most logically divided and compared. It should then work with subfederal entities to create, populate, and maintain a portal.

Whatever entity will host the policy comparison webpage, it should seek stakeholder input before designing the portal.³²³ Specifically, the host should ensure that all categories within a particular policy area are covered, that the categories make sense and are intuitive, and that the visual depiction will be accessible and helpful to users.

2. *Data Input and Portal Maintenance*

Once a portal has been designed, inputting accurate data and using uniform language and terms while inputting this data will be a daunting task. States might use different terms to describe the same regulatory area or regulated activity (seawalls versus embankments in climate adaptation, for example, or pits versus impoundments in oil

³²¹ The NCSL uses a similar map to compare states that 1) have developed and run their own health exchange, 2) have used a “State/Federal Partnership,” 3) use a state-run exchange for businesses and federal marketplace for individuals, or 4) use a federal exchange. Rather than placing text within each state, it shows these initial policy differences by color: it treats full, state-run exchanges as green, for example. See Richard Cauchi, *State Actions to Address Health Insurance Exchanges*, NAT’L CONFERENCE OF STATE LEGISLATURES (May 9, 2014), <http://www.ncsl.org/research/health/state-actions-to-implement-the-health-benefit.aspx#Snapshot> Table (scroll to “New 50-State Table of State and Federal Actions to Implement Exchanges or Marketplaces”). Hovering over a state provides slightly more detail about the exchange approach within the state, and clicking on a state leads the reader to a more detailed table with links to the rules described in the table. *Id.*

³²² The flaws in the healthcare website appear to have been largely technological ones, suggesting that the federal government—unlike relatively innovative and nimble private technology companies that specialize in the area—might not be the best entity either to create a website or even to select contractors to build a website. But the government can still meaningfully contribute experience in terms of identifying the information that should be on a website and how it should be organized.

³²³ Cf. Mark Seidenfeld, *Empowering Stakeholders: Limits on Collaboration as the Basis for Flexible Regulation*, 41 WM. & MARY L. REV. 411, 435–36, 442–44 (2000) (describing the role of stakeholders in the administrative state under both the interest group and collaborative models).

and gas). Those inputting data will need to agree how regulatory terms will be uniformly summarized, and, where regulations contain units, which unit will be used. If state or local governments are directed to input information about their requirements for sea wall construction, for example, the portal must specify the units in which required sea wall height should be reported, such as feet or meters. Alternatively, the portal could allow governments to input a narrative standard (e.g., “adequate sea walls”) if they lack specific technical requirements. To reach agreement on the use of terms and units, the portal designer should convene a group of stakeholders, including those who will input the data, and develop consensus standards within a portal guide. These standards should provide those inputting data with the specific terms and units they should use to describe certain policies. States and federal-state partnerships already have engaged in similar consensus efforts, particularly for the reporting of environmental data (as opposed to policies).³²⁴ Lessons from these projects could be transferred to the policy context.

The individuals most familiar with state policies likely should be tasked with inputting the data. State agency officials or city council members have ready knowledge of their own policies, and relying on them to identify and collect this information will be far more efficient than recruiting federal officials who must familiarize themselves with hundreds of different policies. Given officials’ heavy workload and disincentive to collect and report this information, some form of monetary compensation or recognition likely will be needed to adequately incentivize quality data input, as discussed below. Alternatively, experts in the field, such as professors, could volunteer to submit information. This will often be the case in the context of cooperative federalism, where the states are required to implement federal standards.³²⁵ This is particularly true in areas where states must comply

³²⁴ See, e.g., *Who We Are*, ENVTL. INFO. EXCH. NETWORK, <http://www.exchangenetwork.net/about/who-we-are> (explaining that the Environmental Information Exchange Network—a partnership among “States, Tribes, Territories, and EPA”—involves the automated sharing of environmental data rather than manual inputting of policy data, but it provides models for making “data structures” uniform and providing for the sharing of data by approved entities over the internet); *Risk-Based Data Management System*, GROUND WATER PROTECTION COUNCIL, <http://www.gwpc.org/programs/risk-based-data-management-system> (last visited June 28, 2014) (describing a database into which state officials input information about oil and gas well sites, inspections, and enforcement at sites).

