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NOTES

A COOPERATIVE FEDERALISM MODEL FOR BUILDING ENERGY CODES

Kimberly Chen*

Buildings in the United States are responsible for nine percent of the world's greenhouse gas emissions, and improvement of building energy efficiency through strong building energy codes can help achieve significant emissions reductions and cost savings. But building energy code regulation across the country is inconsistent: Some states have statewide codes with ambitious clean energy targets, while others have no statewide codes at all. Moreover, compliance with building energy codes is both understudied and underachieved, and many states have out-of-date codes, thus missing out on further energy efficiency gains. This Note examines building energy code regulation at the local, state, and federal levels and identifies the shortcomings at each level. It then proposes a framework for building energy code regulation, capitalizing on existing regulatory structures and respecting state and local authority, while also examining the potential for greater federal involvement. To this end, it draws on the cooperative federalism model that has been successful in other areas of environmental law and envisions a role for each level of government in order to improve building energy code regulation and fully realize the potential energy efficiency gains.

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INTRODUCTION

A bevy of potential climate change legislation is frozen in Congress.¹ But while major climate measures, from cap-and-trade to a carbon tax, are politically incendiary,² there are facets of climate policy that are more palatable and no less critical.³ Among these is energy efficiency, which has the capacity not only to mitigate climate change but also to stimulate economic growth and improve energy security.⁴ Moreover, increased energy

1. See Scott Peters, The Climate Playbook, <https://scottpeters.house.gov/climate-playbook/> [<https://perma.cc/4KCX-5MJ5>] (last visited July 21, 2021) (listing over one hundred bills that target climate change).

2. See Randy Showstack, Can Bold U.S. Federal Climate Legislation Be Enacted Now?, *Eos* (June 7, 2019), <https://eos.org/articles/can-bold-us-federal-climate-legislation-be-enacted-now> [<https://perma.cc/ZB5K-BRKC>] (contemplating whether the political composition in Washington, D.C., can pass major climate change legislation).

3. See Justin Gillis, Opinion, Forget the Carbon Tax for Now, *N.Y. Times* (Dec. 27, 2018), <https://www.nytimes.com/2018/12/27/opinion/carbon-tax-climate-change.html> (on file with the *Columbia Law Review*) (“The single most important climate policy in the world might be the efficiency regulations that the American government imposes on cars and trucks . . .”).

4. See Audrey B. Chang, Arthur H. Rosenfeld & Patrick K. McAuliffe, Energy Efficiency, in *Climate Change Science and Policy* 433, 433–35 (Stephen H. Schneider, Armin Rosencranz, Michael D. Mastrandrea & Kristin Kuntz-Duriseti eds., 2010) (discussing the benefits of energy efficiency).

efficiency measures are practicable today: The research exists, and the technology is available. Or, as Nobel Prize-winning physicist and former Secretary of Energy Steven Chu put it, “The quickest and easiest way to reduce our carbon footprint is through energy efficiency. Energy efficiency is not just low-hanging fruit; it is fruit that is lying on the ground.”⁵

Within the realm of energy efficiency, the building sector is particularly promising. Buildings have a long life expectancy, and they are responsible for forty percent of all energy use both in the United States and worldwide.⁶ Additionally, U.S. buildings alone account for nine percent of the world’s greenhouse gas (GHG) emissions.⁷ Increasing energy efficiency in buildings by adopting stronger building energy codes, then, can go a long way. It is estimated that between 1992 and 2040, buildings that meet energy code requirements will avoid almost 3.5 billion metric tons of carbon dioxide emissions, relative to historical building emissions levels.⁸ In addition, in that same timeframe, energy efficient buildings can save U.S. home and business owners over \$230 billion.⁹

Yet, despite the opportunity for emissions reductions and cost savings that the building sector presents, states have relaxed—not strengthened—their building codes, by updating them less frequently or making them less stringent.¹⁰ Additionally, because building code regulation occurs mostly at the state level, the topography of energy efficiency standards follows a familiar pattern in environmental law: While some states have statewide

5. Secretary Chu Opinion Piece in Times of London, Dep’t of Energy (May 27, 2009), <https://www.energy.gov/articles/secretary-chu-opinion-piece-times-london> [https://perma.cc/7K9J-TENT].

6. Lee Paddock & Caitlin McCoy, New Buildings, *in* Legal Pathways to Deep Decarbonization in the United States 256, 257 (Michael B. Gerrard & John C. Dernbach eds., 2019).

7. *Id.* In order to achieve decarbonization goals, the Deep Decarbonization Pathways Project, a research initiative aimed at pathways to achieve a carbon neutral world by the second half of the century, calls for reducing annual carbon dioxide emissions of residential and commercial buildings from 1,995 million metric tons in 2014 to, at most, 260 million metric tons in 2050. See James Charles Smith, Existing Buildings, *in* Legal Pathways to Deep Decarbonization in the United States, *supra* note 6, at 277, 279.

8. See OV Livingston, DB Elliott, PC Cole & R Bartlett, Pac. Nw. Nat’l Lab’y, Building Energy Codes Program: National Benefits Assessment, 1992–2040, at 5.5 (2014), https://www.energycodes.gov/sites/default/files/documents/BenefitsReport_Final_March20142.pdf [https://perma.cc/9FLP-4PLK].

9. *Id.* at 5.1; see Annual Energy Outlook 2020: Table: Table 2. Energy Consumption by Sector and Source, U.S. Energy Info. Admin., <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=2-AEO2020®ion=1-0&cases=ref2020&start=2019&end=2020&f=A&linechart=ref2020-d112119a.3-2-AEO2020.1-0&map=ref2020-d112119a.5-2-AEO2020.1-0&sourcekey=0/> [https://perma.cc/ZT9E-64X7] (last visited July 21, 2021).

10. Lauren Urbanek, The Climate Is Changing. So Why Aren’t State Building Codes?, NRDC (Apr. 4, 2018), <https://www.nrdc.org/experts/lauren-urbanek/climate-changing-why-arent-state-building-codes/> [https://perma.cc/T66Z-Y7XL]; see also Elizabeth Ouzts, North Carolina Panel Moves to Weaken Building Energy Conservation Rules, Energy News Network (Jan. 7, 2021), <https://energynews.us/2021/01/07/southeast/north-carolina-panel-moves-to-weaken-building-energy-conservation-rules/> [https://perma.cc/NLJ5-F5WY].

codes with ambitious clean energy targets, other states have no such codes at all.¹¹ And even in the states with strong building energy codes, compliance levels are scattered, leaving significant room for improvement.¹²

The current regulatory landscape of building codes is thus insufficient for realizing the full scope of the environmental benefits and energy and cost savings that are available. This Note seeks to provide a viable framework that both capitalizes on existing regulatory structures and respects state and local authority, while also examining the potential for greater federal involvement in the regulation of building energy codes. Part I describes the regulatory structure of building energy codes and the involvement of the local, state, and federal governments. It also provides a brief discussion on the federalism challenges that complicate environmental law. Part II discusses the failings of the current building code regulatory structure at the local, state, and federal levels. Part III makes the argument that there can and should be greater federal involvement, proposes a model of cooperative federalism that addresses the existing flaws in the regulatory scheme, and explores the consequences of the proposed scheme.

I. BUILDING ENERGY CODES AND ENVIRONMENTAL FEDERALISM

This Part provides background on building energy codes and environmental federalism. Section I.A describes the current regulatory structure of building energy codes, detailing the involvement of local, state, and federal governments and private organizations in designing and implementing building energy codes. Section I.B discusses environmental federalism and the benefits and drawbacks of implementing environmental laws on a national scale. Then, in light of these considerations, this Part discusses the typical structure of existing federal environmental laws.

A. *The Regulatory Structure of Building Energy Codes*

The authority of states to enact and enforce building codes is derived from the police power, the right of the states to regulate in the interest of “the health, morals, and safety of their people.”¹³ States, in turn, have traditionally delegated this authority to local governments,¹⁴ but they have also

11. See *infra* section I.A.2.

12. See *infra* section II.A.2.

13. *Mugler v. Kansas*, 123 U.S. 623, 659 (1887); Melvyn Green, *Building Codes for Existing and Historic Buildings* 9 (2011).

14. Sara C. Galvan, Note, *Rehabilitating Rehab Through State Building Codes*, 115 *Yale L.J.* 1744, 1746 (2006). There are typically four types of authority distributions:

(I) state enacted codes that are exclusive and preempt local regulations entirely; (II) state enabling statutes allowing municipalities to enact their own building codes; (III) state enacted codes that provide ‘minimum standards’ against which qualified localities are permitted to add more stringent requirements; (IV) permutations of (II) and (III) giving preference to particular codes sometimes with exceptions for state buildings which are governed exclusively by state code or code elements of varying stringency.

imposed “minimum statewide standards where local standards were insufficient.”¹⁵ Typically, states adopt building codes that are based off international model codes and have been adjusted to suit the state’s needs.¹⁶ These codes govern standards for various features of the building, such as ventilation and sanitation, accessibility requirements, and accident prevention features.¹⁷ Following the 1973 energy crisis, model code organizations also began to incorporate energy efficiency standards into their codes.¹⁸ These standards addressed various building components, such as the walls, ceilings, floors, windows, and doors, and the mechanical, electrical, and lighting systems and equipment.¹⁹

1. *Model Building Energy Codes.* — Most jurisdictions adopt building energy codes that are modified versions of model codes developed by one of two private organizations.²⁰ The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) develops the model energy code for commercial buildings, Standard 90.1.²¹ The International Code Council (ICC) develops the analogous code for residential buildings, the International Energy Conservation Code (IECC).²²

Each code is updated on a three-year cycle, through a consensus process that involves the input of industry groups, the public, and government

Jamison E. Colburn, *Solidarity and Subsidiarity in a Changing Climate: Green Building as Legal and Moral Obligations*, 5 U. St. Thomas L.J. 232, 249 (2008). Which distribution a state uses depends in part upon whether the state follows Dillon’s Rule, Home Rule, or a hybrid of the two for building energy code regulation. See *infra* notes 36–42 and accompanying text.

15. Caitlin McCoy, *U.S. City Climate Commitments: Obstacles and Opportunities in the Building Sector Post-Paris Agreement*, 34 Md. J. Int’l L. 249, 261 (2019).

16. *Id.*

17. Green, *supra* note 13, at 9–10.

18. Kate McQueen, *Promoting Energy Efficiency Through Building Codes*, 12 Nat. Res. & Env’t 122, 122–23 (1997). The 1973 energy crisis was fueled by an oil embargo by the Organization of Petroleum Exporting Countries (OPEC). This led to an energy shortage in the United States, with increased gas prices, electric bills, and gas bills. *Id.* at 122.

19. *Id.* at 123.

20. David Cohan, *Energy Codes 101: What Are They and What Is DOE’s Role?*, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy (May 31, 2016), <https://www.energy.gov/eere/buildings/articles/energy-codes-101-what-are-they-and-what-doe-s-role/> [<https://perma.cc/XA2C-8RKU>] [hereinafter Cohan, *Energy Codes 101*].

21. *Id.*

22. *Id.* The ICC also develops a commercial building model energy code, and many states have adopted versions of both the IECC and Standard 90.1 as their commercial building model code. See *Status of State Energy Code Adoption - Commercial*, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/status/commercial/> [<https://perma.cc/U3CW-JLG4>] [hereinafter *State Commercial Code Adoption*] (last updated Sept. 30, 2021) (listing which code each state has adopted for its commercial buildings); see also *Status of State Energy Code Adoption - Residential*, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/status/residential/> [<https://perma.cc/3P4K-QDPL>] [hereinafter *State Residential Code Adoption*] (last updated Sept. 30, 2021) (listing which code each state has adopted for its residential buildings).

entities.²³ With each revision, the codes tend to become more stringent; however, some revisions to the codes have also focused on simplifying them to make compliance easier to achieve.²⁴

After the revised model codes are released, the Energy Conservation and Production Act²⁵ requires that the Department of Energy (DOE) review the codes and release determinations as to whether the new codes “would improve energy efficiency.”²⁶ If the Secretary of Energy makes an affirmative determination regarding the residential code, then each state is required to consider and make “a determination as to whether it is appropriate . . . to revise [its] residential building code provisions to meet or exceed the revised code.”²⁷ If the Secretary makes an affirmative decision regarding the commercial code, then “the language [of the statute] suggests that it is mandatory for the states to adopt standards that meet or exceed the federally prescribed standard. However, the statute does not specify an enforcement mechanism.”²⁸

It is also worth clarifying what these building energy codes are not. Standard 90.1 and the IECC cover features of the building itself, such as insulation in the walls, floors, and ceiling; windows; air leakage; and duct leakage.²⁹ There are separate regulations that set appliance and equipment energy efficiency standards, although these regulations do sometimes overlap with building energy codes, specifically with respect to lighting.³⁰

Building energy codes are also distinct from green building rating and certification systems, such as the U.S. Green Building Council’s Leadership

23. See David Cohan, *How Are Building Energy Codes Developed?*, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy (Aug. 8, 2016), <https://www.energy.gov/eere/buildings/articles/how-are-building-energy-codes-developed/> [<https://perma.cc/S7MK-GV9J>]. But see *infra* note 190 (discussing recent changes to the process by which building energy codes are developed).

24. Matthew Brown, *All. to Save Energy, State Energy Efficiency Policies: Building Energy Codes 1* (2009), https://www.ase.org/sites/ase.org/files/building_codes.pdf [<https://perma.cc/TT23-VK3V>].

25. Energy Conservation and Production Act, Pub. L. No. 94-385, 90 Stat. 1125 (1976) (codified as amended at 42 U.S.C. § 6801 et seq. (2018)).

26. 42 U.S.C. § 6833(a)(5)(A) (2018) (for residential codes); see also *id.* § 6833(b)(2)(A) (for commercial codes). These provisions, enacted as part of the Energy Conservation and Production Act, explicitly endorse the CABO Model Energy Code (the predecessor to the IECC) and Standard 90.1 for residential and commercial buildings respectively.

