

The Structure of U.S. Climate Policy

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THE STRUCTURE OF U.S. CLIMATE POLICY

MICHAEL PAPPAS*

Urgent emission reduction and community adaptation efforts are necessary to avert catastrophic climate-change harms. To assess our nation's progress toward such efforts, this Article develops a comprehensive structural analysis of U.S. climate policy at the federal, state, and local levels. It observes that current climate policies reflect disparate federal, state, and local strategies around emissions regulation, emission reduction subsidies, adaptation, and liability approaches. The Article then analyzes the dynamics between federal, state, and local strategies in these policy areas.

This examination leads to some surprising conclusions. Under current policy alignments, further emission regulation measures do not appear to be realistic policy options. Though such regulatory measures have long been considered the most efficient climate interventions, this analysis suggests they have little near-term prospect for further deployment. Rather, current dynamics among the states and federal government indicate that previously second- and third-choice policies, like subsidies and liability measures, have greater potential for expansion. Thus, these less-favored policy approaches may represent the best hopes for pressing emission reduction efforts.

Further, the analysis suggests that while most climate adaptation policy is implemented at the local level, federal adaptation policies require the more immediate attention. Because federal adaptation policies reflect a deferential funding strategy, where the federal government attempts to match support with state and local policy preferences, altering federal programs to better recognize state and local choices will enhance adaptation efforts at all levels of government.

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INTRODUCTION

U.S. climate policy is a mess. That is, the patchy amalgam of federal, state, and local measures that, collectively, form the climate policy of the

United States, is a disorderly jumble. And yet, so much is expected of this jumble.

Climate policies need to cut greenhouse gas emissions precipitously, year-over-year in hopes of clinging to the global temperature bands known through human history.¹ Climate policies need to transform fundamental energy and transportation infrastructures.² Climate policies need to prepare communities for both sustained weather changes and stochastic climate events, for both rising seas and deepening droughts, and for migration pressures both domestic and international.³ And climate policies need to do all of this in real time.

Are existing policies apace with these challenges? If not, can they catch up? With these questions in mind, this Article takes stock of U.S. climate policy, the whole mess of it. It examines the status and trajectory of federal, state, and local climate approaches to chart where major policies stand and where they realistically might go.

More specifically, the Article makes three contributions, each of which brings novel insight to climate change scholarship. First, the Article presents a broad, structural analysis of U.S. climate policies at the federal, state, and local levels.⁴ This not only sorts and explains complex and diffuse areas of law, but also reveals policy trends and preferences across all levels of government. Second, the Article analyzes the interaction between federal, state, and local climate policies to explain their current dynamics and assess their prospects for further development.⁵ Finally, drawing lessons from this analysis, the Article suggests the feasible, if non-intuitive, pathways for advancing policies to better meet climate challenges.⁶

These three contributions arise from the Article's three parts.

Part I surveys U.S. climate policy to develop a structural account. It observes that U.S. climate policy falls into four primary approaches: (1) emission regulation policies, (2) emission reduction subsidies, (3) adaptation policies, and (4) liability policies. It then details the federal, state, and local strategies taken for each of these four approaches.

Part II examines the interactions between policy strategies deployed by different levels of government. This analysis sheds light on the dynamics animating current policy structures, and it reveals which climate policies are likely entrenched versus which policies show potential for further progress toward climate goals.

1. See J.B. Ruhl & Robin Kundis Craig, *4°C*, 106 MINN. L. REV. 191, 207 (2021).

2. See *id.* at 208.

3. See *id.* at 231.

4. See *infra* Part I.

5. See *infra* Part II.

6. See *infra* Part III.

Finally, Part III draws lessons from the preceding analyses to suggest viable pathways for climate policy to advance and meet urgent climate challenges. It reaches the surprising conclusion that, due to current dynamics, further emission regulation measures are not realistic policy options. Though such regulatory measures have long been considered the most efficient climate interventions, the present policy landscape suggests they have little near-term prospect for further enactment. Rather, current alignment of state and federal strategies indicates that previously second- and third-choice policies, like subsidy and liability measures, have greater potential for expansion. Thus, these less-favored policy approaches may represent the best hopes for urgent emission reduction efforts.

Further, the analysis suggests that while most climate adaptation policy is implemented at the local level, federal adaptation policies require the more immediate attention. Because federal adaptation policies reflect federal attempts to match support with state and local policy preferences, altering federal programs to better recognize state and local choices will enhance adaptation efforts at all levels of government.

I. STRUCTURE: THE LANDSCAPE OF U.S. CLIMATE POLICY

This Part synthesizes the disparate federal, state, and local⁷ measures that collectively form U.S. climate policy. It does so by observing a basic structure that underlies the nation's assorted climate provisions. Climate policies in the U.S. divide into four primary *approaches*: (1) emission regulation policies,⁸ (2) emission reduction subsidies, (3) adaptation policies, and (4) liability policies. Federal, state, and local governments have all adopted policies (whether affirmatively or through inaction) for each of these four approaches, and all these federal, state, and local policies can be categorized into general *strategies* of action, inaction, or opposition.

Appreciating this structure of *approaches* and their *strategies* brings a coherence to the far-flung details of climate measures across the nation, reveals policy trends and preferences across jurisdictions, and sets the stage for the analyses in Parts II and III.

7. Throughout the Article, "local" refers to any sub-state level of government, such as a municipality or a county.

8. Emission regulation policies are commonly bundled with other policies under the umbrella term "climate mitigation," which refers to efforts to decrease greenhouse gas emissions that cause climate change impacts. See, e.g., *Working Group III: Mitigation of Climate Change*, IPCC, <https://www.ipcc.ch/working-group/wg3/#:~:text=Climate%20change%20mitigation%20involves%20actions,these%20gases%20from%20the%20atmosphere> (last visited Nov. 19, 2023). However, rather than use a general "mitigation" label, this Article uses the four "approaches" noted in the text above because they more precisely describe climate policy as enacted in U.S. jurisdictions.

The remainder of this Part surveys the four climate policy approaches in the U.S., and for each it examines the strategies undertaken by federal, state, and local governments.

A. Emission Regulation

Emission regulation policies address the use of mandatory government programs to address greenhouse gas emissions (“GHG emissions” or “emissions”) that contribute to climate change. Emission regulation policies in the United States, whether at the federal, state, or local level, can be categorized into three general strategies: *active emission regulation* (i.e., action), *emission inaction* (i.e., inaction), and *anti-regulatory* (i.e., opposition) strategies.

The first emission regulation strategy, *active emission regulation*, employs government mandates to compel emission-decreasing action. Examples include: (1) cap-and-trade policies, which impose an emissions limit but allow parties to trade emission shares within that limit; (2) renewable portfolio standards, which require certain amounts of renewable or low carbon electricity generation; (3) vehicle emissions standards, which mandate that vehicle fleets meet emissions standards or that certain low-emission vehicles be used; and (4) emissions targets, which require certain emission reductions by a given date. The common thread through these and other examples⁹ is that a government entity compels some action related to emission reduction.¹⁰

A second emission regulation strategy is *emission inaction*. This strategy adopts a laissez-faire, business-as-usual approach and takes no affirmative steps to influence emissions.

Finally, *anti-regulatory* strategies seek not only to allow business as usual but also to affirmatively oppose and prevent emission regulation.

As the following subsections detail, different combinations of these strategies arise at the federal, state, and local levels. The federal government has effectively adopted an *emissions inaction* strategy. Alternatively, state governments are deeply divided in their emission regulation strategies, with one significant group of states adopting an *active emission regulation*

9. In addition to the emissions reduction regulations listed above, there are also less commonly adopted approaches. For instance, low carbon fuel standards have thus far only been adopted in California and Oregon. See *State Climate Policy Maps*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/content/state-climate-policy/> (last visited Dec. 20, 2023).

10. Such requirements may manifest as command-and-control behavioral mandates (e.g., use certain fuel sources to produce electricity; reduce emissions to a certain level by a certain time) or as pricing mechanisms (e.g., pay a certain amount of money to emit a certain amount of GHG). The primary pricing mechanism employed in U.S. climate policy is cap and trade. Other pricing mechanisms, like a carbon tax that mandates a price be paid for carbon emissions, have not been widely adopted in the United States.

strategy and another group embracing *anti-regulatory* or *emission inaction* strategies. Localities, too, are divided between *active emission regulation* and *emission inaction* strategies.

1. Federal Emission Regulation Strategies

Federal emission regulation policy reflects an *emission inaction* strategy that arises through both legislative inaction and judicial limits on executive action.

The federal legislature has been inactive regarding emissions regulation in that it has neither passed new statutes addressing emission regulation nor has it updated relevant existing statutes, such as the federal Clean Air Act.¹¹ Past legislative efforts to advance *active emission regulation*, such as through the Waxman-Markey bill that would have implemented a federal cap-and-trade program,¹² have failed. Moreover, it remains unlikely that a closely divided federal legislature will undertake emission regulation in the foreseeable future.¹³ By the same token, there have not been significant federal legislative efforts to impose *anti-regulatory* strategies either. There is no evidence of a federal legislative appetite for preempting state emissions regulations,¹⁴ and the same divided legislature that makes federal emission regulation unlikely also makes anti-regulatory legislation unlikely. For all these reasons, it appears that the federal legislature will continue with an *emission inaction* strategy.

In contrast with the federal legislature, federal executive administrations and agencies have made substantial efforts to move away from *emission*

11. See, e.g., ARNOLD W. REITZE, JR., AIR POLLUTION CONTROL LAW: COMPLIANCE AND ENFORCEMENT 419 (2001) (noting that Congress has never enacted measures to control the emissions of greenhouse gases); see also Arnold W. Reitze, Jr., *Federal Control of Carbon Dioxide Emissions: What Are the Options?*, 36 B.C. ENV'T AFFS. L. REV. 1, 1 (2009) ("From 1999 to [2007], more than 200 bills were introduced in Congress to regulate [greenhouse gases], but none were enacted.").

12. H.R. 2454, 111th Cong. (2009); *Waxman-Markey Short Summary*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/waxman-markey-short-summary/> (last visited Dec. 13, 2023); see also *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022) (chronicling congressional consideration and failure to pass emissions regulation legislation).

13. See *Climate Policy in 2023 and Beyond: U.S. Midterm Election Results, What They Mean, and Where We Go from Here*, CLEAN AIR TASK FORCE (Jan. 23, 2023), <https://www.catf.us/2023/01/climate-policy-2023-beyond-us-midterm-election-results/> (noting the divided state of the federal legislature surrounding climate change legislation and predicting that the next few years are unlikely to bring the level of climate policy advancement seen in the last two years).

14. Federal preemption has been threatened in other contested policy areas. See Mallory E. SoRelle & Alexis N. Walker, *Both Democrats and Republicans Care About 'States' Rights' — When It Suits Them*, WASH. POST (June 23, 2017, 6:00 AM), <https://www.washingtonpost.com/news/monkey-cage/wp/2017/06/23/both-democrats-and-republicans-care-about-states-rights-when-it-suits-them/> (discussing federal policies threatening to preempt progressive state immigration policies).

inaction strategies and instead adopt either *active emission regulation* or *anti-regulatory* strategies, depending on the administration in power.¹⁵

However, federal judicial opinions have effectively foreclosed executive administrations from anything more than minor departure from an *emission inaction* strategy unless the legislature takes action. For instance, the Obama administration attempted to adopt an *active emission regulation* strategy via the EPA's Clean Power Plan. The Clean Power Plan, promulgated under asserted Clean Air Act authority, would have established emission limits for powerplants across the country and implemented statewide emission programs aimed at transitioning electrical generation to renewable energy.¹⁶ However, before being implemented, the Clean Power Plan was initially enjoined and then ultimately invalidated by the U.S. Supreme Court in *West Virginia v. EPA*.¹⁷ The Court held that the Clean Power Plan exceeded EPA's Clean Air Act authority.¹⁸ Invoking the "major questions doctrine," the Court reasoned that absent a clear legislative indication, Congress reserved to itself the authority and prerogative to make decisions regarding policy matters as consequential as nationwide electricity generation and emissions regulation.¹⁹ Through this holding, the Court essentially held that any effort to shift federal emission regulation policy from an *emission inaction* strategy to an *active emission regulation* strategy must originate in a legislative act or clear legislative declaration.

As a parallel, on the other side of the political spectrum, D.C. Circuit precedent suggests that legislative action is also necessary for significant

15. For instance, the Biden and Obama administrations exemplify an *active emission regulation* approach. See, e.g., *Biden-Harris Administration Proposes Strongest-Ever Pollution Standards for Cars and Trucks to Accelerate Transition to a Clean-Transportation Future*, EPA (Apr. 12, 2023), <https://www.epa.gov/newsreleases/biden-harris-administration-proposes-strongest-ever-pollution-standards-cars-and> (Biden administration tailpipe emission standards); *Biden-Harris Administration Strengthens Proposal to Cut Methane Pollution to Protect Communities, Combat Climate Change, and Bolster American Innovation*, EPA (Nov. 11, 2022), <https://www.epa.gov/newsreleases/biden-harris-administration-strengthens-proposal-cut-methane-pollution-protect> (methane emission reduction). On the other hand, the Trump administration was affirmatively anti-regulatory. See, e.g., Coral Davenport, *U.S. to Announce Rollback of Auto Pollution Rules, a Key Effort to Fight Climate Change*, N.Y. TIMES (Mar. 31, 2020), <https://www.nytimes.com/2020/03/30/climate/trump-fuel-economy.html> (Trump administration efforts to relax tailpipe emission standards); Coral Davenport, *Trump Eliminates Major Methane Rule, Even as Leaks Are Worsening*, N.Y. TIMES (Apr. 28, 2021), <https://www.nytimes.com/2020/08/13/climate/trump-methane.html> (elimination of methane emission rule).

16. See, e.g., *Fact Sheet: Overview of the Clean Power Plan*, EPA, https://19january2017snapshot.epa.gov/cleanpowerplan/fact-sheet-overview-clean-power-plan_.html (last visited Dec. 20, 2023).

17. 142 S. Ct. 2587 (2022).

18. See *id.* at 2615–16.

19. See generally *id.*

efforts to shift federal policy toward an *anti-regulatory* strategy.²⁰ The Trump administration, which touted its anti-regulatory policies in general,²¹ advanced a number of measures to weaken²² or rollback emission regulations.²³ One of that administration's major endeavors was the Affordable Clean Energy rule, which the Trump administration promulgated in place of the Clean Power Plan.²⁴ The Affordable Clean Energy rule effectively promoted the continued use of coal-fired powerplants for electricity generation,²⁵ and when the rule was challenged, the D.C. Circuit characterized the rule as "slow[ing] the process for reduction of emissions" and "requir[ing] the [EPA] to turn its back on major elements of the systems that the power sector is actually and successfully using to efficiently and cost-effectively achieve the greatest emission reductions."²⁶ The D.C. Circuit held that the Affordable Clean Energy rule was inconsistent with the Clean Air Act, which required the agency to use the "best system of emission reduction."²⁷ As this holding demonstrates, the Clean Air Act constrains executive efforts to move emission regulation policy significantly toward *anti-regulatory* strategies, and authority to move in that direction would require legislative action to amend the Clean Air Act or otherwise convey anti-regulatory authority.

Taken together, the Supreme Court's holding regarding the Clean Power Plan and the D.C. Circuit's holding regarding the Affordable Clean Energy rule suggest that federal executive administrations lack the ability to deviate substantially from an *emissions inaction* strategy adopted by the federal legislature. As a result, while the federal executive may have some ability to

20. See *Am. Lung Ass'n v. EPA*, 985 F.3d 914, 930, 945 (D.C. Cir. 2021), *rev'd*, 142 S. Ct. 2587 (2022).

21. See, e.g., Exec. Order No. 13,771, 3 C.F.R. § 284 (2018) (requiring that "for every one new regulation issued, at least two prior regulations [must] be identified for elimination"); see also Nadjia Popovich, Livia Albeck-Ripka & Kendra Pierre-Louis, *The Trump Administration Rolled Back More Than 100 Environmental Rules. Here's the Full List*, N.Y. TIMES (Jan. 20, 2021), <https://www.nytimes.com/interactive/2020/climate/trump-environment-rollbacks-list.html>.

22. See, e.g., Joshua Linn & Wesley Look, *The Role of Federal Subsidies in Decarbonizing the Transportation Sector*, RESOURCES (June 15, 2021), <https://www.resources.org/common-resources/the-role-of-federal-subsidies-in-decarbonizing-the-transportation-sector/>.