³²⁵ See, e.g., *supra* note 63 (describing the state implementation plan requirement under the Clean Air Act). Further, federal officials might be more familiar with state laws when they must address states’ concerns as part of federal approval processes, such as conducting lease sales or issuing permits for mineral exploration on the Outer Continental Shelf or issuing licenses for dams. See, e.g., 43 U.S.C. § 1345 (2012) (requiring the Secretary of the

with a federal standard but have flexibility in implementing that standard.³²⁶ Further, some federal agencies or offices—or divisions of these agencies—already are assigned to collect information about policies or state regulatory programs.³²⁷ Where federal officials have in-depth knowledge of subfederal data, they should be centrally involved in data input efforts.

Those responsible for data input would have to closely follow the portal guide to ensure uniformity, and they should be required to update the data periodically—perhaps annually, by an established date, so that certain policies would not be more outdated than others. The entity that hosts the portal should provide a password-protected page in which regulatory summaries and the full text of regulations could be inputted, category by category.

Persuading state and local officials to take on this task will likely be difficult given the disincentives and resource constraints identified in Part II. The federal government will therefore need to cover the costs that states and local governments incur for data entry, as some federal programs already do. For example, the Community Assistance Program-State Support Services Element supports state efforts that help communities implement National Flood Insurance Program Requirements.³²⁸ Specifically, CAP-SSSE funds technical assistance for communities complying with NFIP requirements and financial support to evaluate community performance in implementing NFIP floodplain management activities.³²⁹ One NFIP requirement is that communities enter data into the Community Information System, which collects and maintains communities' flood zone and floodplain information,³³⁰ and CAP-SSSE funds can be used to support this data

Interior to accept recommendations of a state governor regarding the “size, timing, or location of a proposed lease sale” if these recommendations “provide for a reasonable balance between the national interest and the well-being of the citizens of the affected State”); 33 U.S.C. § 1341 (2012) (requiring applicants for federal licenses to obtain a “certification from the State” showing that the license will comply with various water quality laws).

³²⁶ See, e.g., *supra* note 317 and accompanying text (describing the EPA’s use of sector notebooks to describe rules and promote compliance).

³²⁷ See *supra* note 51 (describing, among other federal information collection efforts, studies of state policy conducted by the Congressional Research Service at the direction of Congress).

³²⁸ *Community Assistance Program - State Support Services Element*, FED. EMERGENCY MGMT. AGENCY, <http://www.fema.gov/floodplain-management/community-assistance-program-state-support-services-element> (last updated July 24, 2014).

³²⁹ *Id.*

³³⁰ U.S. DEP’T OF HOMELAND SEC., NAT’L FLOOD INS. PROGRAM INFO. TECH. SYS. 2 (2012), https://www.dhs.gov/sites/default/files/publications/privacy/privacy_pia_fema_nfi_pits_10122012.pdf.

entry.³³¹ The federal government could further incentivize thorough, accurate data entry by providing monetary prizes or even just publicized recognition to those governments with the best record of accuracy at the end of each year.

The issue of accuracy will be an important one and will likely require careful auditing of subfederal governments' entries. In light of limited federal resources, it will be difficult to assign the federal portal host to this task, thus suggesting the need to enlist experts around the country in this review. One page of the portal should be a dedicated comment page through which individuals could submit to the portal host a complaint about a particular entry, an explanation of why the individual believed the entry was wrong, a source suggesting the correct policy information, and a brief description of the job title and credentials of the commenter, as well as contact information. While the portal host would still have to dedicate resources to reviewing these comments and correcting inaccurate entries where merited, involving the public would reduce the hours that would need to be dedicated to this task.

If the public is involved in assessing the accuracy of policy data entries, then the government officials entering data will need a mechanism to challenge any changes that the portal host makes to inputted data. The host should offer, at minimum, a comment form and direct e-mail address and phone line through which government officials could lodge complaints. In order to ensure that these complaints do not pile up unnoticed, the portal host responsible for checking the accuracy of entries should likely be required to respond to the government official within a certain number of days of receiving the complaint and to offer a written explanation of why the data inputted was modified or restored to its original content.

A number of other technical complications will likely arise in the design and maintenance of the portal, and space limitations prohibit a full review of the technical details. But these general guidelines for design and maintenance of portals should provide a solid foundation of policy information that will be useful to states developing new policies, industry actors complying with a variety of policies in a given area, and nonprofit groups monitoring compliance.