27. *Id.* § 6833(a)(5)(B).

28. Rachael Rawlins & Robert Paterson, *Sustainable Buildings and Communities: Climate Change and the Case for Federal Standards*, 19 *Cornell J.L. & Pub. Pol’y* 335, 346 (2010) (citations omitted); see also 42 U.S.C. § 6833(b)(2)(B)(i) (“If the Secretary makes an affirmative determination [that the revised code will improve energy efficiency], each State shall . . . certify that it has reviewed and updated the provisions of its commercial building code”). For further discussion of the lack of an enforcement mechanism and its implications, see *infra* section II.A.2.

29. Cohan, *Energy Codes* 101, *supra* note 20.

30. *Id.* For further discussion of the overlap between appliance standards and building codes, as well as potential problems arising from this overlap, see *infra* section II.B.2.

in Energy and Environmental Design (LEED) standard, and green building model codes.³¹ Whereas the model energy codes are designed to be adopted by most (if not all) jurisdictions and to establish a baseline energy efficiency standard,³² green building codes and standards “specify additional requirements for environmental design and performance that . . . exceed minimum building code requirements.”³³ This Note focuses on the former—the building energy codes—and the establishment and enforcement of minimum standards that apply to buildings nationwide.

2. *State and Local Building Energy Code Adoption.* — Although the Energy Conservation and Production Act requires that states consider adopting revised residential codes and mandates that states adopt revised commercial codes after the Secretary determines that the revised codes will improve energy efficiency,³⁴ actual adoption of Standard 90.1 and the IECC varies by state. As of October 2021, eight states lack a statewide code for both residential and commercial buildings.³⁵

In different states, different levels of government assume responsibility for the building energy codes. Some are Home Rule states,³⁶ meaning that they follow a system that gives local government the ability to act and set policy in all areas that have not been designated as being of statewide interest.³⁷ In these states, building energy codes are adopted and enforced at the local level, and state governments play only a modest role in building energy regulation.³⁸ The alternative to Home Rule is Dillon’s Rule.³⁹ In Dillon’s Rule states, a local government can “exercise only the powers explicitly

31. Two examples of green building model codes include the ICC’s International Green Construction Code (IgCC) and ASHRAE’s Standard 189.1. Thomas Hutton, Note, Toward Better and More Uniform Building Efficiency Codes, 28 Va. Env’t L.J. 121, 128 (2010); see also Eric A. Fischer & Danielle A. Arostegui, Cong. Rsch. Serv., R40147, Infrastructure: Green Building Overview and Issues 19–20 (Aug. 25, 2017).

32. Hutton, *supra* note 31, at 128.

33. Fischer & Arostegui, *supra* note 31, at 18.

34. See *supra* notes 24–28 and accompanying text.

35. These states are Alaska, Colorado, Kansas, Mississippi, Missouri, North Dakota, South Dakota, and Wyoming. State Commercial Code Adoption, *supra* note 22; State Residential Code Adoption, *supra* note 22.

36. See State Commercial Code Adoption, *supra* note 22; State Residential Code Adoption, *supra* note 22.

37. McCoy, *supra* note 15, at 260.

38. See Christine Brinker, A New Model for Energy Codes in Home Rule States, Sw. Energy Efficiency Project (June 20, 2019), <https://www.swenergy.org/a-new-model-for-energy-codes-in-home-rule-states/> [<https://perma.cc/3TCM-SAPY>]. The robustness of the building energy codes in Home Rule states varies from state to state. See KA Cort & RS Butner, Pac. Nw. Nat’l Lab’y, An Analysis of Statewide Adoption Rates of Building Energy Code by Local Jurisdictions 4.1 (2012), https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-21963.pdf [<https://perma.cc/U4V8-SYM9>] (“Home rule in and of itself is not all encompassing or absolute, and how these states implement their home-rule charters in terms of local government structure, autonomy, and authority varies. Thus, the impact that home-rule status has on energy code adoption and implementation will vary as well.”).

39. See McCoy, *supra* note 15, at 259.

granted to it, powers that are necessarily implied in the express powers, and powers that are essential and indispensable to its objects and purposes.”⁴⁰ As a result, state governments in Dillon’s Rule states are the primary implementers of building energy codes.⁴¹ States may also employ a hybrid of the two rules.⁴²

In addition to the eight states that have no statewide code whatsoever, many states are using old codes that no longer represent the most energy efficient standards available.⁴³ Indeed, only five states have adopted the most recent commercial building standard, and seven have adopted the most recent residential building standard.⁴⁴ Of course, there are practical barriers that may inhibit a state from adopting the most up-to-date code,

40. *Id.* at 259–60; see also *Trenton v. New Jersey*, 262 U.S. 182, 187 (1923) (upholding Dillon’s Rule); *Hunter v. City of Pittsburgh*, 207 U.S. 161, 178–79 (1907) (same).

41. See Chris Cheatham, *Dillon Rule Hampers Green Building Efforts*, *Green Bldg. L. Update* (Oct. 8, 2008), <https://www.greenbuildinglawupdate.com/2008/10/articles/codes-and-regulations/dillon-rule-hampers-green-building-efforts/> [https://perma.cc/VH5B-N2FK] (“The Dillon Rule is upheld in Virginia, which means that cities are not allowed to create their own building codes.”). Although following Dillon’s Rule ensures that each locality has *some* building energy code in place, this system also prevents cities from implementing standards that are *stricter* than those mandated by the state. See *id.* There are still options for cities that want to implement stricter codes, however: In some states, local governments may adopt additional energy efficiency standards through a stretch code. See *Stretch Codes, New Bldgs. Inst.*, https://newbuildings.org/code_policy/utility-programs-stretch-codes/stretch-codes/ [https://perma.cc/AJA9-XS46] (last visited July 21, 2021). This “locally mandated code . . . is more aggressive than [the] base code, resulting in buildings that achieve higher energy savings.” *Id.* For example, Santa Monica’s stretch code “requires all new single-family homes to be constructed to use 15% less energy than what the state mandates under the 2016 California Energy Code.” *Id.* Massachusetts and New York also offer stretch codes. See Shari Shapiro, *Massachusetts and New York City Begin New Green Regulatory Schemes*, *Green Bldg. L.* (May 18, 2009), <http://www.greenbuildinglawblog.com/2009/05/articles/regulations/massachusetts-and-new-york-city-begin-new-green-regulatory-schemes/> [https://perma.cc/55SY-FU8P].

42. See McCoy, *supra* note 15, at 259.

43. See *State Commercial Code Adoption*, *supra* note 22; *State Residential Code Adoption*, *supra* note 22.

44. See *Status of State Energy Code Adoption*, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/status/> (on file with the *Columbia Law Review*) (last updated Dec. 28, 2018). To be clear, a state that has “adopted” a certain standard has not necessarily adopted the model code verbatim. Rather, the state has a building energy code that produces energy savings impacts that are equivalent to savings under a specific edition of the model code. Additionally, since states can adopt model codes with amendments, the state building code may end up being more or less stringent than the model code. For example, in 2007, Georgia had adopted the most recent residential code but then revised it to be more similar to earlier versions, thus negating many of the energy efficiency gains of the new code. See Jim Wells, U.S. Gov’t Accountability Off., *GAO-07-42, Energy Efficiency: Long-Standing Problems With DOE’s Program for Setting Efficiency Standards Continue to Result in Forgone Energy Savings* 27 (2007). Similarly, “[i]n 2013, the North Carolina General Assembly rolled back the 2012 building codes to reflect older, less up-to-date standards from 2009, losing an estimated 30 percent of the efficiency gains.” NCCN Staff, *NC Senate Bill Would Roll Back Energy-Efficiency Standards for New Buildings*, *N.C. Constr. News* (June 19, 2013), <https://www.nconstructionnews.com/nc-senate-bill-would-roll-back-energy-efficiency-standards-for-new-buildings/> [https://perma.cc/YP4L-UK8A].

but nevertheless, it is worth noting that we lose significant potential savings when states decline or fail to adopt newer codes.⁴⁵

3. *Federal Involvement in Building Energy Codes.* — The federal government's involvement with building energy codes occurs primarily by way of the DOE's duties under the Energy Conservation and Production Act.⁴⁶ In addition to those duties, the DOE is responsible for providing support for voluntary building energy codes⁴⁷ by compiling data on building energy efficiency and assisting with improvement of the codes and cost-effectiveness determinations.⁴⁸

The remainder of the federal government's involvement focuses primarily on "providing financial incentives and technical support to help local jurisdictions and individuals make their buildings cleaner, while setting goals and requirements for the federal building stock to lead by example."⁴⁹ From 2006 to 2010, Congress authorized the DOE to provide \$25 million annually to states as an incentive to adopt and comply with updated codes; beginning in 2011, the amount of funding available is "such sums as are necessary."⁵⁰

One piece of legislation that was particularly effective in incentivizing state and local adoption of updated model building codes was the American Recovery and Reinvestment Act (ARRA) of 2009.⁵¹ ARRA offered additional funding to states, on the condition that they adopt the most recent residential and commercial building energy codes and submit a plan to achieve compliance with those codes in at least ninety percent of new and renovated building space within eight years.⁵² As a result of these provisions, all fifty governors provided letters committing to adoption of the most recent codes.⁵³ A select

45. See, e.g., Letter from Dr. Kathleen Hogan, Deputy Assistant Sec'y, Dep't of Energy, to the Hon. Jerry Brown, Governor, California (May 31, 2013) (on file with the *Columbia Law Review*) (estimating energy cost savings of \$680 million annually by 2030 if the state of California were to update its building energy codes in accordance with federal law).

46. See *supra* notes 26–28 and accompanying text.

47. A voluntary building energy code is "a building energy code developed and updated through a consensus process among interested persons, such as that used by . . . the American Society of Heating, Refrigerating, and Air-Conditioning Engineers." 42 U.S.C. § 6832(14) (2018).

48. *Id.* § 6836(a).

49. Select Comm. on the Climate Crisis, 116th Cong., *Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America* 143 (2020), <https://climatecrisis.house.gov/sites/climatecrisis.house.gov/files/Climate%20Crisis%20Action%20Plan.pdf> [<https://perma.cc/L3JX-TGKN>] [hereinafter *Solving the Climate Crisis*].

50. 42 U.S.C. § 6833(e)(4)(A).

51. *Solving the Climate Crisis*, *supra* note 49, at 152.

52. *Id.*; see also American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 410, 123 Stat. 115, 146–48.

53. Shari Shapiro, 2009 Energy Code Adoptions Required by ARRA—Where Are They Now?, *Green Building L.* (Jan. 21, 2013), <http://www.greenbuildinglawblog.com/2013/01/articles/codes-1/2009-energy-code-adoptions-required-by-arrawhere-are-they-now/> [<https://perma.cc/X5GR-SHS9>] [hereinafter Shapiro, ARRA Energy Code Adoptions]. Despite these commitment letters, there are still states that, eleven years later, have energy codes below the

congressional committee has since identified a goal of further incentivizing states to adopt the most up-to-date codes.⁵⁴

Congress has also provided federal leadership on buildings by setting standards for federally owned buildings.⁵⁵ This is not insignificant: The federal government is the largest building owner in the United States,⁵⁶ and it spends roughly \$5.9 billion per year on building energy costs.⁵⁷ Currently, all new federal buildings must meet Standard 90.1-2013 or the 2015 IECC.⁵⁸ Notably, though, there are no similar requirements for already existing federal buildings.⁵⁹

Although most congressional initiatives today are limited to financial incentives and federal leadership, there have previously been efforts to do more. The American Clean Energy and Security Act of 2009, also known as the Waxman–Markey Bill, would have established a national energy efficiency building code for residential and commercial buildings with targets that reduced energy use, first by thirty percent in 2009 and then by fifty percent by 2015, “relative to a comparable building constructed in compliance with the [model energy] code.”⁶⁰ Under this scheme, state

ARRA requirements of the 2009 IECC and Standard 90.1-2007. See Status of State Energy Code Adoption, *supra* note 44.

54. See Solving the Climate Crisis, *supra* note 49, at 152. Some congressional proposals in this realm include providing incentives for homeowner investments in energy efficiency, extending the tax deduction for commercial investments in energy efficiency, extending the tax credit for those who build new energy efficient homes, and establishing tax incentives for construction of net-zero energy buildings. See *id.* at 144–48.

55. See, e.g., Energy Independence and Security Act of 2007, Pub. L. No. 110-140, § 431, 121 Stat. 1492, 1607 (establishing a goal of reducing federal building energy use in 2015 by thirty percent from 2003 levels). By 2020, the federal government had only reduced federal building energy use by 26.6% from its 2003 levels. Federal Government-Wide Performance Data, Off. of the Fed. Chief Sustainability Officer, https://www.sustainability.gov/government_data.html [<https://perma.cc/5E95-R334>] (last visited Aug. 27, 2021).

56. Solving the Climate Crisis, *supra* note 49, at 176.

57. See Letter from Daniel R. Simmons, Principal Deputy Assistant Sec’y, Off. of Energy Efficiency & Renewable Energy, Dep’t of Energy, to Michael R. Pence, President of the Senate (Nov. 30, 2017), https://www.energy.gov/sites/prod/files/2018/01/f46/fy15_annual_report.pdf [<https://perma.cc/5F2C-MSFQ>].

58. 10 C.F.R. § 433.100(a)(4) (2020) (requiring new federal commercial buildings designed after November 2016 to meet Standard 90.1-2013 requirements); *id.* § 435.4(a)(3) (requiring new federal residential buildings designed after January 2018 to meet the 2015 IECC requirements).