23. See, e.g., Hannah Pitt, Kate Larsen & Maggie Young, *The Undoing of US Climate Policy: The Emissions Impact of Trump-Era Rollbacks*, RHODIUM GRP. (Sept. 17, 2020), <https://rhg.com/research/the-rollback-of-us-climate-policy/> (discussing the emission impacts of Trump Administration regulatory rollbacks).

24. *Affordable Clean Energy Rule*, EPA (May 11, 2023), <https://www.epa.gov/stationary-sources-air-pollution/affordable-clean-energy-rule>.

25. *Fact Sheet: The Affordable Clean Energy Rule (ACE)*, EPA, https://www.epa.gov/sites/default/files/2019-06/documents/bser_and_eg_fact_sheet_6.18.19_final.pdf (last visited Dec. 21, 2023).

26. *Am. Lung Ass'n v. EPA*, 985 F.3d 914, 930, 945 (D.C. Cir. 2021), *rev'd*, 142 S. Ct. 2587 (2022).

27. *Id.* at 944.

nudge emission regulation policy marginally toward *active emission regulation* or *anti-regulatory* directions,²⁸ the federal legislature appears to control the federal emission regulation strategy. So, by all indications, the federal strategy is set to remain *emission inactive*.

2. State Emission Regulation Strategies

Political divisions and polarization among states, especially regarding climate change policy, has been observed and well documented.²⁹ The policy rift among states is especially apparent in emission regulation policies, which have states starkly divided. On the one hand, a significant number of states have adopted *active emission regulation* strategies. On the other hand, an even greater contingent of states have gone the opposite direction, electing for either *anti-regulatory* strategies or at least *emission inaction* strategies. Finally, there is a group of marginal states that could arguably fit in either *active emission regulation* or *emission inaction* categories, depending on whether one draws the line at complete inaction or minimal action. Table 1 below captures these state categories,³⁰ with explanations following.

28. For instance, the Obama administration imposed some *active emission regulation* measures through the corporate average fuel economy standards (“CAFE standards”) administered by the Department of Transportation’s National Highway Traffic Safety Administration. During the Obama administration, these standards were aimed at improving the fuel economy of vehicles and reducing GHG emissions. See, e.g., *Corporate Average Fuel Economy (CAFE) Standards*, U.S. DEP’T OF TRANSP. (Aug. 11, 2014), <https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards>.

However, the Trump administration moved the CAFE standards in the opposite direction, rolling back emission reduction policies and moving toward a more *anti-regulatory* strategy. See Pitt, Larsen & Young, *supra* note 23.

A similar story can be told about the California Clean Air Act Waiver. The federal Clean Air Act imposes nationwide standards for automobile emissions, but for many years California has been granted a waiver to impose stricter emissions requirements. See *Vehicle Emissions California Waivers and Authorizations*, EPA, <https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations> (last updated May 23, 2023). The Trump administration, asserting a need for nationwide uniformity at a less stringent standard, withdrew California’s waiver and thus moved federal emission regulation policy toward an *anti-regulatory* strategy. The Biden administration reinstated the California waiver, returning to an *active emission regulation* strategy. Both the Trump administration withdrawal of the waiver and the Biden administration reinstatement occasioned lawsuits by groups of states. See, e.g., Lesley Clark, ‘SCOTUS Bait’: Legal Battle Over Calif. Waiver Begins, E&E NEWS (Jan. 31, 2023, 6:33 AM), <https://www.eenews.net/articles/scotus-bait-legal-battle-over-calif-waiver-begins/>.

29. See, e.g., Brad Plumer, *Blue States Roll Out Aggressive Climate Strategies. Red States Keep to the Sidelines*, N.Y. TIMES (June 21, 2019), <https://www.nytimes.com/2019/06/21/climate/states-climate-change.html>.

30. The precise categorization of some states may be arguable. However, even if a handful of states could be classified differently, the important overall trend holds and demonstrates divergent and polarized state emission regulation policies.

Table 1: State Regulation Strategies

<i>Active Emission Regulation Strategy</i>	<i>Anti-Regulatory Strategy</i>	<i>Emission Inaction Strategy</i>	Marginal
California	Alabama	Alaska	Colorado
Connecticut	Arkansas	Arizona	Hawaii
Delaware	Georgia	Florida	Illinois
Maine	Indiana	Idaho	Louisiana
Maryland	Kansas	Iowa	Michigan
Massachusetts	Kentucky	Tennessee	Minnesota
New Hampshire	Mississippi	Nebraska	Montana
New Jersey	Missouri	North Dakota	Nevada
New York	Ohio	South Carolina	New Mexico
Oregon	Oklahoma	South Dakota	North Carolina
Rhode Island	Texas		Pennsylvania
Vermont	Utah		Wisconsin
Virginia	West Virginia		
Washington	Wyoming		

There are fourteen states that demonstrate *active emission regulation* strategies through a suite of emission regulation policies and advocacy measures. These states are California, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire,³¹ New Jersey, New York, Oregon, Rhode Island, Vermont, Virginia, and Washington. These states have adopted all or nearly all of the following emission reduction regulatory policies: cap-and-trade regulations,³² emission reduction targets,³³ renewable

31. New Hampshire is the most arguable inclusion on this list, given that it has a carbon pricing and Renewable Portfolio Standard (“RPS”) policy, but not emissions targets or vehicle standards, as discussed *infra* in notes 33 and 35.

32. All of the listed states save Oregon have a cap-and-trade mechanism. See *U.S. State Carbon Pricing Policies*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/us-state-carbon-pricing-policies/> (last updated Nov. 2023).

33. All of the listed states save New Hampshire have emission reduction targets. *U.S. State Greenhouse Gas Emissions Targets*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/greenhouse-gas-emissions-targets/> (last updated Sept. 2023).

portfolio standards,³⁴ and zero-emission or low-emission vehicle standards.³⁵ Most of these states have also participated in lawsuits seeking to spur emission regulation at the federal level.³⁶ These states' policies, which all use similar methods, represent the most advanced set of emissions regulations in the United States.

On the opposite end of the policy spectrum, a significant number of states have adopted either *anti-regulatory* strategies or *emission inaction* strategies. These designations are somewhat fluid, with some states generally following *emission inaction* strategies but opting for *anti-regulatory* approaches to particular emission regulations (such as by preempting municipal efforts to curb emissions by banning new natural gas connections in buildings).³⁷ However, regardless of precise delineation, this overall grouping of states has adopted strategies that contrast fundamentally with *active emission regulation* strategies.

34. All of the listed states have renewable portfolio standards. See *U.S. State Electricity Portfolio Standards*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/renewable-and-alternate-energy-portfolio-standards/> (last updated Feb. 2022).

35. All of the listed states save New Hampshire and Virginia have such vehicle emission standards. See *Canadian Provincial Clean Vehicle Policies and Incentives*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/canadian-provincial-clean-vehicle-policies-and-incentives/> (last visited Dec. 14, 2023).

36. For example, in *California v. EPA*, a number of states challenged the EPA's aircraft GHG standards for failing to reduce aircraft GHG emissions. 72 F.4th 308 (D.C. Cir. 2023). The petitioning states included nine of the fourteen states designated as *active emission regulation* states: California, Connecticut, Maryland, Massachusetts, New Jersey, New York, Oregon, Vermont, and Washington. *Active emission regulation* states that did not join the petitioners in *California v. EPA* were Delaware, Maine, New Hampshire, Virginia, and Rhode Island. Further, three states designated as having "marginal" emission regulation strategies joined the petitioners in *California v. EPA*: Illinois, Minnesota, and Pennsylvania.

As another example, *Massachusetts v. EPA* secured a ruling that the Clean Air Act granted the EPA authority to regulate greenhouse gas emissions as air pollutants. 549 U.S. 497 (2007). Plaintiff states in *Massachusetts v. EPA* included the ten of the fourteen states designated as *active emission regulation* states: California, Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington. *Active emission regulation* states that did not join the plaintiffs in *Massachusetts v. EPA* were Delaware, Maryland, New Hampshire, and Virginia. Further, two states designated as having "marginal" emission regulation strategies joined the plaintiffs in *Massachusetts v. EPA*: Illinois and New Mexico.

37. See, e.g., Rebecca Leber, *An "Attack on American Cities" Is Freezing Climate Action in Its Tracks*, VOX (Sept. 29, 2021, 12:59 PM), <https://www.vox.com/22691755/gas-utilities-fight-electrification-preemption> (describing efforts of state legislatures to prevent local regulation of emissions such as through building codes limiting fossil fuel use for heating and cooking); Tom DiChristopher, *Gas Ban Monitor: Building Electrification Evolves as Nineteen States Prohibit Bans*, S&P GLOBAL (July 20, 2021), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/gas-ban-monitor-building-electrification-evolves-as-19-states-prohibit-bans-65518738>; Patrick Gleason, *Why States Continue to Overrule Local Regulation of Fossil Fuels*, FORBES (Apr. 19, 2022, 2:02 AM), <https://www.forbes.com/sites/patrickgleason/2022/04/19/why-states-continue-to-overrule-local-regulation-of-fossil-fuels/?sh=28fe4978769e>.

There are fourteen states that exhibit *anti-regulatory* strategies evidenced by not only state abstention from active emission regulation³⁸ but also by a combination of state laws preempting local emission reduction regulations (such as local efforts to phase out fossil fuel use by banning new natural gas connections),³⁹ lawsuits challenging other states' emission regulation efforts,⁴⁰ and lawsuits challenging federal emission regulation efforts.⁴¹ States that display all or nearly all (as denoted in footnotes) of these *anti-regulatory* criteria are Alabama, Arkansas, Georgia, Indiana,⁴² Kansas,⁴³

38. Most of the states included in this list have no emission regulation policies at all. Some, noted individually in subsequent footnotes, have policies that could theoretically be considered emission regulations but that have such minimal requirements or such little practical impact that they can accurately be described as abstaining from emissions regulation. For example, some *anti-regulatory* states have renewable portfolio standards that require certain fuel mixes for energy production but that include fuel sources with significant emissions. These are also frequently coupled with minimal renewable portfolio standards that may have only a *de minimis* impact on regulating emissions.

39. All of the states listed as *anti-regulatory* have laws preempting local efforts to ban new natural gas connections. *See* DiChristopher, *supra* note 37.

40. All of the states listed as *anti-regulatory*, save Wyoming, joined as plaintiffs in a pending lawsuit challenging the constitutionality of the California Clean Air Act waiver, opposing California's ability to regulate emissions more stringently than the Clean Air Act does. Petition for Review at 2, *Ohio v. EPA*, No. 221081 (D.C. Cir. filed May 12, 2022); *see also* California State Motor Vehicle Pollution Control Standards, Advanced Clean Car Program, Reconsideration of a Previous Withdrawal of a Waiver of Preemption, Notice of Decision, 87 Fed. Reg. 14332 (Mar. 14, 2022).

41. All of the states listed as *anti-regulatory*, save Kentucky, joined as plaintiffs in *West Virginia v. EPA*, 142 S. Ct. 2587 (2022), which successfully challenged the EPA's authority to enact the Clean Power Plan and thereby regulate GHG emissions. *See* Nichola Groom, *Some Republican States Would Fight Forced Utility Emissions Cuts Under Biden Climate Agenda*, REUTERS (Dec. 2, 2020, 11:13 AM), <https://www.reuters.com/article/us-usa-climatechange-republican-states-idUSKBN28C1NK>.

42. Indiana does not have a mandatory renewable portfolio standard; rather it has a measure "allowing electricity utilities to voluntarily produce 10% of the electricity from renewable energy sources by 2025." *U.S. State Electricity Portfolio Standards*, *supra* note 34. Such a voluntary standard does not regulate emissions.

43. Kansas "revised its renewable energy standard from a mandatory requirement to a voluntary goal." *Id.* Thus, Kansas repealed its only previous emission regulation policy.

Kentucky, Mississippi, Missouri,⁴⁴ Ohio,⁴⁵ Oklahoma,⁴⁶ Texas,⁴⁷ Utah,⁴⁸ West Virginia,⁴⁹ and Wyoming.

44. Missouri has a renewable portfolio standard “requiring 15% of electricity sales in the state to come from renewable energy sources by 2021. The renewable portfolio standard also has a solar electricity carveout equal to about 2% of the renewable portfolio standard requirement. Qualifying renewable resources include: solar, wind, biomass, hydroelectric, municipal solid waste, landfill gas, anaerobic digestion, and fuel cells using renewables.” *Id.* This requirement is relatively low compared with other states, *see* Michael Greenstone & Ishan Nath, *Do Renewable Portfolio Standards Deliver?* (Univ. of Chi. Energy Pol’y Inst., Working Paper No. 2019-62, 2019), <https://epic.uchicago.edu/wp-content/uploads/2019/07/Do-Renewable-Portfolio-Standards-Deliver.pdf>, and it allows for higher-emission energy sources such as biomass, solid waste, and landfill gas. *See* FOOD & WATER WATCH, CLEANWASHING: HOW STATES COUNT POLLUTING ENERGY SOURCES AS RENEWABLE 6, 9 (2018), https://foodandwaterwatch.org/wp-content/uploads/2021/03/rpt_1807_rpsnationalscores-web4_0.pdf (giving Missouri an “F” grade for renewable portfolio target goals and timeline and noting projections that less than ten percent of Missouri’s energy would come from clean renewables by 2038). Though Missouri is probably the closest case, the limits of its renewable portfolio standard, its lack of other emission regulation policies, and its other *anti-regulatory* preemption and litigation policies suggest that Missouri qualifies as embracing an *anti-regulatory* strategy.

45. Ohio has a renewable portfolio standard, but it has been cut significantly and has relatively little continuing impact on emission reduction. *See* Katherine McCaffrey, *Ohio Renewable Portfolio Standard Reduction Tempers Solar Market*, S&P GLOBAL (Jan. 2, 2020), <https://www.spglobal.com/marketintelligence/en/news-insights/research/ohio-renewable-portfolio-standard-reduction-tempers-solar-market>. *But see generally* Daniel Sawmiller, *Ohio’s Renewable Energy Future Deserves Better*, NAT. RES. DEF. COUNCIL (May 21, 2019), <https://www.nrdc.org/experts/daniel-sawmiller/ohios-renewable-energy-future-deserves-better> (describing the controversies surrounding Ohio’s renewable portfolio standard, the benefits of the standard, and its relatively modest contributions toward emission reduction). Ohio’s standard requires only 8.5% generation from “renewable and alternative energy sources” that include nuclear and clean coal technologies. *See U.S. State Electricity Portfolio Standards*, *supra* note 34. Given Ohio’s modest renewable portfolio standard and Ohio’s other *anti-regulatory* preemption and litigation policies, it is classified as embracing an *anti-regulatory* strategy.

46. Oklahoma has no emissions regulation. Its closest measure was 2010 adoption of “a renewable energy goal, which established a voluntary goal that 15% of electricity generation capacity come from renewable sources by 2015.” *U.S. State Electricity Portfolio Standards*, *supra* note 34.

47. Texas has a renewable portfolio standard that requires a low amount of renewables, 5,000 MWs, and includes higher-emission fuel sources, such as landfill gas and biomass. *See id.*; *see also* Greenstone & Nath, *supra* note 44, at 13, 32 (noting that Texas’s fixed capacity standard will decrease stringency over time and that Texas’s requirement is among the lowest); Rebecca Beitsch, *OK, You Met Your Renewable Goals – Now What?* STATELINE (Sept. 12, 2018, 12:00 AM), <https://stateline.org/2018/09/12/ok-you-met-your-renewable-goals-now-what/> (noting that Texas has long since met its renewable portfolio standard and suggesting that the standard is no longer driving low carbon or renewable energy development). Given that Texas’s renewable portfolio standard is low and no longer seems to be impacting emission levels, as well as Texas’s other *anti-regulatory* preemption and litigation policies, it is classified as embracing an *anti-regulatory* strategy.

48. Utah has no emission reduction regulation. Its closest measure is a 2008 enactment of “a renewable energy goal, establishing a voluntary goal of 20% of electricity sales to come from renewable energy sources by 2025 as long as it’s cost effective.” *U.S. State Electricity Portfolio Standards*, *supra* note 34.