D. Benefits and Drawbacks of Federal Involvement

Leaving to the federal government the task of collecting and categorizing policy data will not solve all of the incentive, resource, and bias-based problems explored in Part II. Federal officials, too, have

³³¹ *Community Assistance Program - State Support Services Element*, *supra* note 328.

policy preferences; they might favor policies that more stringently regulate environmental risks, for example, and thus would highlight state examples of this type in running a portal.

In some cases, as with the Clean Air Act, the government has instituted a top-down policy directive (a technology-based emissions standard) that states must implement, and it seeks to monitor whether states are meeting this directive.³³² In others, such as oil and gas or renewable energy policy, the government is taking³³³ or contemplating³³⁴ various federal actions, partly in response to perceived inadequacies of state approaches. As with information collection and reporting efforts by nonprofits, universities, and other groups, various biases of federal officials might cause them to collect or portray information in a way that supports the government's ultimate approach to regulation, or rejection of a particular state standard.³³⁵ And the government, although offering economies of scale in information synthesis and financial resources, has limited resources.³³⁶ But especially in areas where the federal government has very little review authority

³³² 42 U.S.C. § 7410 (2012) (requiring states to submit to the EPA Administrator “after the promulgation of a national primary ambient air quality standard . . . for any air pollutant, a plan which provides for implementation, maintenance, and enforcement of such primary standard in each air quality control region” and that the plan must “include enforceable emission limitations”).

³³³ See, e.g., *Overview of Final Amendments to Air Regulations for the Oil and Natural Gas Industry: Fact Sheet*, ENVTL. PROT. AGENCY, <http://www.epa.gov/airquality/oilandgas/pdfs/20120417fs.pdf> (last visited June 28, 2014) (describing new rules on air emissions from hydraulically fractured wells); *Unconventional Extraction in the Oil and Gas Industry*, ENVTL. PROT. AGENCY, <http://water.epa.gov/scitech/wastetech/guide/oilandgas/unconv.cfm> (last visited June 28, 2014) (describing new wastewater treatment standards that the agency is developing).

³³⁴ See, e.g., JEFFREY LOGAN ET AL., EVALUATING A PROPOSED 20% NAT'L RENEWABLE PORTFOLIO STANDARD, NAT'L RENEWABLE ENERGY LAB. <http://www.nrel.gov/docs/fy09osti/45161.pdf> (last visited June 28, 2014) (exploring the types of renewable energy that would be installed to meet a 20% national renewable energy standard, impacts on prices, and other impacts); ENVTL. PROT. AGENCY, STUDY OF THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER SOURCES: PROGRESS REPORT (2012), <http://www2.epa.gov/sites/production/files/documents/hf-report20121214.pdf> (describing the agency's study of the water quality and quantity impacts of hydraulic fracturing—although not stating that it will regulate in the area, which is one that currently operates under several substantial federal regulatory and statutory exemptions).

³³⁵ Cf. Margaret H. Lemos, *State Enforcement of Federal Law*, 86 N.Y.U. L. REV. 698, 702–03 (2011) (noting the possibility that federal agencies' priorities will be skewed “due to capture, bureaucratic pathologies, political influence, or resource limitations”).

³³⁶ See Nell Green Nylen, *To Achieve Biodiversity Goals, the New Forest Service Planning Rule Needs Effective Mandates for Best Available Science and Adaptive Management*, 38 ECOLOGY L.Q. 241, 282 (2011) (describing “limited budgets” and “tight time constraints” of federal agencies); David J. Sousa & Christopher McGrory Klyza, *New Directions in Environmental Policy Making: An Emerging Collaborative Regime or Reinventing Interest Group Liberalism?*, 47 NAT. RESOURCES J. 377, 385 (2007) (noting “limited budgets and staffing” of federal agencies); Mark Squillace & Alexander Hood,

over state regulations—outside of the cooperative federalism process, for example—and where it has little intention of becoming more involved in a particular policy area, officials might be relatively objective reviewers of the accuracy and potential bias of regulatory information.