59. Jason Reott, Federal Buildings Use Far More Energy Than They Should. This Bipartisan Bill Would Help Cut the Waste., All. to Save Energy (Aug. 29, 2018), <https://www.ase.org/blog/federal-buildings-use-far-more-energy-they-should-bipartisan-bill-would-help-cut-waste> [<https://perma.cc/7LP4-V7JT>].

60. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 201(a)(1) (2009). The Waxman–Markey Bill was a comprehensive, economy-wide cap-and-trade bill to fight climate change. It would have amended the Clean Air Act (CAA) to reduce greenhouse gas emissions from covered entities, including petroleum companies, fluorinated gas producers and importers, electric generators, industrial sources, and natural gas local distribution companies. Mark Holt & Gene Whitney, Cong. Rsch. Serv., R40643, Greenhouse Gas Legislation: Summary and Analysis of H.R. 2454 as Passed by the House of

and local governments would have been required to adopt either the new national code or a local code that met or exceeded the targets of the national code.⁶¹ The bill also provided an enforcement mechanism: For each year that a state was found out of compliance, it would lose “additional funding or other items of monetary value otherwise provided under the . . . Act.”⁶² Additionally, the Secretary was to establish by rule an “energy efficiency building code enforcement capability.”⁶³

Although the national building code was far from the central provision of the Waxman–Markey Bill,⁶⁴ its enactment would nevertheless have led to significant strides in energy efficiency.⁶⁵ Had it passed, however, it is likely that the national building energy code provisions would have seen resistance from states and faced legal challenges on federalism grounds for their encroachment into building regulation, something that has traditionally been regulated by the states.⁶⁶

B. *Environmental Federalism*

The federalism challenges of environmental law are well documented, and the academic literature features decades of debate over the merits and drawbacks of centralized environmental policy.⁶⁷ One of the

Representatives 6–7 (2009). The bill narrowly passed the House, but Republican opposition and special interests prevented the legislation from ever reaching a vote on the floor of the Senate. Amanda Reilly & Kevin Bogardus, *7 Years Later, Failed Waxman-Markey Bill Still Makes Waves*, E&E News (June 27, 2016), <https://www.eenews.net/stories/1060039422> (on file with the *Columbia Law Review*). The building code provisions received very little attention at the time, and they have since been largely forgotten. Cf. Justin Moresco, *Report: Why We Need the Climate Bill's Building Code*, N.Y. Times (July 26, 2009), <https://www.nytimes.com/external/gigaom/2009/07/26/26gigaom-report-why-we-need-the-climate-bills-building-cod-60049.html> (on file with the *Columbia Law Review*) (noting that the building code provisions comprised only twenty-nine pages of the 1,428-page bill).

61. H.R. 2454 § 201(c)(1)(A).

62. *Id.* § 201(e)(6)(C)(iii).

63. *Id.* § 201(f)(1).

64. See *supra* note 60.

65. Cf. H.R. Rep. No. 111-137, at 295 (2009) (explaining how the building energy code provisions in H.R. 6899, an earlier bill, were estimated to avoid 1.5 billion metric tons of carbon dioxide emissions per year by 2030).

66. See *id.* at 730 (“This mandate raises potential constitutional questions under the Tenth Amendment, where powers not expressly granted to the federal government in the Constitution—like zoning and building codes—are reserved to the states and local governments.”).

67. See, e.g., Douglas R. Williams, *Toward Regional Governance in Environmental Law*, 46 *Akron L. Rev.* 1047, 1072 (2013) (“Indeed, the sub-field of ‘environmental federalism’ has generated volumes of work and spawned numerous conferences and symposia.”); see also, e.g., Jonathan H. Adler, *Uncooperative Environmental Federalism 2.0*, 71 *Hastings L.J.* 1101, 1123–25 (2020) (arguing for a reinvigoration of federalism into environmental policy); William W. Buzbee, *Contextual Environmental Federalism*, 14 *N.Y.U. Env’t L.J.* 108, 120–29 (2005) (discussing the risks and benefits of the regulatory overlap created by environmental federalism); Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race-to-the-Bottom” Rationale for Federal Environmental Regulation*, 67

most frequently cited justifications for federalization is the problem of interstate externalities, or “spillovers,” wherein a source state pollutes because the costs of the pollution waft across state lines while the economic benefits of the polluting activity are retained by the source state.⁶⁸ The other commonly cited rationale is fear of a race-to-the-bottom: the idea without federal standards, state pollution standards would devolve to desirable levels as states compete for industry and jobs.⁶⁹

Proponents of centralized environmental policy also argue that the federal government can capitalize on economies of scale by having a national agency develop and administer regulations, rather than having “fifty separate bureaucracies working on similar goals.”⁷⁰ A similar line of thinking contends that the federal government is superior to state governments in its access to resources and ability to conduct research and development.⁷¹ Additionally, the federal government may be less subject to undue influence from industries that dominate state politics, as well as more receptive to advocacy from environmental groups.⁷² There are also fairness and equal protection concerns that support centralized environmental legislation: “Principles of equity and equal protection demand the establishment of baseline national standards so that Americans are not exposed to fundamentally unequal levels of environmental risk.”⁷³

Meanwhile, arguments against federalized environmental policy challenge the conventional economic justifications for federalization, arguing that the theoretical basis of the race-to-the-bottom rationale is unfounded.⁷⁴ Those opposed to centralization also cite the local variations that permeate through environmental problems as a practical reason to

N.Y.U. L. Rev. 1210, 1211–12, 1233–34 (1992) [hereinafter Revesz, Rethinking the “Race-to-the-Bottom”] (arguing that one of the traditional rationales undergirding federal environmental policy is unfounded).

68. Richard L. Revesz, *Federalism and Interstate Environmental Externalities*, 144 U. Pa. L. Rev. 2341, 2342–43 (1996); Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 Yale L.J. 1196, 1215–16 (1977).

69. Revesz, *Rethinking the “Race-to-the-Bottom”*, supra note 67, at 1210. In this article, however, Professor Revesz challenges the race-to-the-bottom rationale and argues that competition can in fact “produce an efficient allocation of industrial activity among the states.” See *id.* at 1211–12. But see Kirsten H. Engel, *State Environmental Standard-Setting: Is There a “Race” and Is It “to the Bottom”?*, 48 *Hastings L.J.* 271, 274–78, 315–51 (1997) (challenging this argument).

70. Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 *Nw. U. L. Rev.* 1097, 1104 (2009); see also Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 *Mich. L. Rev.* 570, 573 (1996) (“[Ask,] for example, if we really want every state or hamlet to determine for itself whether polychlorinated biphenyls create additional cancer risks . . .”).

71. Carlson, supra note 70, at 1104.

72. *Id.* (citing Esty, supra note 70, at 598); see also Stewart, supra note 68, at 1213–15 (discussing the advantages for environmental groups of advocating at the national level).

73. Rena I. Steinzor, *Unfunded Environmental Mandates and the “New (New) Federalism”*: Devolution, Revolution, or Reform?, 81 *Minn. L. Rev.* 97, 172 (1996).

74. See supra note 69.

support greater state autonomy.⁷⁵ This includes variations not only in “conditions like wind patterns and geographical terrain” but also in values and priorities regarding environmental protection and development of industry.⁷⁶

In light of the federalism challenges embedded in environmental law, federal environmental laws typically follow one of three models: (1) financial and regulatory incentives for states, (2) cooperative federalism, or (3) federal preemption of state law.⁷⁷ Each of these models is most effective for achieving environmental goals under a different set of circumstances.

1. *Financial and Regulatory Incentives*. — Financial and regulatory incentives are designed “to encourage states to adopt environmental standards on their own.”⁷⁸ These make use of Congress’s spending power, under which Congress may attach conditions to the receipt of federal funds.⁷⁹ In *South Dakota v. Dole*, the Supreme Court outlined four main limitations on the spending power.⁸⁰ First, it must be used in pursuit of “the general welfare.”⁸¹ Second, the conditioning of funds must be unambiguous.⁸² Third, the conditions must be related to the federal interest in “particular national projects or programs.”⁸³ Fourth, other constitutional provisions may bar the conditional grant of federal funds.⁸⁴

75. See James E. Krier, *The Irrational National Air Quality Standards: Macro- and Micro-Mistakes*, 22 UCLA L. Rev. 323, 326–27 (1974) (“To justify uniform standards as efficient . . . one would have to assume that the costs of a given level of pollution and a given level of control are the same across the nation. This assumption, however, is manifestly not valid.”).

76. Carlson, *supra* note 70, at 1106; see also Stewart, *supra* note 68, at 1222 (“Why should Washington force San Francisco to have cleaner air than it apparently wants?”).

77. Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 Md. L. Rev. 1141, 1173–78 (1995).

78. *Id.* at 1173.

79. *South Dakota v. Dole*, 483 U.S. 203, 206 (1987).

80. See *id.* at 207–08.

81. *Id.* at 207 (citing *Helvering v. Davis*, 301 U.S. 619, 640–41 (1937); *United States v. Butler*, 297 U.S. 1, 65 (1936)). There is a great amount of deference given to congressional determination of whether an expenditure is in pursuit of “the general welfare.” *Id.* at 207 & n.2.

82. *Id.* at 207.

83. *Id.* at 207–08 (internal quotation marks omitted) (quoting *Massachusetts v. United States*, 435 U.S. 444, 461 (1978) (plurality opinion)) (citing *Ivanhoe Irrigation Dist. v. McCracken*, 357 U.S. 275, 295 (1958)). In *South Dakota v. Dole*, the Court found that Congress acted within constitutional bounds when it conditioned state receipt of federal highway funds on the state having a drinking age of twenty-one. See *id.* at 205, 209 (“By enacting § 158, Congress conditioned the receipt of federal funds in a way reasonably calculated to address this particular impediment to a purpose for which the funds are expended.”). The Court declined to define the “outer bounds of the ‘germaneness’ or ‘relatedness’ limitation on the imposition of conditions under the spending power.” *Id.* at 208 n.3.

84. *Id.* at 208. In 2012, the Court for the first time held that a statute violated the spending power, finding that the Affordable Care Act’s “threatened loss of over 10 percent of a State’s overall budget . . . is economic dragooning that leaves the States with no real

In the environmental context, financial and regulatory incentives have been used to condition “the receipt of federal funds on state adoption of plans acceptable to federal authorities.”⁸⁵ The effectiveness of incentives hinges on the amount of federal financial assistance offered: The more federal funding available, the more likely states are to adopt regulations and make use of that funding.⁸⁶

This model of federal environmental law is the principal approach to issues where “political sensitivity to federal regulation is particularly high,” such as land use regulation.⁸⁷ Its effectiveness is tempered, however, by the absence of federal enforcement authority.⁸⁸ Without a means of enforcing standards or ensuring compliance, the federal government is powerless if the states themselves are unwilling to accept the incentives and impose regulations.⁸⁹

2. *Cooperative Federalism*. — The second model of federal environmental law is cooperative federalism,⁹⁰ in which states, acting pursuant to federal minimum standards, “enact and administer their own regulatory programs, structured to meet their own particular needs.”⁹¹ Cooperative

option but to acquiesce in the Medicaid expansion.” *Nat’l Fed’n of Indep. Bus. v. Sebelius*, 567 U.S. 519, 582 (2012).

85. Percival, *supra* note 77, at 1173.

86. *Id.* at 1174. For example, Title II of the Federal Water Pollution Control Act of 1956, Pub. L. No. 84-660, 70 Stat. 498 (amended 1972), now known as the Clean Water Act, created a program of federal financial assistance to municipalities for the construction of sewage treatment plants. In the 1972 amendments to the Act, Pub. L. No. 92-500, 86 Stat. 816, Congress significantly expanded the grant program, offering as much as seventy-five percent of the total project costs for certain projects. As a result, Congress has authorized over \$65 billion and appropriated over \$94 billion since 1972 for the construction of sewage treatment plants and other projects under the Clean Water Act. Claudia Copeland, Cong. Rsch. Serv., RL30030, *Clean Water Act: A Summary of the Law* 4-5 (2016).

87. Percival, *supra* note 77, at 1173; see also Todd A. Wildermuth, National Land Use Planning in America, Briefly, 26 J. Land Res. & Env’t L. 73, 79 (2005) (“Land use planning, especially at the federal level, cuts sharply against many American values.”).

88. Percival, *supra* note 77, at 1174 (“[This model, financial and regulatory incentives,] does not use federal regulatory authority to ensure that certain levels of environmental protection are achieved.”).

89. See, e.g., *supra* notes 25–28, 34–35 and accompanying text (describing the lack of state compliance with apparently mandatory federal statutes).

90. Percival, *supra* note 77, at 1174.

91. *Hodel v. Va. Surface Mining & Reclamation Ass’n*, 452 U.S. 264, 289 (1981); see also *New York v. United States*, 505 U.S. 144, 161, 167 (1992) (explaining that “Congress may not simply ‘commandeer[r] the legislative processes of the States by directly compelling them to enact and enforce a federal regulatory program’” but can “offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation” (alteration in original) (quoting *Hodel*, 452 U.S. at 288)). In *New York v. United States*, the Court explained that this distinction was important for maintaining government accountability:

By . . . [this] method of encouraging a State to conform to federal policy choices, the residents of the State retain the ultimate decision as to whether or not the State will comply. If a State’s citizens view federal policy

federalism is the predominant approach to federal environmental law.⁹² State officials must first demonstrate that they are able to administer the program in accord with federal requirements; if they are unable to, or if they opt out of doing so, then federal authorities take over administration of the program.⁹³ There is generally federal financial assistance available to aid states in administering their programs,⁹⁴ and states may also impose more stringent standards than the federal requirements.⁹⁵

as sufficiently contrary to local interests, they may elect to decline a federal grant. If state residents would prefer their government to devote its attention and resources to problems other than those deemed important by Congress, they may choose to have the Federal Government rather than the State bear the expense of a federally mandated regulatory program, and they may continue to supplement that program to the extent state law is not pre-empted. Where Congress encourages state regulation rather than compelling it, state governments remain responsive to the local electorate's preferences; state officials remain accountable to the people.