49. West Virginia once had an RPS but repealed it, meaning the state has no emission regulation in place. *Id.*

Adjacent to the *anti-regulatory* strategy is the *emission inaction* strategy, which ten states exhibit. The characteristics of this strategy are complete or near complete abstention from emission regulation coupled with relatively limited anti-regulatory efforts. States falling in this category include Alaska,⁵⁰ Arizona,⁵¹ Florida,⁵² Idaho,⁵³ Iowa,⁵⁴ Tennessee,⁵⁵ Nebraska,⁵⁶ North Dakota,⁵⁷ South Carolina,⁵⁸ and South Dakota.⁵⁹ Of note, four of these *emission inaction* states, Arizona, Florida, Iowa, and Tennessee,

50. Alaska has no emission regulation, *U.S. State Electricity Portfolio Standards*, *supra* note 34, has no preemption of local emission regulations, and did not join as a plaintiff in *California v. EPA*. However, Alaska was a plaintiff in *West Virginia v. EPA*.

51. Arizona's only emission regulation is a renewable portfolio standard that requires "15% of the electricity load in the state to come from renewable sources by 2025." *U.S. State Electricity Portfolio Standards*, *supra* note 34. This is a relatively low requirement, *see* Greenstone & Nath, *supra* note 44, at 32, and qualifying fuel sources to meet that standard include higher-emission sources such as biogas and landfill gas. *U.S. State Electricity Portfolio Standards*, *supra* note 34. One publication has scored Arizona's renewable portfolio standard effectiveness as receiving a grade of "D." FOOD & WATER WATCH, *supra* note 44, at 12. Arizona also has a law preempting local natural gas hookup bans, *see* DiChristopher, *supra* note 37, but it did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*.

52. Florida has no emission regulation. *U.S. State Electricity Portfolio Standards*, *supra* note 34. It has a law preempting local natural gas hookup bans, *see* DiChristopher, *supra* note 37, but it did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*.

53. Idaho has no emission regulation, has no law preempting local natural gas hookup bans, and did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*. *U.S. State Electricity Portfolio Standards*, *supra* note 34.

54. Iowa has a minimal renewable portfolio standard that requires "two investor-owned utilities to own or to contract 105 MWs from renewable energy sources." *U.S. State Electricity Portfolio Standards*, *supra* note 34. This ranks among the smallest of RPS requirements, *see* GREENSTONE & NATH, *supra* note 44 at 32, and allowable fuel sources include higher-emission fuels like landfill gas, biomass, municipal solid waste, and anaerobic digestion. *U.S. State Electricity Portfolio Standards*, *supra* note 34. Iowa has a law preempting local natural gas hookup bans, *see* DiChristopher, *supra* note 37, but it did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*.

55. Tennessee has no emission regulation. *U.S. State Electricity Portfolio Standards*, *supra* note 34. It has a law preempting local natural gas hookup bans, *see* DiChristopher, *supra* note 37, but it did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*.

56. Nebraska has no emission regulation, *U.S. State Electricity Portfolio Standards*, *supra* note 34, and has no preemption of local emission regulations. However, Nebraska did join as a plaintiff in both *West Virginia v. EPA* and in *California v. EPA*.

57. North Dakota has a voluntary clean energy objective but no emission regulation. *U.S. State Electricity Portfolio Standards*, *supra* note 34. It has no law preempting local natural gas hookup bans, and it did not join as a plaintiff in *West Virginia v. EPA* or *California v. EPA*.

58. South Carolina has no emission regulation, though it does have a program allowing utilities to recover costs for sourcing certain renewable energy generation. *U.S. State Electricity Portfolio Standards*, *supra* note 34. South Carolina has no preemption of local emission regulations. However, South Carolina did join as a plaintiff in both *West Virginia v. EPA* and in *California v. EPA*.

59. South Dakota has a voluntary clean energy objective but no emission regulation. *U.S. State Electricity Portfolio Standards*, *supra* note 34. South Dakota has no preemption of local emission regulations, and it did not join as a plaintiff in *California v. EPA*. However, South Dakota was a plaintiff in *West Virginia v. EPA*.

have preempted localities from banning natural gas connections, demonstrating one way that states shift between *emission inaction* and *anti-regulatory* strategies depending on policy specifics.

Finally, the remaining twelve states demonstrate marginal strategies that could be considered *active emission regulation* strategies or *emission inactive* strategies, depending on how one draws that distinction. These states are Colorado, Hawaii, Illinois, Louisiana, Michigan, Minnesota, Montana, Nevada, New Mexico, North Carolina, Pennsylvania, and Wisconsin. These states have all adopted emission reduction targets,⁶⁰ and all except Louisiana have adopted renewable portfolio standards.⁶¹ However, one might question the practical impact of such emission reduction targets because many do not have clear, mandatory mechanisms for achieving emission reductions, and because evidence to date suggests that such targets are not frequently met.⁶²

Regardless of how one categorizes these marginal twelve states, the map of state emission regulation strategies showcases a sharp divide between *active emission regulation* strategies on the one hand and *anti-regulatory* or *emission inactive* strategies on the other. At least thirty-eight states fall clearly to one side or the other of that divide.

3. Local Emission Regulation Strategies

While the most significant emission regulations occur at the state level, some localities, typically populous urban areas, have also adopted *active emission regulation* strategies. However, such localities are outliers, with most localities following *emissions inaction* strategies.⁶³

Localities with *active emission regulation* strategies have commonly adopted emission reduction targets,⁶⁴ and while these policies have shown some impact,⁶⁵ most of the targets are non-binding and most cities are behind

60. See *U.S. State Electricity Portfolio Standards*, *supra* note 34.

61. See *id.*

62. See *U.S. State Greenhouse Gas Emissions Targets*, *supra* note 33 (“There were 5 states that had targets for emissions reductions for 2020: California, Connecticut, Oregon, Rhode Island, and New Jersey; California is the only state that met its 2020 goal.”).

63. See Sam Markolf et al., *Pledges and Progress: Steps Toward Greenhouse Gas Emissions Reductions in the 100 Largest Cities Across the United States*, BROOKINGS (Oct. 2020), <https://www.brookings.edu/research/pledges-and-progress-steps-toward-greenhouse-gas-emissions-reductions-in-the-100-largest-cities-across-the-united-states/#footnote-2> (“Of the 100 most populous cities in the United States, only 45 have established greenhouse gas reduction targets and corresponding baseline GHG inventories. An additional 22 cities have committed to reducing GHG emissions but have not yet established specific emission reduction targets or completed a baseline GHG emission inventory upon which to base a reduction plan.”).

64. See, e.g., *id.* (“The 45 cities with fully-established greenhouse gas reduction targets and corresponding baseline GHG inventories encompass a total population of roughly 40 million people.”).

65. See generally *id.*

pace to meet their goals.⁶⁶ Beyond emission reduction targets, some localities have also undertaken more definite, pointed emission regulation efforts, such as banning new natural gas connections to curb fossil fuel dependence and phase out emissions.⁶⁷

Such local *active emission regulation* strategies are particularly interesting when they arise from localities within *emissions inactive* or *anti-regulatory* states. In these instances, local emission regulations may be the only form of emission regulation in the state, creating a disjunction between local and state strategies. State tolerance for this disjunction has varied based on the type of local regulation. Both *emission inactive* and *anti-regulatory* states have typically abided local emission reduction targets. For instance, *emission inactive* Florida and Tennessee and *anti-regulatory* Georgia, Kansas, and Texas have all lived with the respective emission reduction targets of Miami,⁶⁸ Memphis,⁶⁹ Atlanta,⁷⁰ Lawrence,⁷¹ and Austin.⁷² However, both *emission inactive* and *anti-regulatory* states (including *emission inactive* Florida and Tennessee and *anti-regulatory* Georgia, Kansas, and Texas)⁷³ have also preempted any local efforts to ban natural gas connections.⁷⁴

66. See *id.* (“Overall, about two-thirds of cities are currently lagging their targeted emission levels.”); *id.* (“GHG reduction targets set by cities are mostly non-binding, with the exception of those in California cities.”).

67. See, e.g., Alex Brown, *Natural Gas Bans Are New Front in Effort to Curb Emissions*, STATELINE (Jan. 6, 2022, 12:00 AM), <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2022/01/06/natural-gas-bans-are-new-front-in-effort-to-curb-emissions>; see Leber, *supra* note 37 (describing efforts of state legislatures to prevent local regulation of emissions such as through building codes limiting fossil fuel use for heating and cooking); DiChristopher, *supra* note 37; Gleason, *supra* note 37.

68. *Climate Action Strategy*, MIAMI DADE CNTY., <https://www.miamidade.gov/global/economy/resilience/climate-strategy/home.page> (last visited Dec. 29, 2023).

69. *Memphis Area Climate Action Plan*, SHELBY CNTY. (Mar. 2020), https://shelbycountyttn.gov/DocumentCenter/View/37432/Memphis-CAP-Overview_Metrics_March-2020.

70. See *GHG Emissions and Reduction Targets*, ATLANTA CLIMATE ACTION PLAN, <https://atlantacclimateactionplan.wordpress.com/ghg-emissions-and-reduction-targets/> (last visited Dec. 29, 2023) (“The City of Atlanta has set targets to reduce its emissions to 20 percent below 2009 levels by 2020, and 40 percent below 2009 levels by 2030.”).

71. *Climate Action and Adaptation Plan and Greenhouse Gas Reduction*, LAWRENCE, KAN., <https://lawrenceks.org/sustainability/greenhouse-gas/> (last visited Sep. 19, 2023).

72. *Austin Climate Equity Plan*, AUSTIN, <https://www.austintexas.gov/page/austin-climate-equity-plan> (last visited Dec. 29, 2023).

73. All *anti-regulatory* states have preempted natural gas connection bans; *emission inactive* states that have done so are Arizona, Florida, Iowa, and Tennessee.

74. Leber, *supra* note 37 (describing efforts of state legislatures to prevent local regulation of emissions such as through building codes limiting fossil fuel use for heating and cooking); see DiChristopher, *supra* note 37; Gleason, *supra* note 37.

B. Emission Reduction Subsidies

Distinct from emission regulation policies, emission reduction subsidies create incentives for reducing emissions by offering direct payments, tax breaks, loan guarantees, grants, or other inducements. Such subsidies are often deployed to encourage renewable energy development, energy efficiency investments, low-carbon vehicle use, or other similar measures. Governments face a basic choice regarding emission reduction subsidy policies: use such subsidies or don't. That is, governments may adopt a *subsidy* strategy (i.e., action) or an *inaction* strategy.⁷⁵ In the United States, most government units have opted for the former, and *subsidy* strategies are common at the federal, state, and local levels. However, some localities have adopted *inaction* strategies.

The federal government has long followed a *subsidy* strategy and offered the largest set of emission reduction subsidies.⁷⁶ The most recent and grandest example is the Inflation Reduction Act of 2022 ("IRA").⁷⁷ The IRA uses tax incentives, grants, and loan guarantees to provide nearly \$400 billion in funding for low carbon electricity and transportation, all with the goal of significantly reducing national GHG emissions.⁷⁸ While the IRA itself was passed by a narrow margin in a close, party line vote,⁷⁹ earlier federal *subsidy* strategies have been implemented by both Republican and Democratic administrations and legislatures.⁸⁰ Further, in addition to the IRA, an assortment of other longer standing federal programs have and continue to

75. For emission reduction subsidies, no level of government has evidenced an "opposition" strategy.

76. See, e.g., Inflation Reduction Act, Pub. L. No. 117-169, 136 Stat. 1818 (2022); Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, 135 Stat. 129 (2021).

77. 136 Stat. 1818.

78. See, e.g., *The Inflation Reduction Act: Here's What's in It*, MCKINSEY & CO. (Oct. 24, 2022), <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it>.

79. See *Actions Overview: H.R. 5376 – 117th Congress (2021–2022)*, CONGRESS, <https://www.congress.gov/bill/117th-congress/house-bill/5376/actions> (last visited Dec. 29, 2023) (documenting vote tallies).

80. See, e.g., Elise Stefanik, *Market-Oriented Solutions to Climate Change*, GEORGE W. BUSH INST.: THE CATALYST (Spring 2019), <https://www.bushcenter.org/catalyst/environment/stefanik-market-solutions> ("And starting in 2005, when the Energy Policy Act passed in a Republican-controlled Congress, President George W. Bush signed tax credits for solar and wind into law."); see also MAURA ALLAIRE & STEPHEN P.A. BROWN, PEW CHARITABLE TR., U.S. ENERGY SUBSIDIES: EFFECTS ON ENERGY MARKETS AND CARBON DIOXIDE EMISSIONS 1–2 (2012), https://www.pewtrusts.org/~media/legacy/uploadedfiles/wwwpewtrustsorg/reports/fiscal_and_budget_policy/energysubsidiesfinalpdf.pdf (summarizing subsidy policies and impact on carbon dioxide emission); Jeff Johnson, *Long History of U.S. Energy Subsidies*, CHEM. & ENG'G NEWS (Dec. 19, 2011), <https://cen.acs.org/articles/89/i51/Long-History-US-Energy-Subsidies.html> (tracing history of US energy subsidies).

subsidize renewable energy through tax incentives, credits, grants, loans, and other measures.⁸¹

Certainly not all federal subsidies are aimed at emission reduction, and, in fact, many federal subsidies contribute to emissions, such as by supporting fossil fuel extraction and use.⁸² However, despite (or possibly because of) the fact that different federal subsidy programs seem to act across purposes, the use of subsidies to promote emissions reduction has proven to be one of the major aspects, indeed a mainstay, of federal climate policy.

Subsidy strategies are also common at the state and local levels. For instance, every U.S. state offers some form of subsidy for renewable energy or energy efficiency.⁸³ Similarly, numerous U.S. cities also have subsidy programs to encourage energy efficiency measures⁸⁴ or renewable energy installation.⁸⁵ As with federal subsidies, not all state and local subsidies are aimed at emission reduction, and even among those supporting emission reduction, there is significant variation in subsidy design and efficacy. For

81. See, e.g., *Renewable Energy Explained - Incentives*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/renewable-sources/incentives.php> (last updated Dec. 30, 2022) (“Several federal government tax credits, grants, and loan programs are available for qualifying renewable energy technologies and projects. The federal tax incentives, or credits, for qualifying renewable energy projects and equipment include the Renewable Electricity Production Tax Credit (PTC), the Investment Tax Credit (ITC), the Residential Energy Credit, and the Modified Accelerated Cost-Recovery System (MACRS). Grant and loan programs may be available from several government agencies, including the U.S. Department of Agriculture, the U.S. Department of Energy (DOE), and the U.S. Department of the Interior. Most states also provide financial incentives to encourage renewable energy production and use.”); U.S. ENERGY INFO. ADMIN., *FEDERAL FINANCIAL INTERVENTIONS AND SUBSIDIES IN ENERGY IN FISCAL YEARS 2016–2022*, at 3 (2023), <https://www.eia.gov/analysis/requests/subsidy/pdf/subsidy.pdf> (“[M]ost federal subsidies were for renewable energy producers (primarily biofuels, wind, and solar) . . . and energy efficiency improvements. During FY 2016–22, nearly half (46%) of federal energy subsidies were associated with renewable energy, and 35% were associated with energy end uses.”).

82. See, e.g., Clayton Coleman & Emma Dietz, *Fact Sheet, Fossil Fuel Subsidies: A Closer Look at Tax Breaks and Societal Costs*, ENV’T & ENERGY STUDY INST. (July 29, 2019), <https://www.eesi.org/papers/view/fact-sheet-fossil-fuel-subsidies-a-closer-look-at-tax-breaks-and-societal-costs>.

83. See *Database of State Incentives for Renewables & Efficiency*, NC CLEAN ENERGY TECH. CTR., <https://www.dsireusa.org> (last visited Dec. 19, 2023).

84. *Local Utilities and Other Energy Efficiency Program Sponsors*, EPA, <https://www.epa.gov/statelocalenergy/local-utilities-and-other-energy-efficiency-program-sponsors> (last updated May 30, 2023).

85. See, e.g., U.S. CONF. MAYORS, *CITIES THAT HAVE POLICIES OR PROGRAMS THAT HELP CITIZENS AND BUSINESSES CHOOSE RENEWABLE ELECTRICITY OPTIONS*, <http://www.usmayors.org/wp-content/uploads/2018/10/Cities-with-Policies-to-Incentivize-Renewable-Energy.pdf>; Susan Gouchoe & Chris Larsen, *The Database of State Incentives for Renewable Energy: Local Government and Community Programs and Incentives* (unpublished manuscript), <https://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2015/01/2001-Gouchoe-The-Database-of-State....pdf> (last visited Jan. 6, 2024).

example, some energy efficiency subsidies promote the use of natural gas,⁸⁶ decreasing emissions in the near term relative to other historic energy sources but also potentially perpetuating fossil fuel use at the expense of longer-term renewable energy development that would further reduce emissions.⁸⁷ On the other hand, some state and local subsidy programs do more clearly aid a transition away from fossil fuels and their emissions; for instance, many offer clean vehicle subsidies.⁸⁸

Taken together, this shows a widespread acceptance and adoption of *subsidy* strategies at all levels of government. While not all of these subsidy programs are equal in scope, ambition, or impact regarding emission reductions, the use of subsidies as a climate change policy tool appears tenable at federal, state, and local levels.