Further, the federal government should be collecting much of this data anyway. In the many areas where the federal government could exercise jurisdiction over a regulated activity and has chosen not to—as it has largely done in the oil and gas context—it is imperative that the government monitor experimentation. If a race to the bottom occurs, if impacts spill beyond local or state boundaries, or if strong national interests are impacted, the federal government might need to assert (or reassert) authority, at least over limited portions of an activity. While simply knowing the content of regulations will not provide the government with all of this information, it will provide essential data. The government can identify substantial gaps that have emerged, which could suggest that a race to the bottom is occurring, or when jurisdictions are regulating so little that spillover effects are likely occurring. At a minimum, information on subfederal regulations will flag these potential problems, causing the federal government to further investigate. Similarly, where the government has delegated authority to the states based on an assumption that they generally will do a good job but need to improve some of their own policies—as it has done for the regulation of oil and gas hazardous wastes³³⁷—it can use regulatory information to monitor whether that improvement has emerged. Comprehensive, easily comparable data about each state, local, or public-private approach will also provide essential information when the government has delegated implementation of a federal policy to states. The government can directly track whether states have enacted the types of standards necessary to meet that policy.

In addition to enabling monitoring of the effectiveness of subfederal regulation, comprehensive, uniform information about subfederal standards will allow the government to respond in a more informed and balanced manner to the demands of various stakeholder groups. If standards become sufficiently diverse, regulated actors might begin lobbying for a uniform federal ceiling, while environ-

NEPA, Climate Change, and Public Lands Decision Making, 42 ENVTL. L. 469, 472 (2012) (describing increasing “resource constraints” of federal agencies).

³³⁷ See REGULATORY DETERMINATION FOR OIL AND GAS AND GEOTHERMAL EXPLORATION, DEVELOPMENT AND PRODUCTION WASTES, *supra* note 65 (describing these regulations).

mental groups will argue for a federal floor.³³⁸ The government needs good information about subfederal policy to effectively respond to these types of requests.

Despite having limited resources, the federal government has a large apparatus designed specifically to collect and synthesize information on policy approaches. This suggests that, in some cases, the government itself could input data, rather than simply designing the portal and reviewing data for accuracy. The Office of Information and Regulatory Affairs already reviews cost-benefit analyses of nearly all proposed federal regulations, and the Government Accountability Office regularly reviews state programs and their content at the request of members of Congress.³³⁹ And as introduced above, the Department of Energy supports one of the most comprehensive comparative databases of state energy policies, which is regularly updated.³⁴⁰

Although the benefits of federal policy portals appear to be quite strong, increasing federal involvement in information collection efforts will substantially anger the states already vociferously objecting to federal intrusions into what they view as their protected regulatory turf.³⁴¹ There is little reason to think that these states will welcome an expanded federal informational role any more than they have welcomed various federal efforts to substantively regulate. States will likely be concerned that a federal agency is directly monitoring and measuring their policies and highlighting good and bad approaches.³⁴² But particularly in areas where states must implement federal mandates—with flexibility in their means of implementation—

³³⁸ See generally Amy L. Stein, *The Tipping Point of Federalism*, 45 CT. L. REV. 217 (2012) (describing the disparities between state control over the siting of electricity generation and federal control in other siting regimes and further concluding that federal agencies are significantly advancing national interests in the other siting of electricity generation); Carlson, *supra* note 72 (describing shifting allocations of authority between federal and state actors).

³³⁹ See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, K-12 EDUC.: STATES' TEST SEC. POLICIES AND PROCEDURES VARIED 2 (2013), <http://www.gao.gov/assets/660/654721.pdf> (examining “the extent to which states’ policies and procedures include leading practices to prevent testing irregularities,” and conducting a 50-state survey).

³⁴⁰ See DSIRE, *supra* note 51.

³⁴¹ See, e.g., David Markell, “Slack” in the Administrative State and its Implications for Governance: *The Issue of Accountability*, 84 OR. L. REV. 1, 27 (2005) (noting “[t]he state-federal relationship has not been particularly smooth” in the context of the EPA measuring state performance); *supra* note 53 (describing such objections from Texas state officials).

³⁴² See Markell, *supra* note 341, at 27 (“Federal agencies that set goals for or measure the performance of states often find themselves in testy territory. For both political and practical reasons, states resent efforts by the federal government to influence their goals and their performance levels.”) (quoting Shelley Metzenbaum, then Executive Director of the Environmental Compliance Consortium).

they should at least partially benefit from informational support. Information about other states' policies could show how other states are meeting federal mandates while, for example, avoiding protracted disputes with federal agencies about the adequacy of the state approach.

In areas where states have largely independent jurisdiction, as with oil and gas development and climate adaptation, they might be less likely to tolerate federal informational efforts. States might view these federal informational efforts as the first step toward greater substantive federal intrusion into their policy turf. Indeed, if accessible, easy-to-read, comprehensive comparisons of states' policies highlight gaps, then this could provide support for more federal involvement—a move that some states would resist. But better, more comprehensive comparisons of states' policies could also show what many states have been arguing all along—that they are regulating effectively within a policy area.