... But where the Federal Government directs the States to regulate, it may be state officials who will bear the brunt of public disapproval, while the federal officials who devised the regulatory program may remain insulated from the electoral ramifications of their decision. Accountability is thus diminished when, due to federal coercion, elected state officials cannot regulate in accordance with the views of the local electorate in matters not pre-empted by federal regulation.

New York v. United States, 505 U.S. at 168–69.

In *New York v. United States*, the Court struck down the “take title” provision of the Low-Level Radioactive Waste Policy Amendments Act, which required states to either accept ownership of waste or regulate according to the instructions of Congress, because it “crossed the line distinguishing encouragement from coercion.” *Id.* at 149, 175. Most federal environmental statutes have remained within the constitutional bounds of the Tenth Amendment. One exception was addressed in *ACORN v. Edwards*, 81 F.3d 1397 (5th Cir. 1996). The Fifth Circuit struck down a section of the Safe Drinking Water Act because it required each state to establish a program to assist schools and day cares with remedying potential lead contamination in their drinking water systems. See *id.* at 1394. Failure to establish the program would subject states to civil enforcement proceedings, thus “depriv[ing] States of the option to decline regulating non-lead free drinking water coolers,” in violation of the Tenth Amendment. *Id.*

92. Percival, *supra* note 77, at 1174; see also *New York v. United States*, 505 U.S. at 167–68 (listing examples of federal statutory schemes that use a model of cooperative federalism, including the Clean Water Act, the Resource Conservation and Recovery Act, and the Alaska National Interest Lands Conservation Act).

93. Percival, *supra* note 77, at 1174. Probably the most well-known example of cooperative federalism in environmental law is the CAA. Section 108 directs the EPA to identify “criteria pollutants” and set National Ambient Air Quality Standards (NAAQS) for each pollutant. States then draft State Implementation Plans (SIPs) to achieve the NAAQS, but if the SIP is inadequate, the EPA will impose a Federal Implementation Plan. This scheme “leaves many key policy choices to the states, but also provides considerable federal oversight.” Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act’s Cooperative Federalism Framework Is Useful for Addressing Global Warming*, 50 *Ariz. L. Rev.* 799, 817–18 (2008).

94. See Percival, *supra* note 77, at 1175.

95. *Id.*

Cooperative federalism “exploit[s] economies of scale by establishing national environmental standards while leaving their attainment to state authorities subject to federal oversight.”⁹⁶ In this respect, cooperative federalism is also pragmatic: It would be enormously costly for the federal government to implement a program “without the substantial resources, expertise, information, and political support of state and local officials.”⁹⁷ Furthermore, cooperative federalism, by creating space for state autonomy, promotes the growth of state-level bureaucracy and expertise⁹⁸ and allows states to serve as laboratories of democracy.⁹⁹

Cooperative federalism can falter, however, if the federal government is unable to ensure that states are allocating sufficient resources to their programs.¹⁰⁰ Additionally, these schemes have sometimes come under attack for nominally giving states authority while really “reserving to [the federal government] the authority to make final judgments under the guise of surveillance and oversight.”¹⁰¹

3. *Preemption of State Law.* — The third approach of federal environmental law is preemption of state law.¹⁰² This approach is typically used for regulation of nationwide products,¹⁰³ a context in which preemption of state

96. *Id.* at 1174.

97. John P. Dwyer, *The Practice of Federalism Under the Clean Air Act*, 54 *Md. L. Rev.* 1183, 1224 (1995).

98. *Id.*

99. 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.”).

100. Percival, *supra* note 77, at 1175. Where there is less federal funding available, states are forced to dip into their own funds, and as a result, “the resources devoted to state environmental programs and the quality of their operation varies dramatically from state to state.” *Id.* Moreover, the federal government’s primary sanction in these scenarios is to withdraw its delegation of program authority, a “sanction . . . too blunt an instrument to be very effective.” *Id.* Thus, adequate ability to enforce environmental standards is once again the Achilles heel of federal environmental statutes.

101. *Alaska Dep’t of Env’t Conservation v. Env’t Prot. Agency*, 540 U.S. 461, 518 (2004) (Kennedy, J., dissenting) (“If cooperative federalism is to achieve Congress’ goal of allowing state governments to be accountable to the democratic process in implementing environmental policies, federal agencies cannot consign States to the ministerial tasks of information gathering and making initial recommendations . . .”).

102. Percival, *supra* note 77, at 1176.

103. *Id.* Examples include the labeling requirements of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act, the regulation of chemicals under the Toxic Substances Control Act, the energy conservation standards of appliances under the Energy Policy Conservation Act (EPCA), and the emissions standards of new motor vehicles under the CAA. See Federal Insecticide, Fungicide, and Rodenticide Act § 24(b), 7 U.S.C. § 136v(b) (2018) (“[A] State shall not impose or continue in effect any requirements for labeling or packaging in addition to or different from those required under [this statute].”); Toxic Substances Control Act § 18(a)(1), 15 U.S.C. § 2617(a)(1) (2018) (“Except as otherwise provided . . . no State or political subdivision of a State may establish or continue to enforce any of the following [actions].”); Energy Policy Conservation Act § 327(a)(1), 42 U.S.C. § 6297(a)(1) (2018) (“[T]his part supercedes any State regulation . . . with respect to any measure of energy consumption or water use

law is considered favorable because of the otherwise high costs of having a patchwork of inconsistent state standards.¹⁰⁴ It is not always clear, however, whether federal law has actually preempted state law,¹⁰⁵ and this uncertainty can lead to litigation and even require Congress to clarify its legislation.¹⁰⁶ Another drawback of preemption is that it inhibits states from acting as “laboratories of democracy,”¹⁰⁷ but some federal statutes have managed to work around this concern.¹⁰⁸

* * *

Ultimately, the most effective model of environmental federalism for a specific problem depends on the nature of what is being regulated and the problems in the existing regulatory framework. Thus, in considering a

of any covered product”); Clean Air Act § 209(a), 42 U.S.C. § 7543(a) (“No State or any political subdivision thereof shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to this part.”).

104. Percival, *supra* note 77, at 1176; see also J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. Pa. L. Rev. 1499, 1507–09 (2007) (“[T]he economic case for preemption is strongest when states engage in product regulation that is likely to interfere with the smooth functioning of the national market.”).

105. See *infra* section II.B.2.

106. See Percival, *supra* note 77, at 1176–77 (“In some cases where courts have found state regulations to be preempted, Congress has acted to remove the preemptive impact of federal regulation.”).

107. See *supra* text accompanying note 99.

108. See Percival, *supra* note 77, at 1177 (describing a “hybrid approach” to preemption). For example, although the CAA establishes uniform national motor vehicle emissions standards, see *supra* note 103, the EPA can grant a waiver to any state that adopted its own emissions standards prior to March 30, 1996, so long as those standards are at least as protective as the federal standards, Clean Air Act § 209(b)(1), 42 U.S.C. § 7543(b)(1). To deny a waiver, the EPA must find (1) that the state’s determination that its standards would be as protective as the federal standard was arbitrary and capricious, (2) that the state does not need the state standards to meet compelling and extraordinary conditions, or (3) that the state standards and enforcement procedures are inconsistent with another section of the CAA. *Id.* The only state to which this exception applies is California, Carlson, *supra* note 70, at 1111, but if California receives a waiver for a given year, then other states can adopt standards identical to those of California, 42 U.S.C. § 7507. California has taken advantage of this waiver provision, in turn acting as a “superregulator” that has been granted “special regulatory power.” Carlson, *supra* note 70, at 1107. This scheme thus captures some of the advantages of economies of scale and the states as laboratories of democracy, by “concentrating regulatory innovation in only one state and the federal government, as opposed to fifty states,” while also avoiding an unworkable patchwork in which there are fifty different standards that manufacturers must meet. *Id.* at 1134; see also *id.* at 1141 (“The preemption provision . . . retain[s] some of the benefits of state devolution in a quite creative way, granting the state with the largest market share of automobiles in the country the ability to set more stringent standards and thus serve as a single laboratory of democracy.”). Professor Ann Carlson also argues that the singling out of California as a superregulator has influenced California to act more readily than it would have without the special status. See *id.* at 1136 (“If California were only one of fifty states to possess the power to regulate greenhouse gas emissions, the state might decide to regulate . . . without the special status. However, the argument in favor of . . . regulation becomes much stronger when the state is the *only* state to possess such authority”).

redesign of building energy code policy, it is necessary to first analyze its current shortcomings.

II. REGULATORY COLLAPSE

This Part discusses where the current regulatory structure of building energy codes breaks down. Section II.A focuses on regulation and compliance at the state and local levels. Statewide studies find code compliance rates to be mixed, at best. But in many states, compliance rates have not even been determined, making it difficult to analyze areas for improvement. Relatedly, state and local governments have insufficient resources and personnel for enforcing codes, further compounding the inconsistent compliance rates. Even in those states that have high levels of code compliance, though, there remain unrealized energy and cost savings, since many states have not adopted more recent and more rigorous energy codes.

These gaps in state policy signal that there is opportunity for federal involvement. Yet thus far, the federal government has been mostly unsuccessful in influencing state policy. Section II.B explores why this is, finding that federal building energy code regulation is, in some cases, too lax, and in others, too strict. On one end, past federal building energy code policy has had no “bite,” such that when states have made commitments and failed to follow through, there are no consequences. On the other end, state and local governments that have sought to enact more stringent building codes have teetered on the edge of being preempted by federal law, creating uncertainty and stymieing energy efficiency gains. These understandings as to the pitfalls of existing federal policy ultimately inform its redesign.

A. State-Level Failings

This section discusses three problems at the state level that contribute to less-than-ideal building energy efficiency. First, there is a lack of studies examining compliance rates, making it difficult to pinpoint problem areas. The studies that do exist point to a second problem—insufficient compliance with and enforcement of building energy codes. Third, states are slow to adopt updated codes, such that even code-compliant buildings leave energy efficiency gains on the table. Examination of these problems indicates that there is opportunity for the federal government to positively incentivize and influence state decisionmaking.

1. *Lack of Compliance Studies.* — Although there are building energy codes in every state, states have not always enforced them and ensured compliance with them.¹⁰⁹ But even just determining levels of compliance

109. This failure is not unfamiliar in environmental law: “Environmental statutes often call for states to assume enforcement authority, subject to federal supervision. In reality, the supervision is often lax, and states often are able to deviate openly from statutory requirements.” Daniel A. Farber, *Taking Slippage Seriously: Noncompliance and Creative Compliance in Environmental Law*, 23 Harv. Env’t L. Rev. 297, 303 (1999).

is complicated: With enforcement delegated to the local level, there is not only variation in compliance—there is also variation in the *collection* of data on compliance.¹¹⁰

More specifically, there is fairly limited data available detailing the levels of building energy code compliance. Traditionally, there have been surveys and studies done by various groups to analyze code compliance for a sampling of states or localities.¹¹¹ These tend to be one-time studies, each using their own method for collecting, analyzing, and reporting data.

Just as a patchwork [of] codes exists across the United States, the number and type of studies that have been completed vary widely.

Enforcement and compliance are really just two sides of the same coin. Compliance training and technical support are often provided by state or local government agencies, universities and community colleges, professional organizations, utility providers, trade unions and associations, national or regional code organizations, and suppliers and manufacturers. Some enforcement strategies include review of building plans and specifications; evaluation of products, materials, and equipment specifications; review of tests, certification reports, and product listings; review of supporting calculations; inspection of the building and its systems during construction; evaluation of materials substituted in the field; and inspection immediately prior to occupancy. Compliance and Enforcement Basics, Dep't of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/compliance/basics> (on file with the *Columbia Law Review*) (last updated Aug. 22, 2019); see also David Cohan, Building Energy Code Compliance, Dep't of Energy: Off. of Energy Efficiency & Renewable Energy (Nov. 14, 2016), <https://www.energy.gov/eere/buildings/articles/building-energy-code-compliance/> [<https://perma.cc/5NZG-YVSS>] (listing examples of enforcement strategies, including review of building plans and specifications, inspections during construction, and review of tests). One study has identified three common enforcement models: (1) an architect or engineer simply certifies that the building plan is code-compliant, and no code officials are involved; (2) builders submit building plans to officials, who review them for compliance; or (3) builders submit building plans for review, and a code official conducts a field inspection. In some cases, finished buildings deviated significantly from their building plans, such that a building deemed compliant under the former two methods might not actually be compliant with the code. See Harry Misuriello, Sarah Penney, Maggie Eldridge & Ben Foster, Am. Council for an Energy-Efficient Econ., Lessons Learned From Building Energy Code Compliance and Enforcement Evaluation Studies 8-246 (2010), <https://www.aceee.org/files/proceedings/2010/data/papers/2185.pdf> [<https://perma.cc/HM24-SMDC>].

110. See Hutton, *supra* note 31, at 141 (explaining how state and local governments, which are often the only sources of information on compliance data, do not invest in collecting this type of data due to strained resources).

111. This includes groups like the Building Codes Assistance Project (BCAP) and the American Council for an Energy-Efficient Economy (ACEEE), as well as regional organizations like the Northwest Energy Efficiency Alliance (NEEA). Misuriello et al., *supra* note 109, at 8-247.

There is also an endogenous problem with using the measure of compliance to analyze energy savings, which is that compliance with an energy code does not necessarily equate to energy savings. EnergyCodes, Single Family Residential Energy Code Field Study, YouTube, at 02:44–03:18 (Jan. 11, 2016), <https://www.youtube.com/watch?v=5uM0EgJYcDY> (on file with the *Columbia Law Review*). As an example (with fabricated numbers), a building might reach fifty percent compliance because it complies with an energy code's labeling requirements but does not comply with any of the energy efficiency requirements, and thus the building does a poor job of saving energy. Conversely, a building might have fifty percent compliance because it complies with the energy efficiency requirements but not the labeling requirements, and it thus does a good job of saving energy.