C. Adaptation Policies

Adaptation policies seek to prepare for or adjust to the impacts of climate change.⁸⁹ There is a broad diversity of adaptation needs, and accordingly of adaptation policies, but from a structural standpoint, U.S. adaptation policies fall into two relevant categories: *active adaptation* strategies (i.e., action) and *static* strategies (i.e., inaction).⁹⁰

Active adaptation strategies take proactive steps to anticipate and adjust to climate impacts. A handy nutshell description of common *active adaptation* measures is the “three Rs” framework offered by Professors J.B. Ruhl and Robin Craig.⁹¹ This includes efforts to “resist” climate change impacts (such as by building sea walls in the face of rising seas), efforts to

86. See, e.g., *Natural Gas Laws and Incentives in Federal*, U.S. DEP’T OF ENERGY, <https://afdc.energy.gov/fuels/laws/NG?state=US> (last visited Dec. 12, 2023) (describing federal incentives for natural gas use); *Natural Gas Laws and Incentives in Colorado*, U.S. DEP’T OF ENERGY, <https://afdc.energy.gov/fuels/laws/NG?state=CO> (last visited Dec. 12, 2023) (describing Colorado incentives for natural gas use).

87. See Melissa Powers, *Natural Gas Lock-In*, 69 U. KAN. L. REV. 889 (2021).

88. These states are Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Maryland, Massachusetts, Montana, Nebraska, Nevada, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, and Wisconsin. See *U.S. State Clean Vehicle Policies and Incentives*, CTR. FOR CLIMATE & ENERGY SOLS. (Aug. 2022), <https://www.c2es.org/document/us-state-clean-vehicle-policies-and-incentives/> (surveying clean vehicle policies and incentives); Austin Igleheart, *State Policies Promoting Hybrid and Electric Vehicles*, NAT’L CONF. OF STATE LEGISLATURES (Aug. 23, 2023), <https://www.ncsl.org/energy/state-policies-promoting-hybrid-and-electric-vehicles> (offering state by state overview of incentives).

89. See, e.g., *Climate Adaptation and EPA’s Role*, EPA, <https://www.epa.gov/climate-adaptation/climate-adaptation-and-epas-role> (Sept. 6, 2023).

90. For adaptation policy, no level of government in the United States has evidenced an “opposition” strategy.

91. See Ruhl & Craig, *supra* note 1, at 200.

build “resilience” (such as by improving urban response to heatwaves), and efforts to “retreat” from unavoidable impacts (such as by relocating from floodplains).⁹² *Active adaptation* strategies typically deploy some or all of the “three Rs.”

Alternatively, *static* strategies eschew active adaptation measures and adopt a business-as-usual outlook. *Static* strategies can include not only a lack of prospective adaptation planning but also actions that respond to climate-exacerbated disasters without employing any “three Rs” measures to decrease future risk or vulnerability. For example, rebuilding homes after a climate-related disaster, without implementing resilience or retreat planning, is an example of a *static* strategy.

Most adaptation policies, whether *active adaptation* or *static* strategies, are implemented at the local level of government.⁹³ However, federal and state adaptation strategies influence local implementation. In particular, federal programs provide the bulk of state and local adaptation funding, and federal adaptation policies support both *active adaptation* and *static* strategies.⁹⁴ States vary in whether they adopt *active adaptation* and *static* strategies, but those states with *active adaptation* strategies frequently provide valuable resources, such as vulnerability studies and planning frameworks, to inform local policies and push them toward *active adaptation* strategies.⁹⁵ Given this cascading set of influences, we consider adaptation policies first at the federal level, then state, then local.

1. Federal Adaptation Strategies

The federal government implements diverse and granular adaptation policies in all aspects of federal action, such as through military and federal agency operations as well as through the management of federal lands and

92. *Id.* at 200–01.

93. *Id.* at 200.

94. See, e.g., Michael Pappas & Victor B. Flatt, *Climate Changes Property: Disasters, Decommodification, and Retreat*, 82 OHIO ST. L.J. 331, 342–43 (2021) (“[F]ederal buyout programs provide funding to support the vast majority of state and local buyout initiatives. Rarely do states and localities fund their own buyout programs, presumably because of both the expense and a learned dependence on federal funding. As such, federal buyout programs are a crucial factor in nearly all managed retreat efforts.” (emphasis omitted) (footnotes omitted)); see also *Hazard Mitigation Grant Program (HMGP)*, FEMA, <https://www.fema.gov/grants/mitigation/hazard-mitigation> (June 30, 2023); *Cities Advancing Climate Action: Federal Funds for Local Impact*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/document/cities-advancing-climate-action-leveraging-federal-funds-for-local-impact-a-resource-guide/> (last visited Dec. 19, 2023) (“Cities will soon qualify for funding through the \$1.2 trillion 2021 Infrastructure Investment and Jobs Act (IIJA), which can be used to magnify their impact on climate and resilience priorities.”).

95. See *infra* Section I.C.2.

federal facilities.⁹⁶ The details of these various adaptation instances are impactful and worthy of attention, but this Article focuses on a dimension of federal adaptation policy that goes beyond the inner workings of the federal government and reaches all states in the nation. That is the federal adaptation policy that manifests through federal funding programs,⁹⁷ which provide resources for state and local governments to design and implement their own adaptation strategies.⁹⁸ Through such funding programs, the federal government supports both *active adaptation* and *static* strategies.

This ambivalent federal adaptation strategy is particularly exemplified through three Federal Emergency Management Agency (“FEMA”) funding programs that significantly impact the adaptation efforts of states and localities: (1) the Public Assistance Program, which is a disaster relief program that “provides supplemental grants to state, tribal, territorial, and local governments . . . so communities can quickly respond to and recover from major disasters or emergencies;”⁹⁹ (2) the Hazard Mitigation Grant Program (“HMGP”), which provides funding to reduce the risk of future disasters;¹⁰⁰ and (3) the National Flood Insurance Program (“NFIP”), which provides subsidized flood insurance to aid in flood recovery and to “work[] with communities . . . to adopt and enforce floodplain management regulations that help mitigate flooding effects.”¹⁰¹ On paper, then, the Public Assistance Program appears to fund *static* strategies, whereas the HMGP and NFIP contemplate funding *active adaptation* strategies.

In practice these FEMA programs do indeed support a mix of *active adaptation* and *static* strategies, though not exactly as their descriptions might suggest. Though the HMGP and NFIP programs theoretically support *active adaptation* strategies, they have a mixed record of success in this regard. For example, the HMGP contemplates promotion of disaster resilience,¹⁰² such as by creating incentives to “raise homes above flood

96. See, e.g., *Climate Change Adaptation*, USDA, <https://www.usda.gov/oce/energy-and-environment/climate/adaptation> (last visited Dec. 12, 2023) (describing the climate change adaptation programs of the U.S. Department of Agriculture, which manages the National Forest System as well as various facilities and programs).

97. The federal government also implements adaptation policies in diverse and granular ways through its management of federal lands, federal facilities, federal agencies, and the military. However, those instances of adaptation policy are outside the scope of this Article’s analysis.

98. See, e.g., Pappas & Flatt, *supra* note 94 (describing the role of federal funding in adaptation).

99. *Assistance for Governments and Private Non-Profits After a Disaster*, FEMA <https://www.fema.gov/assistance/public> (last updated Jan. 24, 2024).

100. *Hazard Mitigation Assistance Grants*, FEMA, <https://www.fema.gov/grants/mitigation> (last updated Dec. 13, 2023).

101. *Flood Insurance*, FEMA, <https://www.fema.gov/flood-insurance> (last updated Sept. 27, 2023).

102. For an example of the HMGP providing funding for state adaptation planning, see N.C. DEP’T ENV’T QUALITY ET AL., NORTH CAROLINA CLIMATE RISK ASSESSMENT AND RESILIENCE

levels or landscape to decrease wildfire vulnerability¹⁰³ or even to fund property buyouts that assist in relocation out of vulnerable areas.¹⁰⁴ In practice, the HMGP has supported such *active adaptation* efforts to some degree, albeit slowly¹⁰⁵ and with bureaucratic barriers that impede localities' access to funds.¹⁰⁶

However, NFIP has proven even less effective at promoting *active adaptation*, and in fact it has often impeded adaptation efforts. Though NFIP “theoretically subsidizes development that takes appropriate precautions, such as raised or resilient structures and homes,”¹⁰⁷ in reality, NFIP has not been particularly successful in encouraging resilience. Instead, it has subsidized non-adaptive rebuilding in floodplains and has perpetuated risk in vulnerable areas.¹⁰⁸ Thus, while NFIP seems aimed toward *active adaptation* strategies, in practice it has largely perpetuated *static* strategies.

PLAN: IMPACTS, VULNERABILITY RISKS, AND PRELIMINARY ACTIONS 7-6 (2020), <https://files.nc.gov/ncdeq/climate-change/resilience-plan/2020-Climate-Risk-Assessment-and-Resilience-Plan.pdf> (describing how North Carolina’s “NCEM in the Department of Public Safety runs the state’s Hazard Mitigation Grant Program (HMGP) under the state Enhanced Hazard Mitigation Plan (EHMP)” and “the HMGP enables North Carolina families to move out of dangerous flood zones, have their homes elevated, or have their homes torn down and rebuilt to enhanced flood safety standards” (emphasis omitted)).

103. Pappas & Flatt, *supra* note 94, at 340; *see, e.g., Elevating Your Home? What You Need to Know and Do*, FEMA (June 25, 2018), <https://www.fema.gov/press-release/20230425/elevating-your-home-what-you-need-know-and-do>; *Fire Adapted Communities*, U.S. FOREST SERV., <https://www.fs.usda.gov/managing-land/fire/fac> (last visited Dec. 19, 2023); *FEMA to Provide Nearly \$2 Million Dollars to Help Retrofit Homes Against Earthquake Damage*, FEMA (Sept. 17, 2018), <https://www.fema.gov/news-release/20200807/fema-provide-nearly-2-million-dollars-help-retrofit-homes-against-earthquake>; *Hazard Mitigation Assistance Grants*, *supra* note 100.

104. Pappas & Flatt, *supra* note 94, at 341–42 (citing FEMA, HAZARD MITIGATION ASSISTANCE UNIFIED GUIDANCE 74 (2010), http://centralvtplanning.org/wp-content/uploads/2012/03/HMA-Unified-Guidance_w-updated-hyperlinks.pdf); FEMA, *NFIP Substantial Improvement/ Substantial Damage: Requirements and Definitions*, in SUBSTANTIAL IMPROVEMENT/SUBSTANTIAL DAMAGE DESK REFERENCE 1 (2010), https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf).

105. *See* A.R. Siders, *Government-Funded Buyouts After Disasters Are Slow and Inequitable – Here’s How That Could Change*, CONVERSATION (Oct. 19, 2018, 6:35 AM), <https://theconversation.com/government-funded-buyouts-after-disasters-are-slow-and-inequitable-heres-how-that-could-change-103817>.

106. Pappas & Flatt, *supra* note 94, at 342 (“Federal efforts at managed retreat from recurrent disasters have proven practically unworkable because the buyout process is hampered by funding, policy choices, and bureaucracy issues.”); Rob Moore, *As Climate Risks Worsen, U.S. Flood Buyouts Fail to Meet the Need*, YALE ENV’T 360 (Jan. 23, 2020), <https://e360.yale.edu/features/as-climate-risks-worsen-u.s.-flood-buyouts-fail-to-meet-the-need>.

107. Pappas & Flatt, *supra* note 94, at 342.

108. *Id.* (“[B]ecause the NFIP subsidizes development in risky areas and does not impose sufficiently strict land use policies to create effective zoning, it actually contributes to recurrent disaster loss rather than forestalling it.”); *cf.* NICOLE T. CARTER ET AL., CONG. RSCH. SERV., R45017, FLOOD RESILIENCE AND RISK REDUCTION: FEDERAL ASSISTANCE AND PROGRAMS 4, 41, 44 (2019); Pappas & Flatt, *supra* note 94, at 346–49 (describing the operation of NFIP and its

Finally, the FEMA Public Assistance Program effectively supports *static* strategies because it provides funding for quick disaster recovery without designed attention to future risks.¹⁰⁹ In fact, the FEMA Public Assistance Program suggests that future risk mitigation is outside of its purview and indicates that the HMGP is the appropriate program for considering future risk and adaptation.¹¹⁰

With their mix of support for *active adaptation* and *static* strategies, these FEMA programs evidence that the federal government's adaptation strategy mainly entails endorsing (and underwriting) the adaptation strategies of state and local governments.

2. State Adaptation Strategies

Whereas federal policy supports both *active adaptation* and *static* strategies, state adaptation strategies tend to fall on one side or the other. There are twenty-six states that have adopted no adaptation measures, evidencing *static* strategies.¹¹¹ The other twenty-four states have affirmatively adopted,¹¹² or are in the process of planning,¹¹³ *active adaptation* strategies. Table 2 below shows the breakdown.

resultant funding of non-adaptive rebuilding in vulnerable areas); Kevin Sack & John Schwartz, *As Storms Keep Coming, FEMA Spends Billions in 'Cycle' of Damage and Repair*, N.Y. TIMES (Oct. 8, 2018), <https://www.nytimes.com/2018/10/08/us/fema-disaster-recovery-climate-change.html>.

109. See *Assistance for Governments and Private Non-Profits After a Disaster*, *supra* note 99 (distinguishing between the "Public Assistance Program" and "hazard mitigation measures").

110. *Id.*

111. States with no adaptation policies are Alabama, Arizona, Arkansas, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, West Virginia, and Wyoming. *State and Local Adaptation Plans*, GEO. CLIMATE CTR., <https://www.georgetownclimate.org/adaptation/index.html> (last visited Dec. 20, 2023).

112. States with adaptation plans are Alaska, California, Colorado, Connecticut, Delaware, Florida, Maine, Maryland, Massachusetts, Montana, New Hampshire, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Virginia, Washington. *Id.*

113. States with adaptation planning underway are Hawaii, Michigan, Minnesota, Vermont, and Wisconsin. *Id.*

Table 2: State Adaptation Strategies

<i>Active Adaptation Strategy</i>	<i>Active Adaptation Strategy in Planning</i>	<i>Static Strategy</i>
Alaska	Hawaii	Alabama
California	Michigan	Arizona
Colorado	Minnesota	Arkansas
Connecticut	Vermont	Georgia
Delaware	Wisconsin	Idaho
Florida		Illinois
Maine		Indiana
Maryland		Iowa
Massachusetts		Kansas
Montana		Kentucky
New Hampshire		Louisiana
New Jersey		Mississippi
New York		Missouri
North Carolina		Nebraska
Oregon		Nevada
Pennsylvania		New Mexico
Rhode Island		North Dakota
Virginia		Ohio
Washington		Oklahoma
		South Carolina
		South Dakota
		Tennessee
		Texas
		Utah
		West Virginia
		Wyoming

Among the states that have adopted *active adaptation* strategies, the most common measures include creating framework plans that provide vulnerability assessments, appointing leadership teams, and announcing

goals and strategies. For example, Alaska,¹¹⁴ Colorado,¹¹⁵ Montana,¹¹⁶ and North Carolina¹¹⁷ have adopted these types of policies. Plans such as these can inform localities and offer coordinating resources for preparing local adaptation strategies.

Additionally, some state adaptation policies go further by imposing resilient building standards or providing funding for local adaptive practices. The adaptation policies of California,¹¹⁸ Connecticut,¹¹⁹ Florida,¹²⁰ Massachusetts,¹²¹ and Virginia¹²² provide examples of such measures. In

114. Alaska has announced a series of goals, strategies, leadership teams, and general policy statements. *See Preparing for Climate Change in Alaska*, GEO. CLIMATE CTR. (Dec. 5, 2018), <https://www.georgetownclimate.org/adaptation/state-information/alaska/overview.html>.

115. Colorado assesses vulnerability and offers a framework of resiliency strategies. *See Preparing for Climate Change in Colorado*, GEO. CLIMATE CTR. (June 25, 2018), <https://www.georgetownclimate.org/adaptation/state-information/colorado/overview.html>.

116. *See Montana Climate Solutions Plan*, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/montana-climate-solutions-plan.html> (last visited Dec. 20, 2023).