This comprehensive information also could provide states with a ready response to policy compilations by, for example, nonprofit groups—compilations that the states might view as more biased. Ultimately, though, it will likely be difficult to persuade states of the value of enhanced federal involvement in collecting information without pointing out the more unpleasant alternative: the fact that under Commerce Clause or taxing powers, the federal government likely *could* be regulating in many of the areas that it has currently left largely to the states, particularly in the case of oil and gas development.³⁴³ When viewed in this more threatening light, government information collection looks far more benign than regulation. And although there is no guarantee that the federal government will stop at the informational line—indeed, after collecting information it could decide that there are regulatory gaps that need filling—it will at least give the objecting states time to gather their forces to defend against a substantive intrusion into their regulatory turf.

³⁴³ Oil and gas wastes were originally covered by the hazardous waste portion of the Resource Conservation and Recovery Act, for example—a federal Act that requires careful handling, storage, transportation, and disposal of hazardous wastes. Congress directed the EPA to consider excluding oil and gas wastes from this portion of the Act after lobbying by industry, and the EPA ultimately chose to exclude them, but it could of course change its mind. See Hannah Wiseman, *Regulatory Adaptation in Fractured Appalachia*, 21 VILL. ENVTL. L.J. 229, 244–45 (2010) (describing the exemption).

E. The Authority of the Federal Government to Collect Regulatory Information and Require Inputs by Subfederal Actors

Although information-based requirements are preferable to federally imposed standards for many subfederal actors, they are still onerous. Actors required to input data into a federally designed portal might resist such requirements, but likely without much success. Agencies like the Environmental Protection Agency already have broad authority to collect detailed information.³⁴⁴ This authority arises if the agency is considering regulating, which it could plausibly assert in a number of subfederal contexts.³⁴⁵ In the oil and gas context, the Environmental Protection Agency could assert that it is considering updating wastewater treatment standards for oil and gas wastes, for example, and thus demand information about state permit requirements.³⁴⁶

Requiring federal agencies to rely on individual statutes to justify mandatory reporting of subfederal statutes and regulations might be inefficient if agencies have to independently justify each effort. In that case, a federal statute directly authorizing broad agency authority to collect information about regulations and standards in defined areas of subfederal authority might be needed. Despite federal gridlock, this directive seems relatively uncontroversial. Those who support continued federalism might hope that detailed exposition of subfederal regulation and standards would show adequate and effective regula-

³⁴⁴ See, e.g., 33 U.S.C. § 1318 (2012) (giving the EPA the authority to require owners or operators of any “point source” of water pollution—a source that conveys, pipes, or otherwise channels pollutants into waters of the United States—to, “establish and maintain such records,” “make such reports,” install “monitoring equipment or methods,” sample effluents, and “provide such other information as [the EPA Administrator] may reasonably require” (emphasis added)).

³⁴⁵ See ENVTL. LAW INST., OPPORTUNITIES FOR ADVANCING ENVIRONMENTAL JUSTICE: AN ANALYSIS OF U.S. EPA STATUTORY AUTHORITIES, 39–45 (2001) (surveying statutory authorities for EPA information gathering).

³⁴⁶ See 33 U.S.C. § 1318 (2012) (giving the EPA the authority to have access to records and industrial premises “[w]henver required to carry out the objective of this chapter, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this chapter”). The EPA used this authority to collect data from operators in the Marcellus Shale region about how they were disposing of their drilling and fracturing wastes, but it could plausibly have also asked Pennsylvania how it was monitoring these wastes and permitting the wastewater treatment plants to accept the wastes. See *EPA Seeks More Information from Natural Gas Drilling Operations to Ensure Safety of Wastewater Disposal*, U.S. ENVTL. PROT. AGENCY (May 12, 2011), available at <http://yosemite.epa.gov/opa/admpress.nsf/0/4816775AD0E881AB8525788E006A91ED>. Indeed, the EPA regional office engaged in a lengthy letter exchange with the Pennsylvania Department of Environmental Protection questioning the adequacy of its regulation of wastewater treatment plants that were accepting Marcellus wastes. See Wiseman, *Risk and Response*, *supra* note 34 (describing the letters).

tions, whereas those leaning toward more federal authority might be confident that gaps would emerge, thus possibly incentivizing federal action. Either way, information would not *force* any jurisdictional change; it would only *inform* a possible change, which only Congress, or an agency operating under existing authority, could implement.