In fact, only a handful of states have experience directly assessing energy code compliance in both the residential and commercial sectors [One] implication from the diverse studies is that there is no consistency in study design or in the presentation of findings. This has made comparing compliance studies virtually impossible¹¹²

This is, no doubt, a problem: Without consistent compliance studies, it is difficult to meaningfully analyze areas for improvement or assess progress.

Fortunately, there are efforts underway to standardize compliance studies. Pacific Northwest National Laboratory (PNNL) has developed a methodology for conducting field studies to assess energy efficiency in new single-family residential buildings, to be used by the DOE's Building Energy Codes Program (BECP) to assist states in increasing compliance rates.¹¹³ The methodology focuses data collection efforts on "key items"—code features that are deemed to have the greatest impact on energy consumption, such as windows, ceiling insulation, and lighting.¹¹⁴ The project team conducting the field study for a particular state—generally an independent firm¹¹⁵—selects specific homes to collect data from in a comprehensive and unbiased manner.¹¹⁶ After data collection, PNNL performs three analyses: a statistical analysis, a savings analysis, and an energy analysis.¹¹⁷ Collectively, these

112. Misuriello et al., *supra* note 109, at 8-249.

113. R. Bartlett, M. Halverson, V. Mendon, J. Hathaway & Y. Xie, *Pac. Nw. Nat'l Lab'y, Residential Building Energy Code Field Study: Data Collection & Analysis Methodology 1* (2018), <https://www.energy.gov/sites/prod/files/2018/06/f52/bto-Res-Field-Study-Methodology-060618-2.pdf> [<https://perma.cc/85FN-UHVT>] [hereinafter Bartlett et al., *Field Study Methodology*].

114. *Id.* at 3. By focusing on these key items, the methodology aims to avoid the endogenous problem described in *supra* note 111.

115. See, e.g., R. Bartlett, M. Halverson & Y. Xie, *Pac. Nw. Nat'l Lab'y, Oregon Residential Energy Code Field Study*, at iii (2020), https://www.energycodes.gov/sites/default/files/2020-08/Oregon_Residential_Field_Study_rev1.pdf [<https://perma.cc/LSE9-JTB5>] [hereinafter Bartlett et al., *Oregon Field Study*] (indicating that the project team was led by TRC Companies and the Northwest Energy Efficiency Alliance). For additional field studies from other states, see *Residential Energy Code Field Studies*, Dep't of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/residential-energy-code-field-studies> (on file with the *Columbia Law Review*) (last visited Oct. 26, 2021).

116. Bartlett et al., *Field Study Methodology*, *supra* note 113, at 4–8. During the data collection process, there are also opportunities for stakeholder engagement. *Id.* at 9. These stakeholders might include "state officials, code officials, builders, subcontractors, material supply distributors, designers, public interest groups, regulators, and utility representatives." *Id.* For a list of questions that are addressed at the stakeholder meetings, see *id.* at app. C.

117. *Id.* at 14–22. The statistical analysis results in histograms for each key item indicating the distribution of each key item's measured value in the sampled homes. *Id.* at 14. For example, ceiling insulation is measured by an R-value, where a higher R-value means greater insulation performance. *How Much Attic Insulation Do I Need?*, Insulation Inst., <https://insulationinstitute.org/im-a-homeowner/about-insulation/how-much-do-i-need/> [<https://perma.cc/M7AS-N95T>] (last visited July 21, 2021). The Oregon Residential Energy Code Field Study, completed in August 2020, found a compliance rate of eighty-three percent for ceiling insulation. See Bartlett et al., *Oregon Field Study*, *supra* note 115, at 3.8–3.9 fig.3.6 & tbl.3.7.

analyses provide a comprehensive view of the state's compliance levels, building energy use, and potential savings.¹¹⁸

BECF first ran pilot studies in eight states, and an additional ten states have conducted field studies of their own using the same methodology.¹¹⁹ Collectively, the available data from these eighteen states¹²⁰ make up the most standardized and comprehensive energy code compliance studies currently available.

2. *Insufficient Compliance and Enforcement.* — Even from just the handful of BECF state field studies, it is clear that there is room for greater compliance. For example, compliance with high-efficacy lighting requirements ranged from twenty-one percent in Alabama to ninety-eight percent in Idaho.¹²¹ Additionally, even though some states had high compliance rates, they were using outdated codes from 2009.¹²²

The energy analysis uses the results from the statistical analysis to model the average energy use intensity (EUI) for the typical home in the studied state. After creating 1,500 “pseudo homes” that represent a state’s population of newly constructed homes, the analysis then runs each home through twenty variations on the home heating system and foundation type in order to simulate energy use and calculate the EUI of each pseudo home. The average of these EUIs—the statewide EUI—represents the EUI of the typical home in the state. Bartlett et al., *Field Study Methodology*, *supra* note 113, at 19–22. In Oregon, the average EUI was about 0.3% worse than code. Bartlett et al., *Oregon Field Study*, *supra* note 115, at 3.22; see also *id.* at 3.23 fig.3.16.

The savings analysis calculates the average energy savings potential per home in the state. It uses the histograms from the statistical analysis to identify the key items with less than eighty-five percent compliance and creates a “noncompliant” building energy model for each key item. In each noncompliant model, all components are set at the minimum prescriptive code level except the key item, which is set at its noncompliant value. Then, the difference in energy use between the model and a fully compliant model represents the potential energy savings that would be achieved if the home were minimally compliant. The potential energy savings for each key item are weighted and summed; then, they are used to calculate the annual and cumulative potential energy savings, energy cost savings, and emissions reductions for the entire state. Bartlett et al., *Field Study Methodology*, *supra* note 113, at 16–18; see also Bartlett et al., *Oregon Field Study*, *supra* note 115, at 3.23–3.24, 3.24 tbl.3.21, 3.26 tbl.3.23 (potential energy savings, energy cost savings, and emissions reductions for Oregon).

118. See Bartlett et al., *Field Study Methodology*, *supra* note 113, at 1–2.

119. *Residential Energy Code Field Studies*, *supra* note 115.

120. Study results are only available for thirteen states: Alabama, Arkansas, Georgia, Idaho, Kentucky, Maryland, Montana, Nebraska, North Carolina, Oregon, Pennsylvania, Texas, and Virginia. See *id.*

121. See R Bartlett, M Halverson, V Mendon, J Hathaway, Y Xie & M Zhao, Pac. Nw. Nat'l Lab'y, *Alabama Residential Energy Code Field Study: Baseline Report 3.8–3.9 & tbl.3.6* (2017), https://www.energycodes.gov/sites/default/files/2019-09/Alabama_Residential_Field_Study_1.pdf [<https://perma.cc/Z2JB-RZ87>]; R Bartlett, M Halverson & Y Xie, Pac. Nw. Nat'l Lab'y, *Idaho Residential Energy Code Field Study 3.8 & tbl.3.7* (2019), https://www.energycodes.gov/sites/default/files/2019-09/Idaho_Field%20Study_State_Report.pdf [<https://perma.cc/V8HN-KTHY>].

122. See, e.g., R Bartlett, M Halverson, V Mendon, J Hathaway, Y Xie & M Zhao, Pac. Nw. Nat'l Lab'y, *Kentucky Residential Energy Code Field Study: Baseline Report 1.1* (2017), https://www.energycodes.gov/sites/default/files/2019-09/Kentucky_Residential_Field_Study.pdf [<https://perma.cc/3ZSC-P4JM>] (“The Kentucky field study was initiated in April 2015 and continued through August 2015 At the time of the study, the state had the 2009 International Energy Conservation Code (IECC).”); R Bartlett, M Halverson, V Mendon, J

The uneven rates of compliance and enforcement can be attributed to a number of factors. For one thing, many jurisdictions are unable to maintain a sufficient code enforcement workforce because they have not devoted the funding necessary to train and educate code officers on new codes every three years.¹²³ Indeed, code officers themselves have identified lack of understanding, knowledge, and training about code requirements as a barrier to higher compliance.¹²⁴ There is also a low prioritization of energy code compliance as compared to other codes, such as fire or electrical codes, meaning that energy codes simply receive less attention from code officers.¹²⁵

States that have sought to overcome these challenges have typically done so in one of two ways. The first way is by investing in education and training for code officers.¹²⁶ Maine, for example, charges fees for new construction, reconstruction, repairs, or renovations, and a surcharge goes to its Uniform Building Codes and Standards Fund.¹²⁷ This fund is then used for the training and certification of inspectors on Maine's building energy code.¹²⁸ Connecticut, meanwhile, has a triennial ninety-hour training requirement in order for code officers to maintain their licenses.¹²⁹ Importantly, having trainings targeted specifically at energy codes also serves to emphasize to code officials that enforcement of energy codes is a priority.¹³⁰

Hathaway, Y Xie & M Zhao, *Pac. Nw. Nat'l Lab'y, Pennsylvania Residential Energy Code Field Study: Baseline Report 1.1* (2017), https://www.energycodes.gov/sites/default/files/2019-09/Pennsylvania_Residential_Field_Study.pdf [<https://perma.cc/6MWT-NR66>] ("The Pennsylvania field study was initiated in October 2014 and continued through July 2015 At the time of the study, the state had the 2009 International Energy Conservation Code (IECC)").

123. See *Solving the Climate Crisis: Cleaner, Stronger Buildings: Hearing Before the H. Select Comm. on the Climate Crisis*, 116th Cong. 6–7 (2019) (statement of Anica Landreneau, Senior Principal, Dir. of Sustainable Design, HOK); see also Alison Williams, Sarah Price & Ed Vine, *Lawrence Berkeley Nat'l Lab'y, The Cost of Enforcing Building Energy Codes* (2014), <https://www.aceee.org/files/proceedings/2014/data/papers/4-76.pdf> [<https://perma.cc/CLX5-ZLLD>] (identifying the costs associated with energy code enforcement).

124. See, e.g., *Peregrine Energy Grp., 2001 Survey of Knowledge, Practices and Needs of Energy Code Officials in New Hampshire and Rhode Island* 42–48 (2002), <https://forum.cee1.org/system/files/library/1090/252.pdf> [<https://perma.cc/W2VP-UBYL>]. Additional factors identified by this study include homeowners' and contractors' lack of interest in compliance and homeowners' preference for large windows, which would require "too much glass." *Id.* at 42.

125. See, e.g., *Heschong Mahone Grp., Inc., SCE Codes & Standards Process and Market Assessment Study* 28 (2009), http://www.calmac.org/publications/C&S_Combined_Study_Report_041509.pdf [<https://perma.cc/5RF7-7YJ3>] ("The lack of motivation by local governments to enforce energy standard compliance, especially as compared to those codes more commonly associated with health and safety (such as fire, structural, and accessibility), is a major challenge with energy standards enforcement.").

126. Brown, *supra* note 24, at 12.

127. Me. Rev. Stat. Ann. tit. 25, §§ 2450 to 2450-A (2019).

128. *Id.* § 2374; Me. Rev. Stat. Ann. tit. 30-A, § 4451(3-A) (2019).

129. See *How to Become a Licensed Building Code Enforcement Official*, Ct.gov, <https://portal.ct.gov/DAS/OEDM/How-to-become-a-Licensed-Building-Code-Enforcement-Official/What-Next> [<https://perma.cc/8WNY-EJ3P>] (last visited July 21, 2021).

130. See Brown, *supra* note 24, at 12.

The second way in which states have sought to overcome compliance and enforcement challenges is through “circuit riders,” energy code specialists who provide technical support to groups like code officials and builders.¹³¹ This technical support might take the form of trainings, calls, emails, online forums, or question-and-answer sessions.¹³² These programs are run and funded by nonprofit organizations,¹³³ operate in only a handful of states,¹³⁴ and typically employ just one circuit rider.¹³⁵ The impact of these circuit rider programs has not yet been quantified, but those attending trainings have rated them positively.¹³⁶ Ultimately, states have taken different approaches to improve their compliance and enforcement, although it is not yet clear how effective these approaches are.

3. *Failure to Adopt Updated Codes.* — The final state-level problem is that many states have failed to adopt more recent and stringent versions of the model energy codes, thus missing out on potential energy efficiency gains.¹³⁷ These states have not necessarily intentionally flouted federal requirements—triennial adoption of new codes might simply be logistically difficult or a low priority.

Conversely, some states have managed to consistently adopt new codes by embedding code updates into state law. Maryland, for example, requires its Department of Housing and Community Development to review the model codes no more than eighteen months after they are issued and determine whether to incorporate them into the Maryland codes.¹³⁸ Maryland staff have noted that the “code update adoption process has worked seamlessly for the past three code cycles.”¹³⁹ Maine, in contrast, makes adoption of the model codes mandatory and “prohibits the Maine

131. See, e.g., Maggie Kelley, Will Bryan & Arlene Stewart, Se. Energy Efficiency All., Florida Energy Codes Circuit Rider 3 (2019), <https://mk0southeastene72d7w.kinstacdn.com/wp-content/uploads/2019-Florida-Circuit-Rider-Report.pdf> [<https://perma.cc/STS3-U8L2>]; Idaho Energy Code Circuit Rider, Idaho Energy Code Collaborative, <https://www.idahoenergycode.com/idaho-circuit-rider-program/> [<https://perma.cc/7D9U-89RG>] (last visited July 21, 2021).

132. Kelley et al., *supra* note 131, at 5.

133. See, e.g., *id.* at 8 (noting that the Southeast Energy Efficiency Alliance invested \$104,050 in the Florida Energy Code Circuit Rider Program from 2014 to 2018); Idaho Energy Code Circuit Rider Program, *supra* note 131 (noting that the Idaho program is funded by the Northwest Energy Efficiency Alliance).