117. North Carolina's adaptation planning includes "the results of vulnerability assessments within 11 critical sectors, climate justice concerns and strategies, and recommendations for nature-based solutions to enhance ecosystem resiliency and sequester carbon in the state's natural and working lands." *See Preparing for Climate Change in North Carolina*, GEO. CLIMATE CTR. (Feb. 9, 2022), <https://www.georgetownclimate.org/adaptation/state-information/north-carolina/overview.html>.

118. California has policies calling for vulnerability assessments and for state adaptation planning that must be updated regularly. *See Preparing for Climate Change in California*, GEO. CLIMATE CTR. (Aug. 1, 2018), <https://www.georgetownclimate.org/adaptation/state-information/california/overview.html>. The state also has funding measures and support for adaptation. *Id.* For example, "in 2017, the legislature passed AB 398 . . . allowing for [cap-and-trade] auction proceeds to be used to advance climate adaptation and resiliency." *Id.* California also created the Strategic Growth Council to aid with planning and funding for local adaptation efforts. *Id.* Additionally, "[t]he 2022 California Climate Adaptation Strategy presents six state priorities and relevant actions to increase climate resilience at the state, regional, and local levels." *2022 California Climate Adaptation Strategy*, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/2022-california-climate-adaptation-strategy.html> (last visited Dec. 20, 2023).

119. Connecticut has a substantive resilience building standard, requiring a minimum elevation above flood and sea-level rise projections. *See Preparing for Climate Change in Connecticut*, GEO. CLIMATE CTR. (Sept. 16, 2021), <https://www.georgetownclimate.org/adaptation/state-information/connecticut/overview.html>.

120. Florida has passed a bill calling for the study of flood vulnerability and for the initiation of statewide efforts to adapt to flood risks. *See Florida Senate Bill (S.B.) 1954: Statewide Flooding and Sea-Level Rise Resilience*, ADAPTATION CLEARINGHOUSE (May 13, 2021), <https://www.adaptationclearinghouse.org/resources/florida-senate-bill-s-b-1954-statewide-flooding-and-sea-level-rise-resilience.html>. It provides some state grant funding for resilience planning, though there is also cost sharing with local governments paying fifty percent. *Id.*

121. Massachusetts provides funding for a range of adaptation and resiliency projects. *See Preparing for Climate Change in Massachusetts*, GEO. CLIMATE CTR. (Apr. 12, 2019), <https://www.georgetownclimate.org/adaptation/state-information/massachusetts/overview.html>.

122. Virginia, in addition to having planning documents such as a Coastal Resilience Master Plan, provides funding for flood adaptation measures, particularly in coastal areas. *See Preparing*

particular, Connecticut's statewide flood-proofing elevation standard¹²³ and Virginia's Coastal Resilience Master Plan¹²⁴ are examples of statewide regulatory and planning efforts that concretely coordinate adaptation efforts in localities across these states.

3. Local Adaptation Strategies

Local adaptation policies are varied and reflect just how particularized climate vulnerability risks can be between localities (and even within different parts of the same locality). Some localities are relatively climate resilient, thus they have lower climate vulnerability and lesser perceived need for *active adaptation* strategies. Moreover, even among climate vulnerable localities, there is significant risk variation. For instance, some localities primarily face flood danger, while others might experience extreme heat, drought, wildfire, or other stressors.¹²⁵ All of this results in local adaptation policies that, like local policies in general, are highly contextual and site specific. Still, local adaptation policies fall broadly into the two categories of *active adaptation* and *static* strategies.

The majority of localities have not enacted adaptation measures and have no prospective planning for implementing any “three Rs” approaches. Thus, such localities have, by default, adopted *static* strategies. When climate-related disasters have occurred in such localities, FEMA Public Assistance Program funding (and, in the case of flooding, NFIP funding) have been available, and, consistent with their *static* strategies, such communities have typically rebuilt without significant changes to decrease

for *Climate Change in Virginia*, GEO. CLIMATE CTR. (Feb. 10, 2022), <https://www.georgetownclimate.org/adaptation/state-information/virginia/overview.html>.

123. See *supra* note 119.

124. See *supra* note 122.

125. See, e.g., *City of San Diego, California: Climate Resilience SD*, ADAPTATION CLEARINGHOUSE (Dec. 14, 2021), <https://www.adaptationclearinghouse.org/resources/city-of-san-diego-california-climate-resilience-sd.html> (“The [City of San Diego, CA adaptation] plan lays out a framework to address climate change impacts by identifying the four primary climate change-related hazards affecting the city—extreme heat, extreme rainfall or drought, wildfires and sea-level—and providing a set of goals, policies, and strategies to offset these hazards.”). Missoula County, MT has a resiliency plan that studies risks and considers vulnerabilities, particularly to wildfire, heat, and drought. See *Climate Ready Missoula: Building Resiliency in Missoula County*, ADAPTATION CLEARINGHOUSE (Feb. 14, 2021), <https://www.adaptationclearinghouse.org/resources/climate-ready-missoula-building-resiliency-in-missoula-county.html> [hereinafter *Climate Ready Missoula*]. Miami, FL has a climate planning document dealing mainly with flooding, hurricanes, and sea level rise. See *Miami, Florida Resilient 305 Strategy*, ADAPTATION CLEARINGHOUSE (July 2019), <https://www.adaptationclearinghouse.org/resources/miami-florida-resilient-305-strategy.html>.

vulnerability and enhance resiliency. For instance, many communities that have suffered flood¹²⁶ or fire disasters¹²⁷ have rebuilt without adaptation.

Alternatively, localities with active adaptation strategies attempt to reduce vulnerability to climate-related disasters through prospective planning, reactive measures, or both. Some localities' adaptation plans primarily identify resiliency goals and objectives,¹²⁸ whereas others more directly implement "three Rs" measures.¹²⁹ Examples of the latter approach include localities that have zoning or building requirements to minimize climate risks,¹³⁰ localities that use green infrastructure or other armoring to

126. See Pappas & Flatt, *supra* note 94; Robert S. Young, *To Save America's Coasts, Don't Always Rebuild Them*, N.Y. TIMES (Oct. 4, 2022), <https://www.nytimes.com/2022/10/04/opinion/hurricane-ian-coast-rebuilding.html>; Sarah Fecht, *Should Coastal Communities Rebuild or Retreat After Hurricane Ian?*, COLUM. CLIMATE SCH.: STATE OF THE PLANET (Oct. 7, 2022), <https://news.climate.columbia.edu/2022/10/07/should-coastal-communities-rebuild-or-retreat-after-hurricane-ian/>.

127. See, e.g., H. Anu Kramer et al., *Post-Wildfire Rebuilding and New Development in California Indicates Minimal Adaptation to Fire Risk*, 107 LAND USE POL'Y, Aug. 2021, at 1; Diane Carman, *Carman: Rebuilding from the Marshall Fire Should Be a Model of Climate Adaptation*, COLO. SUN (Jan. 16, 2022, 2:02 AM), <https://coloradosun.com/2022/01/16/climate-change-marshall-fire-opinion/>.

128. See, e.g., *Fort Collins, Colorado 2019 Municipal Sustainability and Adaptation Plan*, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/fort-collins-colorado-2019-municipal-sustainability-and-adaptation-plan.html> (last visited Dec. 20, 2023); *Climate Ready Missoula*, *supra* note 125.

129. See, e.g., KATIE SPIDALIERI ET AL., GEO. CLIMATE CTR., GREAXING RESILIENCE AT HOME: A COLLECTION OF LESSONS AND CASE STUDIES FROM LOUISIANA AND BEYOND (Katie Spidaliere ed., 2022), https://www.georgetownclimate.org/files/Louisiana%20Regional%20Vision/Greaxing_Resilience_Full_Case_Studies.pdf (collecting twenty-four case studies of local jurisdictions adaptation approaches).

130. For example, the City of Baltimore, Maryland has a "Disaster Preparedness and Planning Project" that has adopted "a new zoning code with an open space designation, initiated four pilot Resilience Hubs, approved a Landscape Manual, and has made significant progress towards funding for needed stream restoration and other flood-minimizing projects." *Baltimore, Maryland 2018 Disaster Preparedness and Planning Project (DP3)*, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/baltimore-maryland-2018-disaster-preparedness-and-planning-project-dp3.html> (last visited Dec. 20, 2023). Similarly, Norfolk, VA has zoning initiatives to address flood risks. See *Greaxing Resilience at Home — City of Norfolk, Virginia: PlaNorfolk 2030, Norfolk Vision 2100, and Resilience Zoning Updates*, ADAPTATION CLEARINGHOUSE (June 16, 2022), <https://www.adaptationclearinghouse.org/resources/greaxing-resilience-at-home-eo-city-of-norfolk-virginia-planorfolk-2030-norfolk-vision-2100-and-resilience-zoning-updates.html>.

resist climate impacts,¹³¹ and localities that have retreat programs to relocate people out of highly vulnerable areas.¹³²

D. Liability Policies

Liability policies address the remedial obligations that major GHG emitters bear for their contributions to climate change. Such policies can manifest through lawsuits¹³³ or statutes that distribute responsibility for climate impacts. Liability policy strategies among federal, state, and local governments fall into three categories: *liability pursuing* (i.e., action), *liability precluding* (i.e., opposition), and *liability inactive* (i.e., inaction).

Liability pursuing strategies seek to hold GHG emitters accountable for climate contributions and impacts. These strategies often employ litigation to seek judicially determined remedies for climate-related harms, but some jurisdictions have also considered statutory apportionment of climate liability.¹³⁴ These climate liability strategies can have a mix of goals, such as securing compensation for climate harms, creating incentives for emission

131. For example, Boston, MA has adopted “Coastal Resilience Solutions for Downtown Boston and the North End,” which entails a:

\$200 to \$300 million dollar, 50-year plan to protect the Boston waterfront, including Downtown, the North End, and the eastern edge of the city’s West End. The plan aims to protect these neighborhoods from a hundred-year flood on top of a 40 inch rise in sea levels by late this century. The integrated plan relies on a combination of natural (green infrastructure) defenses, breakwaters, seawalls, harbor walks, and raised land to protect the waterfront and inland areas from increases in coastal flooding and sea level rise.

Coastal Resilience Solutions for Downtown Boston and North End, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/coastal-resilience-solutions-for-downtown-boston-and-north-end.html> (last visited Dec. 20, 2023).

132. For instance, the City of Punta Gorda, Florida has a planning document that includes relocation or managed retreat. *Managing the Retreat from Rising Seas—Punta Gorda, Florida: Climate Adaptation and Comprehensive Plans and Updates*, ADAPTATION CLEARINGHOUSE (July 15, 2020), <https://www.adaptationclearinghouse.org/resources/managing-the-retreat-from-rising-seas-eo-punta-gorda-florida-climate-adaptation-and-comprehensive-plans-and-updates.html>. The City of Kivalina, Alaska has a relocation master plan (that was prepared by the U.S. Army Corps of Engineers). *USACE Kivalina, Alaska Relocation Master Plan*, ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/usace-kivalina-alaska-relocation-master-plan.html> (last visited Dec. 20, 2023). The City of Charlotte, North Carolina has been a leader in policies to avoid climate vulnerability by buying out repeat-flooding properties. See Pappas & Flatt, *supra* note 94, at 390.

133. The relevant litigation here attempts to wield private liability as a policy lever in and of itself, rather than as a means of achieving other policies. Accordingly, not all lawsuits relating to climate change necessarily fit under the liability policy umbrella as conceived here. For instance, lawsuits filed against government units seeking to compel or halt climate action involve efforts to impact policy via litigation, but they do not wield liability as a policy.

134. See *infra* notes 141, 152.

reduction, and building pressure for enacting regulation.¹³⁵ In contrast, *liability precluding* strategies seek to limit or bar the particular assignment of responsibility for climate harms and instead distribute climate responsibility broadly across society. *Liability precluding* policies can include immunizing GHG emitters from legal responsibility for climate impacts or imposing barriers to climate-liability lawsuits. Finally, *liability inactive* strategies walk the middle path. They act neither to impose nor oppose climate liability policies.

1. Federal Liability Strategies

The federal government has maintained a *liability inactive* strategy, evidenced by the federal legislature rejecting proposals for both *liability pursuing* and *liability precluding* policy proposals.

Federal liability strategy unfolds against the backdrop of the Supreme Court's foundational decision in *American Electric Power Co. v. Connecticut*,¹³⁶ an early climate-change suit that tested the bounds of potential climate liability. There, the Court held that the Clean Air Act displaces federal common law claims for climate liability.¹³⁷ This established a baseline for climate liability by ruling out a set of common law claims, thereby shunting litigants toward statutory and state law claims instead.

Since *American Electric Power Co.*, advocates have sought federal legislation to alter the liability baseline set by the Supreme Court's ruling. However, despite proposals both to expand liability and to limit it further, Congress has declined to alter the status quo, demonstrating a *liability inactive* strategy. For example, the legislature has rejected proposals and lobbying efforts pushing for *liability precluding* strategies, such as policies immunizing fossil fuel companies from potential climate change liabilities.¹³⁸

135. See Michael Pappas, *Prevention and Cure*, 54 LOY. L.A. L. REV. 1067, 1121–24 (2021); Daniel A. Farber, *Basic Compensation for Victims of Climate Change*, 155 U. PA. L. REV. 1605 (2007).

136. 564 U.S. 410 (2011).

137. *Id.* at 424 (holding “that the Clean Air Act and the EPA actions it authorizes displace any federal common-law right to seek abatement of carbon-dioxide emissions from fossil-fuel fired powerplants”).

138. See, e.g., Dana Drugmand, *Democrats' New Climate Plan Says Polluters Shouldn't Receive Immunity From Lawsuits for Climate Impacts*, DESMOG (June 30, 2020, 6:04 PM), <https://www.desmog.com/2020/06/30/house-democrats-climate-plan-liability-relief-fossil-fuels/> (reporting on Democratic legislators' rejection of proposals for legal immunity for climate liability); Press Release, Representative Jamie Raskin, House of Representatives, Raskin Leads 60 Members in Opposing Climate Change “Immunity Grabs” by Fossil Fuel Industry in COVID-19 Legislation, (May 5, 2020), <https://raskin.house.gov/2020/5/raskin-leads-60-members-opposing-climate-change-immunity-grabs-fossil-fuel> [hereinafter Raskin Press Release]; see also Umair Irfan, *Exxon Is Lobbying for a Carbon Tax. There Is, Obviously, a Catch*, VOX, (Oct. 18, 2018, 8:10 AM), <https://www.vox.com/2018/10/18/17983866/climate-change-exxon-carbon-tax-lawsuit>.

Additionally, though some federal legislators have apparently expressed interest in completely preempting state-law climate liability claims or stripping state courts of jurisdiction for such claims,¹³⁹ Congress has not acted on either idea.¹⁴⁰

At the same time, the federal legislature also spurned *liability pursuing* policies. For example, a proposed bill requiring GHG emitters to pay for climate damage¹⁴¹ was not passed. Thus, the federal legislature has demonstrated a *liability inactive* policy.

2. State and Local Liability Strategies

The majority of states and localities deploy a *liability inactive* strategy,¹⁴² neither pursuing liability nor attempting to preclude it. However, a small number of states and localities have adopted *liability pursuing* strategies.

These *liability pursuing* states and localities have used an evolving set of litigation theories.¹⁴³ Early cases asserted common law claims like nuisance and trespass; however, none has yet proven successful. Some of these claims have been mired in lengthy removal disputes about whether they

139. See BENJAMIN M. BARCZEWSKI, CONG. RSCH. SERV., LSB10805, CLIMATE LIABILITY SUITS: IS THERE A PATH TO FEDERAL COURT? 1 (2022) (discussing possible preemption and jurisdiction stripping). The existence of this report suggests congressional interest in the issue. *About This Collection*, CONG. RSCH. SERV., <https://crsreports.congress.gov/Home/About> (last visited Dec. 20, 2023) (“[Congressional Research Service reports are] created for the sole purpose of supporting Congress in its legislative, oversight, and representational duties. New products are regularly produced to *anticipate and respond to issues of interest to Congress on a timely basis.*” (emphasis added)).

140. See, e.g., Jonathan H. Adler, *Displacement and Preemption of Climate Nuisance Claims*, 17 J.L. ECON. & POL’Y 217, 221–22 (2022) (“Whether state law nuisance actions are to be preempted is a choice for Congress to make, and is a choice Congress has not yet made. Accepting that the EPA has regulatory authority over greenhouse gases, there is no legislation preempting state efforts to address the consequences of greenhouse gas emissions themselves. While other legal doctrines may constrain or complicate state common law climate nuisance claims, federal preemption should not be among them.” (footnotes omitted)).