CONCLUSION

States shoulder enormous responsibilities in the policy areas that fundamentally affect human welfare. Subfederal entities experimenting with different policy approaches can in some cases generate better and more diverse regulatory regimes. But good experimentation is unlikely to happen without an extensive baseline of information. Those involved in the grand experiment need to know what others already have tried, and it appears that this information baseline is often inadequate.

A number of groups already have incentives to produce information about individual subfederal policies and to compare approaches in a given policy area. With respect to intrastate information, state agencies want to inform regulated industries of regulations to improve compliance. But entrenched industries that have already taken the time to summarize regulatory information for themselves might discourage this type of state effort, as it reduces entry costs for competitors. Furthermore, state agencies could be captured by industry players that demand laxer enforcement of regulations, in which case states have little incentive to fully understand and publicize their own laws.

With respect to needed comparisons of subfederal standards across states, municipalities, or public-private partnerships, organizations like the NCSL and various consortia of state agencies already regularly produce some of this data. But the information often is not comprehensive, tending instead to provide broad-level summaries of state or local approaches without offering the key details of policy elements that experimenting entities need. Further, when we rely on these types of consortia to summarize policy without direction from a more disinterested source or group of sources with a variety of perspectives, there is a risk that only select information will be reported. If the organization believes that one type of approach is superior to another, it might inadvertently highlight this approach while ignoring others. These and other nonprofit groups might also only focus on the latest and most interesting policy areas, such as health care, at the expense of other, more mundane areas where experimentation also occurs.

The federal government has an important role to play here. In areas like health care, where it has set a national goal and asked the states to implement large components of that goal, the government has a direct interest in fully understanding and comparing state approaches. Federal involvement in collecting, summarizing, and reporting intra- and interstate information in these areas could, as with nonprofit groups, bias the information collection and production effort. The government might highlight certain favored states as having the “model” exchange and overlook or give short shrift to effective approaches that it dislikes for political or other reasons. But the federal government is also in one of the best positions to collect information from the states, and, if it partnered with universities, nonprofit groups, and regulated actors to collect, organize, and report this information, could eliminate some of this bias.

In areas where states experiment without a federally required goal or in areas with only federal goals that are just being developed, such as the fields of oil and gas development, clean energy policy, and climate adaptation, the federal government should still have strong incentives to understand, monitor, and report state policy approaches. To the extent that a race to the bottom or detrimental spillover effects occur, the government might need to step in. And, as with oil and gas development, if the federal government ceded authority to the states under an assumption that they would do a good job of regulating waste management, it might need to revisit this assumption from time to time. The government therefore already does, to some extent, monitor state approaches. It is in a good position to expand and enhance this monitoring and to play the role of information collector and provider, in collaboration with universities, states, and other organizations that have expertise, data input abilities, and, potentially, more stable funding.

In a perfect world of policy experimentation, subfederal entities would have full information—summarized concisely, yet thoroughly—about the approaches that all of their counterparts had taken in a given policy area. They would know the details of each individual approach, and they would have tables, maps, or other data allowing for quick comparison of their counterparts’ approaches. For oil and gas development, states could look at maps showing the required depth of casing that protects groundwater, the minimum mandated thickness of the plastic liners in waste pits, and the number of water wells that had to be tested before drilling, as well as a number of other points of comparison. In the clean energy context, municipalities and states could quickly determine the amount of electricity that must come from renewables in each state, the types of entities that must

meet this standard (only large utilities, for example, or all utilities), and the types of resources that counted as “renewable,” among other policy elements. This type of information is slowly becoming available. The federal government has occasionally funded these sorts of information projects, as best exemplified in the area of renewable energy. And motivated nonprofit and interstate associations have taken up the onerous task of collecting and categorizing data on oil and gas regulation. The federal government, too, is beginning to collect and publicize information about state health exchanges. But much progress remains to be made. If we are to rely on experimentation as a justification for federalism, as well as a tool to create better, more efficient, and fairer policy, then we must ensure that a solid information baseline emerges along with the experiment. Without this guarantee, the regulatory islands described here will continue to experiment blindly and in isolation, to the detriment of their constituents and the nation as a whole.