134. See Kelley et al., *supra* note 131, at 3 (citing similar circuit rider programs in Massachusetts, Idaho, and Kentucky). The Kentucky program was run by the Midwest Energy Efficiency Alliance, but “as of September 2017, the circuit rider is no longer funded or available.” Residential Energy Code Improvement Study, Midwest Energy Efficiency All., <https://www.mwalliance.org/initiatives/policy/kentucky/residential-energy-code-improvement-study> [<https://perma.cc/E4VS-6WY7>] (last visited July 21, 2021).

135. See Kelley et al., *supra* note 131, at 3; Idaho Energy Code Circuit Rider Program, *supra* note 131.

136. See Kelley et al., *supra* note 131, at 10.

137. See *supra* notes 34–35 and accompanying text.

138. See Md. Code Ann., Public Safety § 12-503 (West 2017).

139. Brown, *supra* note 24, at 5.

code from falling more than one three-year cycle behind the model code. These regularly scheduled updates simplify the update process and synchronize it with the IECC and ASHRAE code updates.”¹⁴⁰ Thus, there are a number of ways to successfully streamline the adoption of updated codes.

Notably, even though federal law requires states to periodically adopt updated codes, there is no enforcement mechanism under the Energy Conservation and Production Act.¹⁴¹ Indeed, use of such a mechanism might risk running afoul of constitutional principles,¹⁴² meaning that the federal government’s ability to compel state adoption of updated codes might be a somewhat limited one.¹⁴³

B. *Federal-Level Shortcomings*

This section discusses two problems with the federal government’s building energy code policies. First, the federal government has used financial incentives to compel certain state actions, such as a commitment to achieve a certain level of energy code compliance,¹⁴⁴ but federal funding is not actually conditioned on whether a state meets that commitment. Second, federal law can preempt state and local enactment of *more stringent* energy codes, thus limiting jurisdictions that are more ambitious in their energy efficiency goals. Examination of these problems demonstrates that the federal government’s role must be both more involved and more precisely defined than it currently is, so as not to intrude upon state authority.

1. *Insufficient Financial Incentives.* — The federal government makes available financial incentives for states to adopt updated building energy codes,¹⁴⁵ but these incentives have been largely ineffective at achieving this end.¹⁴⁶ Even “successful” financial incentive programs are, when viewed

140. Me. Rev. Stat. Ann. tit. 10, § 9722(6) (2019); Brown, *supra* note 24, at 5. For a list of states and their automatic code update processes, see Brown, *supra* note 24, at 6 tbl.1. Likewise, Colorado recently passed a bill that requires a jurisdiction to adopt a newer energy code when it updates any building code, thus ensuring the continual updating of energy codes. See Colo. Rev. Stat. § 31-15-602(3) (2019).

141. See *supra* notes 25–28 and accompanying text.

142. See *supra* note 91; see also Hutton, *supra* note 31, at 159–62 (“[A mandatory] provision . . . has actually been in effect for over fifteen years . . . with little impact, but also little controversy But if a provision based on this model is actively enforced by the DOE, . . . the mechanism is likely to be tested judicially for the first time.”).

143. This is not to say that there is no role for the federal government here. See *infra* section III.B.3.

144. See *supra* notes 51–53 and accompanying text.

145. See *supra* section I.A.3.

146. This is supported by virtue of the fact that so few states have adopted the most recent codes. See *supra* text accompanying notes 43–44. Of course, there is the question of what “effective” financial incentives would look like. Certainly, if all fifty states were to have the most recent energy codes, one would tout the incentives as effective, although in light of the discussion in section II.A.2, the standard of effectiveness should perhaps also include some measure of compliance. But for now, the point is simply to reiterate that levels of energy code adoption and compliance are far from where they could be.

more critically, unsuccessful: Although ARRA contained financial incentives that led all fifty states to commit to adopting updated building energy codes and developing plans for compliance, these commitments have not actually led to adoption or compliance by most states.¹⁴⁷

The inefficacy of financial incentives can be traced to a lack of enforcement by the federal government. For example, ARRA required every state or municipality receiving funds to submit a plan to achieve ninety percent compliance with the then-recent model codes within eight years.¹⁴⁸ The only mechanism for tracking progress seemed to come via a commitment by the state to “measure the rate of compliance each year,”¹⁴⁹ but these annual compliance reports are nowhere to be found.¹⁵⁰ In short, the federal government had no means of ensuring that states receiving federal funding were meeting the requirements upon which that funding was conditioned.¹⁵¹

Even if financial incentives come with an enforcement mechanism,¹⁵² there remains the question of whether states would opt to receive that funding. ARRA was, after all, the 2009 stimulus package that was enacted as a response to the Great Recession, at a time when governors were “desperate for economic relief.”¹⁵³ Even then, some states and governors indicated that they were opposed to the energy code provisions.¹⁵⁴ More recently, in March

147. See *supra* note 53; see also Griffin Hagle & Ryan Boswell, *Is DOE’s Energy Code Deadline a Looming ‘Volkswagen Crisis’ for the Building Sector?*, Greentech Media (Mar. 7, 2016), <https://www.greentechmedia.com/articles/read/energy-code-compliance-deadline-a-looming-volkswagen-crisis> [<https://perma.cc/FZH8-7AY6>] (noting that it was unlikely that many states would meet the building energy code commitments they had made when they accepted ARRA funding).

148. See American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 410(2)(C), 123 Stat. 115, 147 (2009).

149. *Id.*

150. See Shapiro, *ARRA Energy Code Adoptions*, *supra* note 53.

151. See Hagle & Boswell, *supra* note 147 (noting that the deadline for states to meet their ARRA-related commitments would “pass largely without consequence for laggard states”). That is not to say that the ARRA energy code incentives were entirely without benefit. “[E]nergy code policy has still seen substantial progress as a result of the Recovery Act,” since some states did uphold their commitments to adopt new energy codes. *Id.*

152. This is a big “if”—an enforcement mechanism would likely test the limits of constitutionality. See *supra* text accompanying notes 141–143. Even conditional spending has been received negatively in the context of building energy codes: In 1976, Congress conditioned federal assistance on state adoption of a building code that would provide for the effective application of building performance standards established by the DOE. See Energy Conservation and Production Act, Pub. L. No. 94-385, § 305(a)(1), 90 Stat. 1125, 1147 (1976). This condition was repealed in 1981 after states objected to the standards that were developed. See 42 U.S.C. § 6834 (2018); see also Hutton, *supra* note 31, at 163.

153. Hagle & Boswell, *supra* note 147.

154. See, e.g., Robert Farley, *Sarah Palin Says She Vetoed Stimulus Money for Energy Efficiency Because It Required Tougher Building Codes*, *PolitiFact* (June 11, 2009), <https://www.politifact.com/factchecks/2009/jun/11/sarah-palin/palin-veto-stimulus-energy-efficiency-building-cod/> [<https://perma.cc/S2EF-FGZB>] (quoting then-Governor Sarah Palin’s concerns with ARRA section 410 but also finding that she had misstated the federal requirements).

2021, the Biden Administration proposed a \$2 trillion infrastructure package with \$213 billion to be invested in homes and commercial buildings, including for energy efficiency projects.¹⁵⁵ The version of the infrastructure bill before the Senate as of October 2021, however, contains no funding for buildings,¹⁵⁶ illustrating that there is a low likelihood of federal legislation designed to improve building energy efficiency.

Put otherwise, financial incentives alone are not guaranteed to get all states on board, and some states may even strongly reject them. Thus, there is a case to be made for a different form of federal regulation.¹⁵⁷

2. *Preemption of Stringent State Codes.* — Whereas financial incentives have not been enough to compel slow-moving states to adopt updated codes, potential federal preemption of state codes has impaired the abilities of other states and municipalities to enact *more stringent* energy codes. The Energy Policy Conservation Act (EPCA) expressly preempts state regulation of appliance efficiency standards for “covered products” such as refrigerators and showerheads.¹⁵⁸ This policy scheme is justified by the undesirability of a patchwork of fifty different state standards for common products.¹⁵⁹

Although federal preemption pertains to appliances, this can have implications for building codes, too: One court has held that EPCA, by

155. See Fact Sheet: The American Jobs Plan, White House (Mar. 31, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/> [<https://perma.cc/M5BH-7RU4>].

156. See Aatish Bhatia & Quoc Trung Bui, *The Infrastructure Plan: What’s In and What’s Out*, N.Y. Times, <https://www.nytimes.com/interactive/2021/07/28/upshot/infrastructure-breakdown.html> (on file with the *Columbia Law Review*) (last updated Aug. 10, 2021).

157. Even interest groups that have traditionally opposed greater regulatory reach have acknowledged as much. See Greg Ip, *Business Shifts From Resistance to Action on Climate*, Wall St. J. (Sept. 16, 2020), <https://www.wsj.com/articles/business-shifts-from-resistance-to-action-on-climate-11600233503/> (on file with the *Columbia Law Review*) (“While it strongly prefers market-based mechanisms, the Business Roundtable acknowledges a need for regulations where price incentives are less effective, such as building codes . . .”).

158. See Energy Policy and Conservation Act § 327(a)(1), 42 U.S.C. § 6297(a)(1) (2018) (“[T]his part supersedes any State regulation . . . with respect to any measure of energy consumption or water use of any covered product . . .”). Other covered products include air conditioners, water heaters, furnaces, dishwashers, clothes washers and dryers, kitchen ranges and ovens, fluorescent lamp ballasts, and faucets. *Id.* § 6292(a). Pursuant to § 6297(d), states can apply for a preemption waiver. The waiver request must be based on “unusual and compelling State or local energy or water interests” that are “substantially different in nature or magnitude than those prevailing in the United States generally.” *Id.* § 6297(d). The DOE, as of 2010, has never granted a preemption waiver under this provision. Alexandra B. Klass, *State Standards for Nationwide Products Revisited: Federalism, Green Building Codes, and Appliance Efficiency Standards*, 34 Harv. Env’t L. Rev. 335, 348 (2010); see also State Petitions for Exemption From Federal Preemption, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energy.gov/eere/state-petitions-exemption-federal-preemption> [<https://perma.cc/L6NM-F4FN>] (last visited Aug. 5, 2021) (indicating that the DOE denied petitions for preemption waivers from California and Massachusetts).

159. See *supra* section I.B.3. But see Klass, *supra* note 158, at 352–55 (arguing that federal preemption of products leads to regulatory ossification and inhibits the potential for state leadership and innovation).

preempting state and local regulation of covered products, thus preempts any requirement in a state or local building code that concerns the energy efficiency or energy use of covered products, unless the building code meets seven statutory requirements.¹⁶⁰

This occurred in Albuquerque: In 2007, the city adopted the Albuquerque Energy Conservation Code, part of which included provisions modeled off Standard 90.1-2004 and the 2006 IECC.¹⁶¹ The Code also included provisions that indirectly required the use of HVAC and water heating products with energy efficiency levels that went beyond the federal standards.¹⁶² The district court thus found these latter provisions to be preempted by EPCA.¹⁶³ After also finding that the preempted provisions were not severable from the former provisions that were based on the model codes, the court effectively ruled that the entire Albuquerque Energy Conservation Code was invalid and unenforceable.¹⁶⁴

But in a similar case, the Ninth Circuit upheld the State of Washington's Building Code.¹⁶⁵ This Code, in relevant part, provided economic incentives for builders to use covered products with energy efficiencies that exceeded the federal standards.¹⁶⁶ The court found that these incentives alone did not amount to "requir[ing]" the use of higher efficiency products within the meaning of EPCA,¹⁶⁷ distinguishing Washington's Code from Albuquerque's by noting that the Albuquerque Code imposed a penalty for not using such products.¹⁶⁸

On one hand, these cases highlight nuances to federal preemption under EPCA that other state and local governments may take into account, "increas[ing] the likelihood that local code provisions that provide for alternative routes to compliance . . . will not run afoul of the federal

160. See *Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque (Albuquerque I)*, Civ. No. 08-633 MV/RLP, 2008 WL 5586316 (D.N.M. Oct. 3, 2008); see also 42 U.S.C. § 6297(f)(3).

161. *Albuquerque I*, 2008 WL 5586316, at *2–3. In 2008, the court granted the plaintiffs' motion for a preliminary injunction. See *id.* at *1. The case was later heard again, in 2010, on the plaintiffs' renewed motions for partial summary judgment. See *Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque (Albuquerque II)*, 835 F. Supp. 2d 1133, 1134 (D.N.M. 2010).

162. *Albuquerque I*, 2008 WL 5586316, at *2–3.

163. See *Albuquerque II*, 835 F. Supp. 2d at 1135, 1138, 1140.

164. See *Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque (Albuquerque III)*, Civ. No. 08-633 MV/KBM, 2012 WL 13081235, at *5 (D.N.M. Jan. 25, 2012).

165. See *Bldg. Indus. Ass'n of Wash. v. Wash. State Bldg. Code Council*, 683 F.3d 1144, 1146 (9th Cir. 2012).

166. *Id.* at 1151.

167. See Energy Policy and Conservation Act § 327(f)(3)(B), 42 U.S.C. § 6297(f)(3)(B) (2018) (permitting state and local building codes that regulate a covered product if, among other requirements, the code "does not require that the covered product have an energy efficiency exceeding the applicable energy conservation standard" (emphasis added)).

168. *Bldg. Indus. Ass'n of Wash.*, 683 F.3d at 1151–52.

preemption provisions.”¹⁶⁹ On the other hand, these two cases leave the state of the law somewhat muddled.¹⁷⁰ This lack of clarity, coupled with the high costs and effort required to develop a progressive building energy code, may chill a jurisdiction from going to lengths to develop a code for fear that it will be struck down. Ultimately, federal policy on building energy codes should be careful not to inadvertently preempt state and local governments that seek to promote greater building energy efficiency.