141. Press Release, Senator Chris Van Hollen, U.S. Senate, Van Hollen Leads Senate Democrats in Announcing New Legislation to Make Polluters Pay for Climate Damage (Aug. 4, 2021), <https://www.vanhollen.senate.gov/news/press-releases/van-hollen-leads-senate-democrats-in-announcing-new-legislation-to-make-polluters-pay-for-climate-damage>.

142. Texas has a statute that arguably creates a *liability precluding* effect, however it has not had a substantial impact in that regard. See Tracy D. Hester, *A New Front Blowing in: State Law and the Future of Climate Change Public Nuisance Litigation*, 31 STAN. ENV’T. L.J. 49, 74 n.97, 74–75 (2012) (discussing TEX. WATER CODE § 7.257 (2011)).

143. See generally Rachel Rothschild, *State Nuisance Law and the Climate Change Challenge to Federalism*, 27 N.Y.U. ENV’T. L.J. 412, 413 (2019); CTR. ON CLIMATE INTEGRITY, CLIMATE LIABILITY LITIGATION: CASES UNDERWAY TO MAKE CLIMATE POLLUTERS PAY (2023), <https://climateintegrity.org/uploads/media/Legal-CaseChart-07272023.pdf>.

belong in state or federal court,¹⁴⁴ while others have simply been dismissed.¹⁴⁵

More recently, *liability pursuing* states and localities have looked to alternate theories of liability, such as information concealment and consumer protection claims. As of 2022, “[t]here [were] at least 20 pending lawsuits filed by cities and states across the U.S., alleging major players in the fossil fuel industry misled the public on climate change to devastating effect.”¹⁴⁶ For example, Massachusetts, Minnesota, New York, Vermont, and Connecticut have pending suits against fossil fuel companies alleging deceptive or misleading practices against consumers and investors.¹⁴⁷ Similarly, the City of Annapolis, MD; Anne Arundel County, MD; the City and County of Honolulu, HI; and the City of Hoboken, NJ, have sued fossil fuel companies alleging concealment of information about their products’ contribution to climate change.¹⁴⁸

Other *liability pursuing* claims seek remedies for jurisdiction-specific climate-change damages. For instance, Delaware “seek[s] to hold the fossil fuel industry liable for the physical, environmental, social, and economic consequences of climate change in Delaware.”¹⁴⁹ Rhode Island similarly seeks liability for “climate change impacts that adversely affect Rhode Island and jeopardize State-owned or -operated facilities, real property, and other assets.”¹⁵⁰ And the City of Charleston, SC, the County of Maui, HI, the City of Baltimore, MD, the County of San Mateo, CA, and the County of Santa

144. See, e.g., *City of Oakland v. BP p.l.c.*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case/people-state-california-v-bp-plc-oakland/> (last visited Dec. 23, 2023) (describing litigation regarding public nuisance actions the Cities of Oakland and San Francisco, California, have brought against fossil fuel companies); *King County v. BP p.l.c.*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case/king-county-v-bp-plc/> (last visited Dec. 23, 2023) (noting voluntary dismissal, pending resolution of the Oakland suit noted earlier in this footnote, of public nuisance and trespass action brought by King County, Washington, against fossil fuel companies).

145. See, e.g., *City of New York v. BP p.l.c.*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case/city-new-york-v-bp-plc/> (last visited Dec. 23, 2023) (describing dismissal of the City of New York state-law public nuisance, private nuisance, and trespass claims because the lawsuit would regulate cross-border greenhouse gas emissions).

146. Bruce Gil, *U.S. Cities and States Are Suing Big Oil Over Climate Change, Here’s What the Claims Say and Where They Stand*, PBS: FRONTLINE (Aug. 1, 2022), <https://www.pbs.org/wgbh/frontline/article/us-cities-states-sue-big-oil-climate-change-lawsuits/>.

147. See *U.S. Climate Change Litigation: State Law Claims—Enforcement Cases*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case-category/enforcement-cases/> (last visited Dec. 23, 2023).

148. *U.S. Climate Change Litigation: Common Law Claims*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case-category/common-law-claims/> (last visited Dec. 23, 2023).

149. *Id.*

150. *Id.*

Cruz, CA, have sued fossil fuel companies seeking liability for the impacts of climate change on those respective localities.¹⁵¹

Finally, a proposed New York bill would also adopt state legislation as part of that state's *liability pursuing* strategy. The bill, thought unlikely to pass, would assess liability on major GHG emitters to pay for adaptation costs.¹⁵²

E. Structural Summary: Trends in Climate Policy

Aggregating the previous sections provides a comprehensive structural overview of U.S. climate policy. This has descriptive value in offering a simple, unified, and wholistic view of the nation's complex, distributed, and piecemeal climate policy. Additionally, this structural summary reveals policy trends and jurisdictional preferences that provide a backdrop for the game-theoretical analysis in Section II and the policy strategy ramifications identified in Section III.

1. A Picture of U.S. Climate Policy

As an initial matter, the preceding sections offer an overview of U.S. climate policy. This section offers a graphical summary of that information.

First, Table 3 helps depict federal climate strategies across the approaches of emission regulation policy, emission reduction subsidies, adaptation policy, and liability policy.

Table 3: Federal Climate Strategies

	Emission Regulation Policy	Emission Reduction Subsidies Policy	Adaptation Policy	Liability Policy
Federal	<i>Emission Inaction</i>	<i>Subsidy</i>	<i>Both Active and Static</i>	<i>Liability Inaction</i>

151. *Id.*

152. S.B. S9417, 2021–22 Leg. Sess. (N.Y. 2022); see *Senate Bill S9417*, N.Y. STATE SENATE, <https://www.nysenate.gov/legislation/bills/2021/s9417> (last visited Dec. 23, 2023) (explaining that the bill “establishes the climate change adaptation cost recovery program and the climate change adaptation fund”); Maxine Joselow & Vanessa Montalbano, *Bills in Blue States Target the Fossil Fuel Industry for Climate Damage*, WASH. POST (May 31, 2022, 8:06 AM), <https://www.washingtonpost.com/politics/2022/05/31/bills-blue-states-target-fossil-fuel-industry-climate-damage/>.

Second, Table 4 depicts state approaches.

Table 4: State Climate Strategies

	Emission Regulation Policy	Emission Reduction Subsidies Policy	Adaptation Policy	Liability Policy
Alabama	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Alaska	Emission Inaction	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Arizona	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Arkansas	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
California	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Colorado	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Connecticut	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
Delaware	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
Florida	Emission Inaction	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Georgia	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive

Hawaii	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation Strategy in Planning	Liability Inactive
Idaho	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Illinois	Marginal	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Indiana	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Iowa	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Kansas	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Kentucky	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Louisiana	Marginal	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Maine	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Maryland	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Massachusetts	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
Michigan	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation Strategy in Planning	Liability Inactive
Minnesota	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation Strategy in Planning	Liability Pursuing

Mississippi	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Missouri	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Montana	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Nebraska	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Nevada	Marginal	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
New Hampshire	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
New Jersey	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
New Mexico	Marginal	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
New York	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
North Carolina	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
North Dakota	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Ohio	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Oklahoma	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Oregon	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive

Pennsylvania	Marginal	For Renewable Energy or Energy efficiency	Active Adaptation	Liability Inactive
Rhode Island	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Pursuing
South Carolina	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
South Dakota	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Tennessee	Emission Inaction	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Texas	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Utah	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Vermont	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation Strategy in Planning	Liability Pursuing
Virginia	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
Washington	Active Emission Regulation	For Renewable Energy or Energy Efficiency	Active Adaptation	Liability Inactive
West Virginia	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive
Wisconsin	Marginal	For Renewable Energy or Energy Efficiency	Active Adaptation Strategy in Planning	Liability Inactive
Wyoming	Anti-Regulatory	For Renewable Energy or Energy Efficiency	Static	Liability Inactive

Finally, while local approaches are too numerous and varied to capture in detail, Table 5 captures some of the climate strategy range, as well as majority and minority strategies, at local levels.

Table 5: Local Climate Strategies

	Emission Regulation Policy	Emission Reduction Subsidies Policy	Adaptation Policy	Liability Policy
Local	Majority <i>Emission Inaction</i> , with some <i>Active Emission Regulation</i>	Majority <i>Inaction</i> with some <i>Subsidy</i> programs	Majority <i>Static</i> with some <i>Active</i>	Majority <i>Liability Inaction</i> with some <i>Liability Pursuing</i>

The structural overview outlined above provides a starting point for numerous forms of analysis. This Article will focus on a relatively apolitical evaluation of trends within U.S. climate policy as well as the dynamics between federal, state, and local policy strategies (as analyzed in Parts II and III). Additionally, subsequent work will evaluate this structural breakdown in terms of its political dimensions, exploring how state climate policy alignments sometimes track but also confound their typical political leanings, as evidenced through voting trends.¹⁵³ Moreover, this structural compilation may lend itself to a variety of other examinations.

2. Policy Trends

The structural overview of U.S. climate policy shows some interesting (and some underappreciated) trends. For example, federal climate policy action has consisted almost entirely of handing out money. The federal government has adopted major emission reduction subsidies and has provided substantial funding for state and local adaptation efforts. However, the federal government has been inactive regarding emissions regulation policies and liability policies.

153. See Michael Pappas, *The Surprising Politics of State Climate Policies* (2023) (unpublished manuscript) (on file with author).

Thus, the federal government's most significant contribution to climate policy has been as a funder. While this harnesses one federal comparative advantage, it squanders another. Given the relatively deep federal pockets and the federal government's ability to distribute costs widely, it has funding capacities well beyond those of state or local governments. So, in its funding provision, the federal government has done what other levels of government cannot. However, by serving solely as funder, the federal government has spurned its comparative advantage in coordinating or unifying divergent state policies regarding issues of national scope. The federal government is uniquely situated to manage climate policy throughout the nation, but it has not done so in any of the emission regulation, emission reduction subsidy, adaptation, or liability policy areas.

States have done much more to dictate climate policies than has the federal government, but state policies are deeply divided. Though all states have adopted subsidies of some form, states are highly polarized regarding emission regulation, adaptation, and liability policies. Across all aspects of climate policy, more than half of the states have inert policy strategies that appear ill-matched for the instability posed by climate change.¹⁵⁴

Those states that have undertaken policies around active emissions regulation, active adaptation, and liability pursuit have been the primary drivers of proactive climate policies in the US. However, these same states may be nearing the limits of their potential policy commitments. While there is work to be done for these states to live up to their climate policy goals, there appears to be relatively little room left for policy advancement in the states that are willing to pursue policy advancement.

Localities have adopted a range of climate policy strategies with a range of impacts on other levels of government. Some local policies have mirrored state policies, while other local policies have influenced or even galvanized policies at the state and federal level. For instance, in the areas of emission reduction subsidies and liability, local policies have largely matched state policies. However, with emission regulation policies, some localities have sought to regulate despite their states adopting anti-regulatory policies. These local regulatory efforts have led some states to reaffirm their anti-regulatory policies by preempting local regulations. Finally, localities have been the primary implementors of adaptation policies with state efforts supplying adaptation resources to localities and with federal funds flowing to meet local priorities.

154. See *supra* Table 1, Table 2.

II. ANALYSIS OF DYNAMICS IN U.S. CLIMATE POLICIES

This Part analyzes emission regulation policies, emission reduction subsidies, adaptation policies, and liability policies to forecast whether current federal, state, and local strategy alignments are likely stable or dynamic, and to what degree policies will remain disparate versus uniform. In doing so, it considers the range of strategies described in Part I, analyzing policy dynamics based on the observable policy choices that have actually been pursued. Thus, it bases its analysis on what has happened, and appears likely to continue, given the current federal, state, and local commitments. This analysis yields distinct conclusions for each policy approach.

First, emissions regulation policies are likely to remain disparate and entrenched because of the interplay between state strategies (which evidence significant, entrenched polarization) and the federal strategy (which rests at a seemingly stable place of *inaction*). As a result, there is little prospect for states' strategies to converge on their own or for the federal government to coordinate the states into a unified strategy. Thus, emission regulation policies are likely ossified.

Conversely, emission reduction subsidy strategies are fairly consonant among federal, state, and local entities. With no level of government categorically opposing subsidies, this leaves room for dynamic policy development at every level of government, regardless of whether it is coordinated.

Adaptation strategies are disparate but may be dynamic due to state coordination efforts. A major component of federal adaptation strategy attempts to match federal funding provisions to fit state and local strategies. As a result, federal policy does not coordinate, and may perpetuate, the variation between active adaptation and static strategies at the state and local levels. However, states with active adaptation strategies have attempted to coordinate local strategies within their borders by providing resources for active adaptation efforts.

Finally, liability policy is likely to remain disparate but potentially dynamic. Though federal liability policy demonstrates an inaction strategy toward liability, state and local policies diverge, leaving room for independent development by liability-pursuing states and localities.

The following table depicts these conclusions, and the remainder of this Part addresses these policy areas in turn.

Table 6: Climate Policy Dynamics

	Uniform	Disparate
Stable		Emission Regulation Policies
Dynamic	Emission Reduction Subsidy Policies	Adaptation Policies and Liability Policies

A. Emission Regulation

Emission regulation policies are likely to remain stagnant and polarized because state strategies are likely to retain their current split and because federal strategy will not likely intervene to align them. At the state and local levels, emission regulation policies demonstrate that states and localities are deeply divided in their emissions regulation strategies. In fact, the divide in state policies may become even further entrenched because *anti-regulatory* states have stifled some local regulatory efforts and because states may double down on their opposing strategy positions.¹⁵⁵ Meanwhile, the seemingly entrenched federal strategy of *emission inaction* likely stands in the way of federal coordination of state and local emission regulation policies. The ultimate result is that, absent a political shift that will jar current strategies, emission regulation policies are likely to remain entrenched exactly as they are now. Given these dynamics, emission regulation policy on the whole is likely to remain stable and divergent. The following subsections offer further detail.

1. Federal and State Strategies

As discussed in Part I, the federal emission regulation strategy is ultimately determined by the federal legislature.¹⁵⁶ While some contingent of legislators has shown interest in *active emission regulation* strategies and another contingent has shown interest in *anti-regulatory* strategies, the compromise has been to a middle position of *emission inaction* strategy.¹⁵⁷

What that means for emission regulation policy is that unless there is a significant (and unexpected) shift in political preferences among federal legislators, there is no reason to expect that federal emission regulation policy will deviate from its current *emission inaction* strategy.

155. See *supra* Section I.A.

156. See *supra* Section I.A.1.

157. See *supra* Section I.A.2.

Meanwhile, state emission regulation policy represents a divide, with states adopting divergent emission regulation strategies. This dynamic is apparent both when comparing *active emissions regulation* states with *emissions inaction* states and when comparing *active emissions regulation* states with *anti-regulatory* states.¹⁵⁸ As a result, states are likely not only to adopt polarized and inconsistent policies, but also to persist in those policy divisions. Moreover, it is likely that the polarizing effect of these policies will further entrench the division between *active emissions regulation* states and *anti-regulatory* states. *Active emissions regulation* states are likely to place a greater value on their own emissions regulations if other states are not regulating to reduce emissions. At the same time, *anti-regulatory* states may double down on deregulatory policies to attract industry or to appeal to political bases. Accordingly, the intensity of policy preferences will likely become more polarized, leading to greater reinforcement of the current polarization.

Taken together, the divergent policies at the state level combined with the *emissions inaction* strategy at the federal level suggest that the federal government will not take action to coordinate state policies. Rather, the states are likely to continue their polarized policies while the federal government is likely to remain inactive. The upshot of examining these federal-state dynamics is that federal emissions regulation policy will not coordinate and align state emission regulation policies.

2. Local and State Strategies

Similar to state emissions regulation policies, local emission regulation policies fall disparately, typically between *active emission regulation* localities and *emission inaction* localities. However, the dynamics between localities and their states are more complex than the one between the states and the federal government. The federal *emission inaction* strategy means that the federal government has not intervened to align state strategies. However, some state strategies, particularly *anti-regulatory* ones, have led states to intervene and bring local policies in line with the state strategy.

When local and state strategies align, there are consistent strategies within that state without the need for further coordination. Conversely, when local and state strategies diverge, states are faced with a choice of whether to coordinate unified statewide policies via preemption or to accept some policy conflict within the state. The most notable examples of such divergence have arisen from *active emission regulation* localities within *anti-regulatory* states or within *emission inaction* states. In such cases, states have sometimes, but not always, opted to coordinate local strategies via preemption in efforts to

158. See *supra* Section I.A.2.

achieve a unified strategy within the states. To date, it appears that these states' decisions about preemption have turned on the type of local regulation at issue (emission reduction targets versus natural gas connection bans).

For instance, a divergence emerged between the City of Lawrence, Kansas, and the State of Kansas. The City of Lawrence pursued two *active emission regulation* policies: The first developed a city emission reduction target,¹⁵⁹ and the second committed the city to phase out fossil fuels and use entirely renewable energy by 2035.¹⁶⁰ Both of these policies conflicted with Kansas's statewide *anti-regulatory* strategy.

The State of Kansas offered a mixed response to the local strategies. The State tolerated Lawrence's development of emission reduction targets, allowing that *active emission regulation* strategy to persist despite the State's *anti-regulatory* strategy. However, the State preempted Lawrence's effort to phase out fossil fuel use by passing the statewide Energy Choice Act, thereby unifying policies within the state by preventing municipal bans on natural gas.¹⁶¹

Similar sets of conflicts have emerged when *active emission regulation* localities are within *emission inaction* states. For example, Miami, Florida, adopted an emission reduction target,¹⁶² and it proposed to ban natural gas connections.¹⁶³ The State of Florida, which has adopted an *emission inaction* strategy, responded with a mixed approach similar to that of Kansas. Florida has tolerated Miami's emission reduction target, but it has preempted municipal bans on natural gas connections.¹⁶⁴

159. See *Climate Action and Adaptation Plan and Greenhouse Gas Reduction*, CITY OF LAWRENCE, <https://lawrenceks.org/sustainability/greenhouse-gas/> (last visited Dec. 19, 2023).

160. *Id.*; *Energy Efficiency & Renewable Energy*, CITY OF LAWRENCE, <https://lawrenceks.org/sustainability/energy/> (last visited Dec. 19, 2023).

161. See ALEXANDER STEVENS & PAIGE LAMBERMONT, INST. FOR ENERGY RSCH., AN OVERVIEW OF NATURAL GAS BANS IN THE U.S. 8 (2021), https://www.instituteforenergyresearch.org/wp-content/uploads/2021/08/Natural-Gas-Ban-Report_Updated.pdf (describing the Energy Choice Act and the Lawrence initiative); Titus Wu, *Prohibition on Natural Gas Bans, Legal COVID-19 Immunity for Nursing Homes Become Kansas Law*, TOPEKA CAP. J. (April 12, 2021, 3:39 PM), <https://www.cjonline.com/story/news/state/2021/04/12/energy-choice-act-natural-gas-bans-kansas-nursing-homes-covid-immunity-politics-legal-renewable/7188926002/> (describing the Act and its impact on the City of Lawrence's efforts to move to entirely renewable energy).

162. *Greenhouse Gas Reduction Plan*, CITY OF MIAMI, <https://www.miamigov.com/My-Government/ClimateChange/Climate-Change-Action/GHGReduction> (last visited Dec. 19, 2023).

163. See Alex Harris, *Miami Planned to End Natural Gas Hookups to Help Cut Emissions. Then TECO Asked Them Not To*, TAMPA BAY TIMES (Nov. 17, 2021), <https://www.tampabay.com/news/business/2021/11/17/miami-planned-to-end-natural-gas-hookups-to-help-cut-emissions-then-teco-asked-them-not-to/>; STEVENS & LAMBERMONT, *supra* note 161, at 7.

164. H.B. 919, 2021 Leg., 123d Sess. (Fla. 2021); Molly Taft, *Ron DeSantis Signs a Bill That Mandates Cities Keep Using Fossil Fuels*, GIZMODO (June 26, 2021), <https://gizmodo.com/ron-desantis-signs-a-bill-that-mandates-cities-keep-usi-1847176182>.

These examples from Kansas and Florida are not unique. Rather, they reflect a trend in how *anti-regulatory* and *emission inaction* states have addressed the policies that arise from *active emission regulation* localities within their borders. The trend is for *anti-regulatory* and *emission inaction* states to preempt natural gas connection bans but to tolerate emission reduction targets.

B. Emission Reduction Subsidy Policies

Unlike emission regulation policies, emission reduction subsidy policies are likely to continue changing and developing. Emission reduction subsidy programs have been adopted at all levels of government, and while the details of subsidy policies vary, federal, state, and local governments all seem to accept subsidies as a policy strategy. This broad acceptance suggests that subsidy policies may advance further, even without coordination between different levels of government.

Beginning with state-federal dynamics, the respective positions of the federal and state governments converge; both deploy subsidy policies. There is a similar dynamic between states. Finally, the dynamic between localities and states also evidences a broad acceptance of subsidies. Though not every locality has implemented a subsidy program, localities do not evidence anti-subsidy policies. Thus, localities either adopt emission reduction subsidies themselves or are inactive. Either way, they do not impede state emission reduction subsidies.

In sum, emission reduction subsidies are a common climate policy approach across different jurisdictions, with federal, state, and local governments all deploying subsidy policies. This convergence on subsidy strategies suggests that such policies are potentially feasible and adaptable at any level of government in the United States, even in the face of polarized political divisions.

C. Adaptation Policies

Adaptation strategies are highly varied, but coordination efforts in *active adaptation* states inject some dynamism into local policy strategies.

Local and state adaptation policies vary widely based on a variety of contextual factors. As a result, local and state adaptations divide between *active adaptation* and *static* strategies. However, states that have adopted *active adaptation* strategies have also provided resources for previously *static* localities to undertake *active adaptation* strategies, leading to some policy dynamism and tailoring to local conditions. As a result, local and state adaptation policies are diverse and evolving.

Federal adaptation policy provides funding for both *active adaptation* and *static* strategies at the local and state levels. This dynamic between federal and local/state strategies shows the federal government attempting to coordinate its funding provision to match the local/state strategies.

1. Local and State Adaptation Strategies

It makes sense to begin with local adaptation strategies because localities are the primary implementors of adaptation measures. Local strategies divide between *active* adaptation and *static* policies based on different jurisdictional preferences.

Similarly, state adaptation strategies also demonstrate a division. Among the states, nearly half have adopted no adaptation measures, meaning those states have de facto *static* adaptation strategies.¹⁶⁵ The remaining states have adopted, or are in the process of adopting, *active adaptation* strategies.¹⁶⁶ Since both local and state adaptation policies adopt varied strategies, the combination of local and state strategies can result in consonance or divergence among policies within a state. In the case of divergence, conflict can arise between inconsistent state and local strategies.

However, *active adaptation* states have moved to address this divergence by coordinating policies within the state. This coordination has arisen through state measures to provide information, funding, and planning rather than through state preemption. Thus, it is a softer form of state coordination rather than a mandatory one. Examples of such soft coordination resources include statewide vulnerability assessments (such as those undertaken in Colorado and North Carolina),¹⁶⁷ state funding or state management of federal hazard mitigation funding (such as that provided in California, Florida, and Massachusetts),¹⁶⁸ or statewide planning and regulatory measures (such as Connecticut's statewide flood-proofing elevation standards and Virginia's Coastal Resilience Master Plan).¹⁶⁹ These measures evidence *active adaptation* state efforts to coordinate strategies by steering localities toward *active adaptation*.

2. Federal Adaptation Strategies and Federal-State/Local Dynamics

A prevailing federal adaptation strategy is to support both *active* adaptation and *static* strategies at the state and local levels. The practical impact of the FEMA Public Assistance Program, HMGP, and NFIP is that

165. See *supra* Table 2.

166. See *supra* Table 2.

167. See *supra* notes 115, 117.

168. See *supra* notes 118, 120–121.

169. See *supra* notes 119, 122.

the federal government will fund any local/state adaptation strategy. Thus, federal adaptation policy is premised on identifying the preferred local/state policy and then matching it. As a result, federal adaptation policy does not appreciably coordinate or align local/state adaptation policies. Rather, federal policy supports divergent local/state policies, with funding deployed to match whichever policy is chosen at the local/state level.

D. Liability Policies

Federal legislators have not signaled a great enthusiasm for either pursuing or precluding liability, so federal liability strategy embraces *liability inaction*. As a result, there is no federal coordination of liability policy at the state and local levels. This has left states and localities largely free to experiment with liability policies, with some states and localities adopting creative *liability pursuing* strategies and others opting for *liability inaction*. State and local policies are likely to remain split in this way because the federal *liability inaction* policy will not operate to coordinate or align them, and this allows for potential dynamism and innovation at the state and local levels.

III. LESSONS: NAVIGATING STRATEGIES TO PLAN A POLICY FUTURE

Finally, Part III takes the conclusions from Parts I and II and suggests paths forward given the current and likely future alignments of federal, state, and local climate policy strategies. In its suggestions, the Article seeks to advance climate policy for the critical coming decade and beyond. As in previous Parts, it addresses emission regulation, emission reduction subsidies, adaptation, and liability policies in turn.

First, since emission regulation policies are likely ossified, there are limited gains to be made in this policy area. Even though emission regulation policies might otherwise be a first-choice response to climate change, the current alignment of strategies significantly curtails the possibility of expanding emission regulation. This suggests that advocates should focus efforts around meeting current emission reduction targets and prioritizing other policy approaches to achieve further emission reductions.

Second, emission reduction subsidies may hold the most promise for reducing emissions in the near term because they appear politically feasible at every level of government. While this approach may be theoretically less efficient than regulatory options, it appears more achievable.

Third, federal adaptation strategy reflects an effort to match funding to state and local priorities. This strategy appears appropriate given the high variation in local adaptation needs; however, federal programs can be refined

to better suit this matching objective. In particular, federal programs can better appreciate, foster, and support state and local adaptation efforts.

Finally, liability policy remains an area of dynamism and uncertainty. States and localities can independently develop liability pursuing policies, which allows them to experiment with liability suits or statutes. While liability might not be an optimal climate change policy, it may have an increasingly important role given the limited frontiers of emission regulation policy. In fact, liability policies may present the best opportunity to change political payoffs and thus spur action on emission regulation.

A. Emission Regulation

Barring a major change in political attitudes across much of the country, emission regulation policy is likely at a stalemate. States will probably retain their current emission regulation strategies, and the federal government will probably remain on the sidelines. This roadblock to progress suggests channeling advocacy efforts elsewhere because even if emission regulations may be the most efficient way to reduce emissions, there is little practical likelihood of expanding such policies. Thus, the best current option might be to pursue attainment of existing emission reduction targets and to look for additional gains through other policy approaches.

The likelihood of emission regulation policy remaining persistently stagnant owes to the polarization among states combined with the apparent federal commitment to *emission inaction*. States are currently locked in division, separating *active emission regulation* states from *emission inaction* and *anti-regulatory* states.

Active emission regulation states and localities have gone nearly as far as they can in terms of emission regulation commitments and pledges. Their regulatory enactments include cap-and-trade, renewable portfolio standards, and emission reduction targets, leaving only so much more to be gained in these jurisdictions (at least in terms of announced regulation policies; many targets are yet to be met). Moreover, even if all these *active emission regulation* commitments and targets are met, this will only represent a fraction of U.S. climate goals and Paris Agreement pledges.¹⁷⁰ These policies

170. See USA Country Summary, CLIMATE ACTION TRACKER, <https://climateactiontracker.org/countries/usa/> (last visited Dec. 26, 2023) (showing the current U.S. trajectory of emissions reduction to be insufficient to meet its targets); BLOOMBERG PHILANTHROPIES, FULFILLING AMERICA'S PLEDGE: HOW STATES, CITIES, AND BUSINESSES ARE LEADING THE UNITED STATES TO A LOW-CARBON FUTURE (2018), https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge_Executive-Summary_2018.pdf; Brad Plumer, A 'Green New Deal' Is Far from Reality, but Climate Action Is Picking Up in the States, N.Y. TIMES (Feb. 8, 2019), <https://www.nytimes.com/2019/02/08/climate/states-global-warming.html> (suggesting that current state policies, if followed, will get the United States only about two-thirds of the way to its Paris

are still important; they just leave relatively limited room for regulatory gains in *active emission regulation* states.

Conversely, *emission inaction* and *anti-regulatory* states not only display little sign of adopting emission regulations,¹⁷¹ they also show signs of entrenching anti-regulatory policies. For example, the widespread preemption of natural gas connection bans shows these states' commitment to both perpetuating fossil fuel emissions and preventing localities from taking a more regulatory approach. Moreover, these state preemption policies evidence the power of fossil fuel lobbies that appear to have influenced states to halt or foreclose local emission regulation policies.

This persistent separation between state strategies might redouble arguments for federal intervention, and in other policy contexts, federal enactments have coordinated states that were locked in such division.¹⁷² However, given the federal *emissions inaction* strategy, federal coordination of emission regulation is unlikely. Thus, we probably already have all the emissions regulation that we are likely to have in the near future.¹⁷³ While current conditions and payoffs are neither inevitable nor perpetual, at the moment there is a limited horizon for emission regulation gains.

Such bearish pessimism about emission regulation gains suggests a difficult conclusion: Climate advocacy efforts should shift focus away from emission regulation. This is a tough suggestion because emission regulation has widely been considered a first-choice policy approach for dealing with climate change. For instance, there have been strong arguments from across the political spectrum that emission regulation approaches, such as carbon

Agreement obligations). See generally Brad Plumer, *How Can U.S. States Fight Climate Change if Trump Quits the Paris Accords?*, N.Y. TIMES (Sept. 20, 2017), <https://www.nytimes.com/2017/09/20/climate/paris-climate-accord-trump.html>; Adler, *supra* note 140, at 248 (“Even working together, states are not capable of reducing projected climate change and its anticipated effects to any meaningful degree.”); Markolf, *supra* note 63 (“The 365 million metric tons that would be reduced on an annual basis by year 2050 if all 45 states reached their GHG reduction targets translates to roughly 6% of total U.S. GHG emissions in 2017 assuming emissions without the plans would remain the same from the baseline year to the target year. Six percent is not an insignificant number, but it is a far cry from the level of emission reductions that the IPCC suggests needs to occur in order to avoid many of the more significant impacts of climate change.”).

171. Adam Orford, *Natural Gas and Net Zero: Mutually Exclusive Pathways for the Southeast*, 39 GA. ST. U. L. REV. 1033, 1065 (2023) (analyzing southeastern states and showing that any emission reductions within have arisen from economically induced switches from coal to natural gas electrical generation and that the states oppose policies to spur further emissions reduction).

172. See Leslie Henry & Maxwell Stearns, *Commerce Games and the Individual Mandate*, 100 GEO. L.J. 1117 (2012) (detailing how federal laws have been used to force state coordination when separating equilibria have arisen in the context of public accommodations law and in the Affordable Care Act).

173. See, e.g., Adler, *supra* note 140, at 248 (“Absent cooperation or the imposition of federal (or international) requirements, state and local efforts are unlikely to provide anything approaching the optimal level of greenhouse mitigation measures.”).

pricing,¹⁷⁴ are more efficient and superior to other options, such as litigation¹⁷⁵ or subsidies.¹⁷⁶ Thus, deemphasizing emission regulation policies means walking away from some of the potentially most effective policy instruments. However, as discussed, expansion of emission regulation policy, even if it is hypothetically first-choice, appears practically untenable under current circumstances.

The takeaway is that the near term hopes for emission regulation policy are more modest, and the likely progressive outlook more resembles consolidation than expansion. That is, there is little prospect in pursuing new emission regulation where it is unlikely (i.e., at a federal level committed to *emission inaction*, or in states that have adopted *emission inaction* and *anti-regulatory* strategies).¹⁷⁷ Instead, a more profitable course could be to shore up the commitments of *active emission regulation* states and localities or of marginal states that have emission reduction targets. This entails work to “turn[] pledges into reality.”¹⁷⁸

Meeting all the existing state and local emission reduction targets will not reduce emissions enough to reach Paris Agreement commitments or global temperature targets, but since emissions are cumulative, these reductions are still meaningful contributions. Additionally, as some states or

174. See, e.g., Linn & Look, *supra* note 22 (arguing that a policy of subsidies alone would not be as effective in reducing transportation emissions as a combination of subsidies regulation, and pricing would); LEE LANE, STRATEGIC OPTIONS FOR BUSH ADMINISTRATION CLIMATE POLICY 102 (2006), https://www.aei.org/wp-content/uploads/2014/07/-strategic-options-for-the-bush-administration_160635893399.pdf (arguing for a conservative political agenda of carbon pricing in the form of a carbon tax or even a cap and trade regime as opposed to subsidies).