* * *

Thus, the regulatory scheme of building energy codes breaks down in multiple places and at multiple levels. This has resulted in a patchwork of codes and varying levels of code compliance across the country, which ultimately leave major GHG reductions wanting. With an understanding of the weaknesses in the regulatory scheme, we can now turn to its redesign.

III. LEVERAGING OLD INFRASTRUCTURE UNDER A NEW FRAMEWORK

This Part proposes a redesign of building energy code regulation and grounds the discussion in familiar principles of environmental law. Section III.A justifies a framework that calls for greater federal involvement, taking into account historical regulatory policy and the wisdom of environmental federalism. Section III.B outlines the details of that proposed framework, and section III.C pushes back against concerns that the proposed policy is a federal overreach.

A. Justification for Greater Federal Involvement

 This section justifies the call for greater federal involvement in building energy code regulation. It first argues that there should be little concern that federal involvement infringes on state and local land use regulation. It then asserts that building energy codes are better viewed as a policy tool for GHG mitigation and shows how, in light of this, environmental federalism wisdom can be applied to the building energy code context.

1. *Federal Non-Intrusion on Land Use Regulation.* — The concerns that federal regulation of building codes intrudes upon state and local domains are misplaced. Although “building codes” sounds like part of land use—a body of law that has traditionally been without federal involvement¹⁷¹—

169. Andrea McArdle, Local Green Initiatives: What Local Governance Can Contribute to Environmental Defenses Against the Onslaughts of Climate Change, 28 *Fordham Env’t L. Rev.* 102, 127 (2016).

170. See Shari Shapiro, Decision in *BIA v. Washington* Does Not Clarify When Energy Efficient Codes Are Preempted by Federal Law, *Green Bldg. L.* (July 13, 2012), <http://www.greenbuildinglawblog.com/2012/07/articles/litigation/decision-in-bia-v-washington-does-not-clarify-when-energy-efficient-codes-are-preempted-by-federal-law/> [https://perma.cc/FZM4-82CE].

171. See Wildermuth, *supra* note 87, at 73–79 (charting failed attempts at national land use planning in the 1930s and 1970s). Indeed, traditionally, land use was even without significant state involvement. See Carol M. Rose, Planning and Dealing: Piecemeal Land

this is not technically correct: Land use concerns the type, size, and uses of structures in a given location, whereas building codes concern the design specifications of such structures.¹⁷² In addition, despite the conventional conception of land use as an area of local law, some have argued that the federal government is already involved in land use regulation,¹⁷³ and this is certainly true as to building energy codes.¹⁷⁴ Thus, greater federal involvement in building energy code regulation is not a novel idea.¹⁷⁵

Moreover, to whatever extent building codes may be categorized as “land use,” building energy codes are perhaps best viewed not as a form of control over buildings, but rather, as a vehicle for GHG mitigation.¹⁷⁶ They are thus part of climate change law, an area in which the federal government *does* have regulatory authority.¹⁷⁷ Under this view, federal regulation of building codes is far less controversial.

2. *Building Codes Through the Lens of Environmental Federalism.* — Viewing building energy codes as a form of climate and environmental policy also sheds light on how to best design that policy: Many principles of

Controls as a Problem of Local Legitimacy, 71 Calif. L. Rev. 837, 839 (1983) (“Land use control in America has always been an intensely local area of the law.”); see also Richard Briffault, *Our Localism: Part I—The Structure of Local Government Law*, 90 Colum. L. Rev. 1, 23–24 (1990) (“Local control, including . . . regulation of local land use, was treated as a vital local interest that state legislatures could legitimately promote . . .”). But this may be changing, particularly in the context of buildings and climate change. See, e.g., Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 Minn. L. Rev. 231, 235, 266–72 (2008) (arguing that “states must take back . . . some of their powers to regulate land use and facilitate green building”). Additionally, some have argued that the federal government *should* play a larger role in land use planning. See *infra* note 173.

172. See Felicia Marcus & Justin Horner, Response to *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States* by Sara Bronin, 40 Env’t L. Rep. 10,743, 10,743 (2010) (explaining that Bronin, *supra* note 171, conflates green buildings, building codes, and land use).

173. See, e.g., Bruce Babbitt, *Cities in the Wilderness: A New Vision of Land Use in America* 60–61 (2005) (“Land use planning has . . . been a federal function since the nation’s founding. And so long as the planning is intended to facilitate development, hardly a discouraging word is ever heard . . . Land use planning itself, then, is not the issue; rather, the question is land use planning for what purpose?”). There have also been calls for greater federal land use regulation in the wake of natural disasters, such as hurricanes, the devastating effects of which are exacerbated by climate change. See, e.g., Neal Peirce, *Opinion, Katrina’s Harsh Land-Use Lesson*, *Seattle Times* (Oct. 24, 2005), <https://www.seattletimes.com/opinion/katrinaharshlanduselesson/> [<https://perma.cc/JN63-974N>] (arguing, in the wake of Hurricane Katrina, that the federal government should play a greater role in the planning and regulation of land use).

174. See *supra* section I.A.3.

175. It is especially non-novel when “greater federal involvement” is largely a reframing of the federal role that simply streamlines existing programs and processes. See *infra* section III.B.

176. See, e.g., Gillis, *supra* note 3 (explaining the importance of building codes to climate policy); cf. Albert Monroe, *Using Building Codes to Rewrite the Tailoring Rule and Mitigate Climate Change*, 30 Pace Env’t L. Rev. 58, 94–97 (2012) (proposing that building codes be used to regulate GHG emissions via the CAA’s State Implementation Plans).

177. Cf. *Massachusetts v. Env’t Prot. Agency*, 549 U.S. 497, 532 (2007) (holding that EPA can regulate GHGs under the CAA).

environmental federalism are applicable to building energy codes, and they cut in favor of more centralized regulation.¹⁷⁸ Most notably, GHG emissions are an interstate externality,¹⁷⁹ creating a problem that is often best—and sometimes only—ameliorated upon federal involvement.¹⁸⁰ Building energy codes also can, and indeed already do, capitalize upon economies of scale and superior federal resources,¹⁸¹ since the model energy codes are developed at the national level.¹⁸² These aspects lend support to an argument for greater federal involvement.¹⁸³

In contrast, the force of arguments against greater federal involvement can be allayed. For example, because state and local governments are the implementers and enforcers of building energy codes,¹⁸⁴ they are still able to tailor the model codes to local needs and weather patterns.¹⁸⁵ Likewise, by providing state and local governments with a palette of policy choices,¹⁸⁶ federal policy could still allow for those governments to impose some degree of their own values and priorities.¹⁸⁷ In this way, the principles of environmental federalism can inform how building energy code regulation should be redesigned.

B. A Cooperative Federalism Model

This section proposes a new model of building energy code regulation, based on cooperative federalism¹⁸⁸ and tailored to address the issues

178. See *supra* section I.B.

179. Grantham Rsch. Inst. & Duncan Clark, *Why Do Economists Describe Climate Change as a ‘Market Failure’?*, *Guardian* (May 21, 2012), <https://www.theguardian.com/environment/2012/may/21/economists-climate-change-market-failure> [<https://perma.cc/PBG7-F8CW>].

180. See *supra* text accompanying note 68.

181. See *supra* text accompanying notes 70–71.

182. See *supra* section I.A.1.

183. Additionally, state and local building lobbies have less influence at the national level. See *supra* text accompanying note 72. Admittedly, however, the national building lobby is still a strong presence that can stymie the development of more energy efficient codes. See, e.g., Christopher Flavelle, *Secret Deal Helped Housing Industry Stop Tougher Rules on Climate Change*, *N.Y. Times* (Oct. 26, 2019), <https://www.nytimes.com/2019/10/26/climate/building-codes-secret-deal.html> (on file with the *Columbia Law Review*) (describing an agreement that allowed a trade group, the National Association of Home Builders (NAHB), “to prevent changes that would have made new houses in much of the country more energy-efficient or more resilient to floods, hurricanes and other disasters”); Emily Holden, *Inside the Climate Battle Quietly Raging About US Homes*, *Guardian* (Oct. 9, 2020), <https://www.theguardian.com/us-news/2020/oct/09/climate-change-building-code-emissions-us> [<https://perma.cc/UZ85-L7AN>] (describing the negative reactions of trade groups, including the NAHB, the Leading Builders Association, the American Gas Association, and the American Public Gas Association, to climate-friendly building code proposals).

184. See *supra* section I.A.2.

185. See McCoy, *supra* note 15, at 261 (“Counties and/or municipalities may . . . [implement codes that] are responsive to unique geographic issues.”).

186. See *infra* notes 211–224 and accompanying text (proposing this scheme).

187. See *supra* note 76 and accompanying text.

188. This is an idea to which others have alluded. See Alice Kaswan, *A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a*

and gaps in the current regulatory scheme. It describes three components of this model in turn: the building energy codes themselves, programs and provisions for increasing code compliance, and policies for streamlining the adoption of updated codes. Critically, each proposal takes advantage of existing programs and efforts. In other words, this model proposes very few *new* undertakings—rather, it calls for a reorganization and reinforcement of the existing regulatory scheme.

1. *Federal Model Building Energy Codes*. — There are several options for federal model building energy codes. The simplest is for the federal government to continue endorsing Standard 90.1 and the IECC as model building codes,¹⁸⁹ thus deploying organizations with prior expertise and capitalizing on preexisting code design processes.¹⁹⁰ An alternative is to task the federal government with developing its own codes, perhaps primarily based off of the model codes, but also incorporating data and information from other sources.¹⁹¹ This would remove some of the concerns in relying solely on private organizations to set building standards.¹⁹² In either case, the federal model codes should be updated on three-year time cycles¹⁹³ to stay current.

Federal System, 85 Denv. U. L. Rev. 791, 829 (2008); Shari Shapiro, Who Should Regulate? Federalism and Conflict in Regulation of Green Buildings, 34 Wm. & Mary Env't L. & Pol'y Rev. 257, 277–78 (2009).

189. See *supra* section I.A.1.

190. One point of caution is that the private organizations that design these codes are vulnerable to lobbyists. See *supra* note 183. For another example of the influence of lobbyists, see Ula Chrobak, Making Buildings Energy Efficient Just Got Harder, *Popular Sci.* (Mar. 12, 2021), <https://www.popsci.com/story/environment/changes-in-building-codes/> (on file with the *Columbia Law Review*) (describing how, after local government officials voted overwhelmingly in favor of strengthening energy efficiency standards for the ICC's 2021 code update, the home construction and natural gas industries successfully lobbied for the ICC to change its voting rules, likely tipping decisionmaking power in future codes toward industry interests); David Iaconangelo, DOE Stirs Up Climate Fight Over Building Codes, *E&E News* (Sept. 21, 2021), <https://subscriber.politicopro.com/article/eenews/2021/09/21/doe-stirs-up-climate-fight-over-building-energy-codes-280815> (on file with the *Columbia Law Review*) (noting Secretary of Energy Jennifer Granholm's remarks that the changes to the voting procedures, which shut stakeholders out of the decisionmaking process, would "drive the resulting codes towards irrelevance" (internal quotation marks omitted) (quoting Jennifer Granholm, Sec'y of Energy)). Additionally, because they are private, organizations like the ICC are not accountable to the people whose buildings they design codes for. See Rawlins & Paterson, *supra* note 28, at 354 ("[W]e should not be relying on private organizations that are not accountable to the people . . . to alone draft the model codes . . .").

191. The Waxman–Markey Bill proposed something similar. It required the Secretary of Energy to develop a national building energy code, taking into consideration not only the ASHRAE and ICC model codes, but also data and information from organizations (e.g., the Residential Energy Services Network and the New Building Institute) and programs (e.g., the DOE's Building America Program and the Energy Star for Buildings program). See American Clean Energy and Security Act, H.R. 2454, 111th Cong. § 201(b)(1) (2009); *id.* § 201(b)(2)(C)(i)–(ii).

192. See *supra* notes 183, 190.

193. These time cycles should align with the Standard 90.1 and IECC revision cycles. See *supra* text accompanying note 23.

Then, as is currently the case,¹⁹⁴ states should adopt the model building codes and tailor them to their own needs. Additionally, state or local governments that want to have codes more stringent than the national standards can implement stretch codes.¹⁹⁵ In this way, the federal model codes act only as a “floor,” creating a baseline, but they do not hinder state or local governments that are more ambitious in their energy efficiency targets.¹⁹⁶

2. *Compliance Programs and Provisions.* — To improve code compliance, the federal government should focus on two programs that use cooperative federalism to encourage and ensure regulation by some level of government. First, it should expand the BECP field studies.¹⁹⁷ Second, it should create a more comprehensive program to aid code compliance officers and address the gaps in state and local enforcement ability. Additionally, although it cannot mandate state or local adoption of policies that increase code compliance,¹⁹⁸ the federal government should incentivize states to adopt them.

The BECP field studies should be expanded in order to standardize the collection of data on code compliance. Currently, eighteen states have completed field studies, and in the eight states that implemented measures to increase code compliance in single- and multi-family residential buildings, follow-up studies are forthcoming.¹⁹⁹ As part of the expansion of the field studies, all fifty states should undertake this iterative process, with funding and support from the DOE.²⁰⁰ But, a state might also opt out of performing field studies itself, in which case the DOE should undertake the data collection process.

194. See *supra* text accompanying note 20.

195. See *supra* note 41. One progressive stretch code is the Building Decarbonization Code, developed by the New Buildings Institute with support from the Natural Resources Defense Council. The Code is compatible with the 2021 IECC and promotes electrification of new residential and commercial buildings. Lauren Urbanek, *New Stretch Code Will Mean Low-Carbon Buildings*, NRDC (Feb. 25, 2021), <https://www.nrdc.org/experts/lauren-urbanek/new-stretch-code-will-mean-low-carbon-buildings> [https://perma.cc/F2CX-KHXX]; see also *Building Decarbonization Code*, New Bldgs. Inst. (Feb. 10, 2021), <https://newbuildings.org/resource/building-decarbonization-code/> [https://perma.cc/X75P-5XRW] (making the Building Decarbonization Code available for download).

196. An express statement, along the lines of “nothing in this enactment shall be construed to prevent state or local governments from adopting stricter standards than herein provided,” would also help to allay the concern of preempting state and local codes with a weaker federal code. See *supra* section II.B.2.

197. See *supra* notes 113–118 and accompanying text.

198. See *supra* note 91.

199. See *Residential Energy Code Field Studies*, *supra* note 115. These eight states were part of a pilot program to determine whether an investment in energy code education, training, and outreach programs could produce measurable change in codes and energy use. See *id.*

200. Indeed, this is what PNNL envisioned. See Bartlett et al., *Field Study Methodology*, *supra* note 113, at 1 (“Ideally, states would conduct a study using this methodology every 3-5 years to establish trends in residential single-family new construction and identify areas of change.”).

In addition, an analogous field study methodology should be developed for commercial buildings,²⁰¹ and for both commercial and residential buildings, the studies should be extended to analyze existing buildings in addition to new buildings.

The benefits of a comprehensive energy efficiency field studies program are threefold. First, consistent studies enable an individual state to assess its own progress and the efficacy of its measures to increase compliance. Second, uniform and regular studies allow states “to compare building energy code performance and compliance rates with other states”²⁰² and to thus identify practices that have been effective in other jurisdictions.²⁰³ Finally, a database of studies from all fifty states enables observation of patterns at the national scale that may promote further policymaking.²⁰⁴ In this way, expansion of the field studies program creates the infrastructure for both states and the federal government to collect, interpret, and utilize compliance data.

In addition to expanding the field studies, the federal government should take two related measures to aid code compliance officers and address gaps in state and local enforcement of codes. First, it should set baseline requirements for the training and education of code officers, such as certifications or hours spent in training courses.²⁰⁵ Compliance with these requirements could also serve as a proxy for measuring how well a state enforces its codes.

Second, the federal government should provide the funding and support necessary for states to meet these requirements.²⁰⁶ Where states are

201. This is currently underway. See Commercial Energy Code Field Study, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/commercial-energy-code-field-study> [<https://perma.cc/6J7J-5EEP>] (last visited Aug. 16, 2021).

202. Misuriello et al., *supra* note 109, at 8-253.

203. Cf. *supra* note 99 and accompanying text (describing how states can serve as laboratories of democracy).

204. A similar positive feedback loop can be seen in the case of the Toxics Release Inventory (TRI), a national database created as part of the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. §§ 11001–11050 (2018). EPCRA requires comprehensive emergency planning for and reporting of chemical releases. See *id.* Section 11023 mandates that owners and operators of facilities of a certain size complete a toxic chemical release form, disclosing the releases of certain toxic chemicals used in quantities that exceed the reporting threshold. *Id.* § 11023(a)–(f). With this information, the EPA maintains a national database, the Toxics Release Inventory. *Id.* § 11023(j). The TRI has been hailed as “an exceptional success story”: For example, the EPA has used TRI data to identify chemicals requiring extra enforcement, to target specific industries that release significant amounts of toxics, and to develop strategies for future pollution reductions. See Cass R. Sunstein, *Informational Regulation and Informational Standing: Akins and Beyond*, 147 U. Pa. L. Rev. 613, 622 (1999); David J. Abell, *Comment, Emergency Planning and Community Right to Know: The Toxics Release Inventory*, 47 SMU L. Rev. 581, 590 (1994).

205. Cf. *supra* text accompanying note 129 (describing Connecticut’s triennial ninety-hour training requirement for code officers to maintain their licenses).

206. This would also be in line with the Unfunded Mandates Reform Act of 1995, Pub. L. No. 104-4, 109 Stat. 48. States might also consider adopting something similar to Maine’s

still unable to do so, the federal government should step in, such as by running its own program that provides training on the model code. Such training would be relatively easy to extrapolate to a specific state code, given that state codes are based on the model codes.²⁰⁷ Moreover, the DOE already has a variety of training resources available,²⁰⁸ which could be easily adapted for these purposes. This directly addresses the difficulty of maintaining a code enforcement workforce, which is one of the primary barriers to compliance.²⁰⁹

Finally, the federal government should encourage adoption of policies that have been effective at increasing code compliance. For example, Oregon and Washington have relatively high compliance rates, owing in part to simple, easy-to-understand codes.²¹⁰ There are also a number of other practices that, empirically, have been effective at increasing compliance, including benchmarking policies that require disclosure of annual energy usage,²¹¹ energy audits that identify ways to maximize energy savings,²¹² and retrocommissioning and retrofitting requirements to identify areas for energy efficiency improvements.²¹³ The federal government is in

provisions, which charge fees for construction, reconstruction, repairs, and renovations, and put some of these fees toward training energy code officers. See *supra* text accompanying notes 127–128.

207. See *supra* text accompanying note 20 (describing how most jurisdictions adopt versions of the model codes); see also *supra* text accompanying notes 194–196 (advocating that jurisdictions adopt model codes and tailor them to their own needs).

208. See Training Courses, Dep’t of Energy: Off. of Energy Efficiency & Renewable Energy, <https://www.energycodes.gov/technical-assistance/training> [<https://perma.cc/V8GC-EVST>] (last visited July 21, 2021).

209. See *supra* text accompanying notes 123–125 (identifying lack of education and training as a barrier to maintaining a sufficient code enforcement workforce).

210. Brown, *supra* note 24, at 11.

211. More specifically, these benchmarking policies oblige building owners to measure, report, and share their energy use. See David Ribeiro, Stefen Samarripas, Kate Tanabe, Alexander Jarrah, Hannah Bastian, Ariel Dreihobl, Shruti Vaidyanathan, Emma Cooper, Ben Jennings & Nick Henner, Am. Council for an Energy-Efficient Econ., *The 2020 City Clean Energy Scorecard 72* (2020), <https://www.aceee.org/research-report/u2008> (on file with the *Columbia Law Review*). Usually, owners must report this information to the local government and disclose it, perhaps to the public on a recurring basis or to parties involved in a transaction like a purchase, lease agreement, or sale. *Id.*

212. Energy audits require a certified professional to perform an inspection, identifying potential upgrades for retrofits and potential tune-ups for retrocommissioning. *Id.* Energy audits have been demonstrated to lead to an increase in home value and energy efficiency investments. See Erica Myers, Steve Puller & Jeremy West, *Mandatory Energy Efficiency Disclosure in Housing Markets*, VoxEU (Nov. 15, 2020), <https://voxeu.org/article/mandatory-energy-efficiency-disclosure-housing-markets> [<https://perma.cc/E4H3-WZZ8>] (describing findings that home energy audits in Austin, Texas caused an increase in home value and energy efficiency investments and that mandatory energy audit and disclosure programs were more effective than market forces).

213. See Ribeiro et al., *supra* note 211, at 71 (citing evidence that retrofitting can cut energy use in commercial buildings by twenty to fifty percent and retrocommissioning by up to fifteen percent). Retrocommissioning and retrofitting are critical for addressing emis-

a position not only to centralize information about these policies but also to incentivize states to adopt them.²¹⁴ States, meanwhile, are free to choose from this palette of policies those that best align with their values and priorities.²¹⁵

3. *Streamlined Adoption of Codes.* — The federal government should incentivize the adoption of provisions for streamlined consideration of code updates, in order to address the problem of states' failures to adopt updated codes.²¹⁶ The provisions suggested by the federal government can range from simply a reconsideration of codes every three years to an automatic update to the state codes upon release of updated model codes.²¹⁷ Such provisions have proved effective for ensuring that states have up-to-date codes.²¹⁸ As with the array of policy choices, states may choose streamlining provisions in accord with their own values and priorities.

By incentivizing—but not mandating—adoption of streamlining provisions, this proposal gives states a meaningful choice and thereby stays within the bounds of the Tenth Amendment.²¹⁹ The incentives would likely be financial, and thus, they must follow the contours of the spending power.²²⁰ Ultimately, targeted and uncoercive incentives should pass muster under current spending power doctrine.²²¹ Additionally, states would be likely to accept such incentives²²²—after all, they would be receiving federal money in exchange for simply adopting a streamlining provision.²²³ And with streamlining provisions proven to be effective,²²⁴ this incentivization can go a long way toward ensuring up-to-date codes.

sions from existing buildings, which are otherwise not affected by new energy codes. Retro-commissioning involves the evaluation of opportunities to improve the systems in a building that use energy to identify ways to optimize performance after natural performance degradation. Retrofitting is the process of upgrading existing buildings by adding new technology that was not available at the time of construction. See *id.*; see also What's the Difference Between Retrofitting vs. Recommissioning, Bldg. Controls & Servs., Inc. (Aug. 2, 2017), <https://bldgcontrols.com/blog/whats-difference-retrofitting-vs-recommissioning> [<https://perma.cc/6DYD-KXSF>].

214. See *supra* section I.B.1.

215. See *supra* note 76 and accompanying text.

216. See *supra* section II.A.3.

217. See Brown, *supra* note 24, at 6 tbl.1.

218. See *supra* notes 139–140 and accompanying text.

219. See *supra* note 91.

220. See *supra* text accompanying notes 78–84.

221. See Eloise Pasachoff, Conditional Spending After *NFIB v. Sebelius*: The Example of Federal Education Law, 62 Am. U. L. Rev. 577, 651 (2013) (“*NFIB* is not likely to spell the undoing of . . . conditional spending in the regulatory state.”). Professor Eloise Pasachoff concludes that federal education law is not at risk of being undone by *NFIB v. Sebelius*. See *id.*

222. This is an important consideration, given that the federal government cannot compel states to accept incentives. See *supra* text accompanying note 89.

223. But see *supra* notes 183, 190 (discussing the influence of lobbying groups opposed to stronger building energy codes).

224. See *supra* text accompanying notes 138–140 (explaining the efficiency of the code adoption processes in Maine and Maryland).

C. Federal Nonencroachment and Nonentrenchment

A primary concern about this proposal is that it advocates for an increase in regulation and an expansion of federal regulatory power. But it *also* centers and promotes expansion of state power²²⁵ in that states are the primary decisionmakers, and the federal government is involved only where states decline to act or where the federal government is able to make use of its more extensive resources.

One step beyond the concern of simply too much regulation is the concern of federal entrenchment and encroachment in building code regulation. Professor Abbe Gluck describes schemes where “federalism [is] expressed from the inside of federal statutes rather than through the separation of state and federal law,” arguing that they can lead to federal entrenchment and encroachment in areas traditionally dominated by state law.²²⁶ By requiring state and local officials to deliberate their adoption and by tasking state and local bureaucracies with their implementation, these schemes entrench a federal program into state and local government.²²⁷ By introducing federal programs into the states and by giving the federal government complete regulatory authority when states opt out, these schemes encroach on what has traditionally been state authority.²²⁸ Although at first such schemes are only “incremental moves,” they can ultimately be a means of expansion of federal power.²²⁹

But there are three reasons that the regulatory scheme proposed in this Note does not set up building energy code regulation for a “federal takeover.”²³⁰ First, many of the proposals—federal adoption of model building energy codes and a comprehensive field studies program, for example—are already in place. Thus, the overall scheme that this Note

225. See Dwyer, *supra* note 97, at 1224 (“States that want to assume administrative responsibilities under federal environmental statutes . . . must establish agencies with an adequate number of trained staff and adequate resources and legal authority. As they grow in size and sophistication, [they] in turn become centers of environmental policy-making, which set their own goals and priorities.” (footnote omitted)).

226. Abbe R. Gluck, *Intrastatutory Federalism and Statutory Interpretation: State Implementation of Federal Law in Health Reform and Beyond*, 121 *Yale L.J.* 534, 542 (2011). Professor Gluck terms this form of federalism “intrastatutory federalism.” *Id.* (emphasis omitted). The cooperative federalism model laid out in section III.B is a form of intrastatutory federalism—the scheme’s own terms implicate the balance of federal and state powers, thus expressing federalism “from the inside.” *Id.*

227. See *id.* at 569–72.

228. See *id.* at 572–74.

229. See *id.* at 573–74. Professor Gluck then discusses how aspects of the Affordable Care Act have operated in this way: “In fact, the most significant aspect of the ACA simply may be that it has brought the federal government squarely into state terrain.” *Id.* at 593–94. Particularly in the building context, such expansion might face opposition. See Hutton, *supra* note 31, at 166 (anticipating as a challenge to a national building code “that the federal government has no business reaching past state and local government into commercial buildings, and most of all, into private homes”).

230. Gluck, *supra* note 226, at 593 (internal quotation marks omitted).

proposes does not expand federal power so much as it reframes and reinforces that which already exists. Second, the cooperative federalism aspects—field studies in individual states and the training of code officers—are limited to smaller programs, while the heart of building energy code regulation—the adoption and enforcement of codes—remains in the realm of state and local governments. Finally, building codes at large are not soon going to be entirely regulated by the federal government: Federal involvement in building *energy* codes is justified by its position as a form of climate change regulation, but this justification does not carry over to other types of building codes.

Thus, to the extent that this proposal expands federal power, it does so in a measured way, respecting and promoting state authority while also harnessing the resources and coordination ability of the federal government to ultimately strengthen building energy code policy.

CONCLUSION

Federal environmental law has long navigated local, state, and federal boundaries to leverage the strengths and avoid the weaknesses of each level of government. But the problems that demand a careful balancing of intergovernmental roles are not unique to the environmental problems of the past: They have resurfaced in analyses of present-day climate change regulation. As such, the principles of environmental federalism can be extracted and applied anew. The past success of cooperative federalism in environmental law is promising for a building energy code framework that is currently riddled with regulatory gaps. As a practicable scheme that re-frames building energy efficiency as an emissions problem and refocuses existing infrastructure to be more effective, implementation of a cooperative federalism model for building energy codes is a small step that goes a long way.