175. See, e.g., David A. Dana, *The Mismatch Between Public Nuisance Law and Global Warming*, 18 SUP. CT. ECON. REV. 9, 9–10 (2010) (arguing that treating the global climate as a common-pool resource is likely to be more effective than nuisance litigation); Joni Hersch & W. Kip Viscusi, *Allocating Responsibility for the Failure of Global Warming Policies*, 133 U. PA. L. REV. 1657, 1659 (2007) (“Regulation through litigation is a less desirable climate change policy approach than a sound regulatory policy that reflects society’s broad interests.”). See generally SHILING HSU, A CASE FOR THE CARBON TAX: GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY (2011) (making the case for a carbon tax); Jonathan H. Adler, *Eyes on a Climate Prize: Rewarding Energy Innovation to Achieve Climate Stabilization*, 35 HARV. ENV’T. L. REV. 1 (2011) (discussing measures to facilitate innovation). But see Jonathan Zasloff, *The Judicial Carbon Tax: Reconstructing Public Nuisance and Climate Change*, 55 UCLA L. REV. 1827 (2008) (arguing that successful climate nuisance claims against fossil fuel companies could result in the imposition of a de facto carbon tax).

176. See, e.g., Linn & Look, *supra* note 22 (arguing that a policy of subsidies alone would not be as effective in reducing transportation emissions as a combination of subsidies regulation, and pricing would); LANE, *supra* note 174, at 102 (arguing for carbon pricing as a more efficient and effective alternative to subsidies).

177. See *supra* Part II.

178. See Markolf et al., *supra* note 63 (discussing localities that are not on pace to meet emission reduction targets); *U.S. State Greenhouse Gas Emissions Targets*, *supra* note 33 (“There were 5 states that had targets for emissions reductions for 2020: California, Connecticut, Oregon, Rhode Island, and New Jersey; California is the only state that met its 2020 goal.”).

localities meet their pledges, they can provide blueprints or proofs of concept for other jurisdictions to meet their own pledges or to adopt loftier goals. Ultimately, simply meeting these pledges may represent the best that can be done with emission regulation policy at the moment. Beyond that, other policy approaches, discussed below, can provide more room for gains.

B. Emission Reduction Subsidies

While emission regulation policy may be frozen by the current political environment, emission reduction subsidies have potential for movement and expansion. As a result, even if emission reduction subsidies are flawed, second-choice options, they may offer the most realistically obtainable pathway to further emission reductions. This counsels greater efforts to pursue emission reduction subsidies, even if they are not the most efficient policy option. It also puts pressure on subsidy design to mitigate as much as possible the acknowledged drawbacks of subsidies.¹⁷⁹

Across federal, state, and local governments, there is at least an acceptance of emission reduction subsidies and, maybe as importantly, relatively little opposition. This leaves room for emission reduction subsidies to serve as a practicable tool for reducing emissions. Such subsidy policies may be second-best at best,¹⁸⁰ but they have the distinct advantage of being feasible.¹⁸¹ Moreover, there is evidence that recently enacted emission reduction subsidies, like those in the IRA, are not only helping achieve emission reductions but also winning previously elusive political support for a transition to lower-emissions infrastructure.¹⁸²

That said, there is an array of well documented criticisms and drawbacks to such subsidy policies. For instance, such policies are expensive, leading to questions about how they will be funded, and they are thought to be less

179. See *infra* notes 182–184.

180. See, e.g., *Federal Energy-Related Tax Policy and Its Effects on Markets, Prices, and Consumers: Hearing Before the Subcomm. on Energy of the H. Comm. on Energy & Com.*, 115th Cong. (2017) (statement of Joseph E. Aldy, Assoc. Professor of Pub. Pol’y, Harv. Kennedy Sch.), <https://www.govinfo.gov/content/pkg/CHRG-115hhrg26902/html/CHRG-115hhrg26902.htm> (“And let me close by noting that if we really want to maximize social welfare to make Americans as well off as possible, we want to look for ways to transition from the second best subsidy instruments that are the norm in the tax code on energy and instead transition to a world in which we have direct pricing on the externalities associated with energy.”).

181. See, e.g., Jason Bordoff, *America’s Landmark Climate Law*, FIN. & DEV., Dec. 2022, at 35, 35 (“[C]arrots work better than sticks to build political support, and thus the law subsidizes clean energy rather than taxing or restricting carbon pollution—despite a large academic literature demonstrating the economic efficiency of a carbon price.”).

182. See Eric Lipton, *With Federal Aid on the Table, Utilities Shift to Embrace Climate Goals*, N.Y. TIMES (Nov. 29, 2022), <https://www.nytimes.com/2022/11/29/us/politics/electric-utilities-biden-climate-bill.html>.

efficient than policy alternatives, such as emission regulation.¹⁸³ Additionally, such policies have no guarantee of effectiveness; the government may make poor choices about what to subsidize; there is a high likelihood that significant subsidy funds will be captured by projects that would have occurred even without the subsidy;¹⁸⁴ and rent-seeking money grabs are almost assured.¹⁸⁵ Further, there is the objection that, as a matter of principle, the government should not buy “good” behavior from polluters when it could instead regulate away their “bad” behavior.

Acknowledging all these criticisms, the apparent reality is that emission reduction subsidies represent a potentially important policy opportunity at the moment, even if not an ideal one. Subsidies may be less efficient or more costly than other policy options, but they appear to be currently more realistic. Further, there is a risk of falling into the Nirvana fallacy by comparing the efficiency of, say, a hypothetical carbon pricing policy with no realistic hope of implementation against that of an emission reduction subsidy that could practically be deployed.¹⁸⁶

None of this absolves subsidy policies of the criticisms, limitations, and drawbacks noted above. Rather, those criticisms, limitations, and drawbacks should inform subsidy design¹⁸⁷ and create pressure to mitigate these issues as much as possible.¹⁸⁸ Because emission reduction subsidies appear politically feasible, they become an important policy consideration in this time when reductions are urgently needed and emission regulation gains are politically elusive.

183. See *supra* Section I.B.

184. See Lipton, *supra* note 182.

185. See *id.*

186. See Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. & ECON. 1 (1969) (discussing the Nirvana fallacy in terms of criticizing a real policy via comparison to an ideal one); Commissioner Hester M. Peirce, U.S. Sec. & Exch. Comm’n, *Alligators in Nirvana: Smart Regulation and the Future of Financial Service*, Speech at the George Mason University Antonin Scalia Law School (May 16, 2019), https://www.sec.gov/news/speech/peirce-alligators-nirvana#_ftnref16 (explaining the Nirvana fallacy point).

187. Biao Li et al., *The Impact of Government Subsidies on the Low-Carbon Supply Chain Based on Carbon Emission Reduction Level*, 18 INT’L J. ENV’T RSCH. & PUB. HEALTH 1, 1 (2021) (discussing how the design of subsidies for low carbon products impacts the price and sales volume of the low carbon products).

188. While a full discussion of subsidy design is beyond the scope of this paper, some ideas to explore include structuring the provision of subsidies at different jurisdictional and governmental levels to help reduce rent-seeking. Barry R. Weingast, *The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development*, 11 J.L. ECON. & ORG. 1, 6 (1995). Additionally, subsidies could be contingent upon technology transfers or publicly available intellectual property. Cf. Eric Payne, *The Critical Importance of the Bayh-Dole Act in the U.S. Energy Transition*, LES NOUVELLES, Sept. 2023, <https://www.lesi.org/publications/les-nouvelles/les-nouvelles-article-of-the-month/les-nouvelles-article-of-the-month-archives/les-nouvelles-article-of-the-month-september-2023>. Finally, subsidies may take diverse forms such as prizes and monopoly grants in addition to direct funding or tax breaks.

C. Adaptation Policy

Current adaptation policy involves the federal government seeking to match funding to state and local policy preferences. This deference to state and local choices makes sense in the context of adaptation because it allows policies to be tailored to local needs, which vary significantly. However, if current federal policy is indeed premised on matching state and local choices, there is room to improve how the federal government receives information about those choices and how it empowers and informs those choices. Though current federal policy in theory defers to state and local adaptation priorities, in practice it mutes some signals about *active adaptation* priorities, distorts some choices toward *static* strategies, and remains disconnected from the adaptation needs of “receiving communities” that will receive in-migration as a result of climate change. Addressing these three areas can improve coordination in the federal adaptation driving game.

First, the implementation of federal adaptation policy has muted signals from some localities and states regarding a preference for *active adaptation* policies. For example, after a flooding disaster in Houston, the burdens of accessing federal adaptation programs apparently hampered local *active adaptation* efforts to relocate housing outside of vulnerable floodplains.¹⁸⁹ The city was unable to secure supposedly available federal funds to pursue its preferred *active adaptation* plan, and as a result of the federal barriers to funding, the city implemented *static* redevelopment in those floodplains.¹⁹⁰

This suggests that federal policy could better effectuate its deferential funding strategy if FEMA programs allowed for clearer and timelier coordination with local/state preferences for *active adaptation*. Indeed, a unifying feature across many suggested FEMA reforms is a coordination-enhancing effect.¹⁹¹

Second, it appears that federal actions have actively distorted local/state policy preferences toward *static* strategies and have implicitly contributed to similar distortions. The primary example of active distortion is the deployment of the NFIP program, which has perpetuated *static* redevelopment and investment that otherwise would have been uneconomical.¹⁹² Further, federal programs contribute to an implicit

189. See Pappas & Flatt, *supra* note 94, at 345–46 (discussing the examples of Houston, TX not being able to access federal buyout funds in a short enough timeframe to support relocation efforts).

190. See *id.*

191. See *id.*; Stephanie Stern, *Climate Transition Relief: Federal Buyouts for Underwater Homes*, 72 DUKE L.J. 161, 224 (2022).

192. See Pappas & Flatt, *supra* note 94, at 345–46 (2021).

distortion toward *static* strategies. At the outset, status quo bias¹⁹³ and inertia favor *static* strategies, and federal programs have exacerbated that by effectively defaulting toward *static* programs, such as the FEMA Public Assistance Program and NFIP. This imposes a de facto presumption against state/local *active adaptation* strategies, which already face barriers because states/localities must take initiative to developing hazard mitigation grant plans before they can access *active adaptation* HMGP resources.¹⁹⁴

Removing these active distortions and combatting implicit ones would advance the federal funding strategy because it would help states and localities realize their adaptation preferences (which the federal government seeks to match) rather than have federal programs steer state/local adaptation choices at the outset. As for implementing such ideas, there have been many suggestions for removing the active distortions posed by NFIP.¹⁹⁵ Moreover, examples of proposals to alleviate implicit distortions include supplementing available adaptation planning support¹⁹⁶ with increased access to federal resources that inform and empower local community choice,¹⁹⁷ increasing accessibility of resilience funding for localities,¹⁹⁸ and implementing federal pilot projects for climate relocation.¹⁹⁹ While there are signs that the federal government is beginning to recognize these issues,²⁰⁰ much is left to be done to remove distortions.

Finally, federal adaptation policy has thus far remained disconnected from the adaptation needs of “receiving community” localities that are likely

193. *Status Quo Bias*, BEHAVIORALECONOMICS.COM, <https://www.behavioraleconomics.com/resources/mini-encyclopedia-of-be/status-quo-bias/> (last visited Dec. 20, 2023).

194. See, e.g., *Hazard Mitigation Grant Program (HMGP)*, *supra* note 94 (“All state, local, tribal and territorial governments must develop and adopt hazard mitigation plans to receive funding for hazard mitigation project application.”).

195. See Pappas & Flatt, *supra* note 94, at 398 (2021) (surveying proposals).

196. *Federal Funding and Technical Assistance for Climate Adaptation*, EPA, <https://www.epa.gov/arc-x/federal-funding-and-technical-assistance-climate-adaptation> (last updated Aug. 21, 2023).

197. CASSIDY CHILDS ET AL., CTR. FOR AM. PROGRESS, ACCESS TO FEDERAL CLIMATE DATA CAN EMPOWER COMMUNITIES IN ADAPTATION AND RESILIENCE EFFORTS (2022), <https://www.americanprogress.org/wp-content/uploads/sites/2/2022/11/ClimateScience-report.pdf>.

198. *Biden Administration Announces Historic Coastal and Climate Resilience Funding*, U.S. DEP’T OF COM. (June 29, 2022), <https://www.commerce.gov/news/press-releases/2022/06/biden-administration-announces-historic-coastal-and-climate-resilience>; Mari Quenemoen, *Federal Grants Can Impact State and Local Policy to Build Climate Change Resilience in Vulnerable Communities*, GEO. L., <https://www.law.georgetown.edu/salpal/federal-grants-can-impact-state-and-local-policy-to-build-climate-change-resilience-in-vulnerable-communities/> (last visited Dec. 27, 2023).

199. *Climate Change: A Climate Migration Pilot Program Could Enhance the Nation’s Resilience and Reduce Federal Fiscal Exposure*, U.S. GOV’T ACCOUNTABILITY OFF. (Jul. 6, 2020), <https://www.gao.gov/products/gao-20-488>.

200. See *id.*

to experience in-migration due to climate change.²⁰¹ While some localities have begun planning to adapt to the pressures of such migration,²⁰² they are beset with challenges ranging from funding questions to data availability.²⁰³ Federal adaptation policy could provide a crucial resource to supporting these localities, but any such federal efforts are in their infancy.²⁰⁴ Continuing to adjust federal policy to align with local adaptation needs is central to a federal strategy premised on supporting state and local priorities.

D. Liability Policy

Finally, liability policy may be unpredictable and fraught, but it also offers some of the broadest hopes for experimentation and development in climate policy. Moreover, liability policy assumes greater importance given the ossification of emission regulation policy. Liability could potentially prompt nationwide emission reductions. Further, by changing political payoffs, it could even break the stalemate around emission regulation policy.

The federal *liability inaction* strategy leaves *liability pursuing* states and localities great latitude to explore potential suits and statutes. Unlike with emission regulation policy, where the lack of federal coordination has led to polarized ossification, with liability policy an absence of federal coordination has led to experimentation through different liability theories. Such experimentation takes on heightened importance with other policy approaches, such as emission regulation, effectively stagnated.

That is not to say that liability represents the ideal approach around which to build a nation's climate policy. In fact, many aspects of climate liability efforts have been criticized. For instance, dispersed litigation efforts

201. See generally *Climate Migration and Receiving Community Institutional Capacity in the U.S. Gulf Coast*, URBAN INST., <https://www.urban.org/projects/climate-migration-and-receiving-community-institutional-capacity-us-gulf-coast> (last visited Dec. 12, 2023).

202. See generally Fern Hickey, *Building Capacity to Receive: How Four Communities in the U.S. are Preparing for Climate Driven In-Migration* (June 20, 2022) (M.A. thesis, University of North Carolina, Chapel Hill) (Carolina Digital Repository); *Global Cities Fund for Migrants and Refugees*, MAYORS MIGRATION COUNCIL, <https://mayorsmigrationcouncil.org/gcf/> (last visited Jan. 6, 2024).

203. See Hickey, *supra* note 202.

204. See, e.g., CARLOS MARTIN & ALEXANDER WILLIAMS, URBAN INST., *A FEDERAL POLICY AND CLIMATE MIGRATION BRIEFING FOR LOCAL COMMUNITY GROUPS AND JUSTICE ORGANIZERS 1* (2021), https://www.urban.org/sites/default/files/2021/03/25/a_federal_policy_and_climate_migration_briefing_for_local_community_groups_and_justice_organizers.pdf (discussing the challenges that a federal program might respond to); Erol Yayboke et al., *A New Framework for U.S. Leadership on Climate Migration*, CTR. FOR STRATEGIC & INT'L STUD. (Oct. 23, 2020), <https://www.csis.org/analysis/new-framework-us-leadership-climate-migration> (discussing the need to address climate migration); Jay Balagna et al., *To Help Climate Migrants, We Must First Recognize Them*, RAND CORP. (Jan. 28, 2022), <https://www.rand.org/blog/2022/01/to-help-climate-migrants-we-must-first-recognize-them.html>.

by states and localities are far from a first-choice solution to climate issues.²⁰⁵ Indeed, some critics have castigated liability pursuits as a “sideshow” that detracts from more productive climate policy efforts.²⁰⁶ Others have suggested that climate liability implicates policy matters that are simply “too big” for courts or judges to resolve,²⁰⁷ and, indeed, some rulings have embraced this notion by evoking the political question doctrine to dismiss climate claims.²⁰⁸ Finally, pursuit of climate liability may simply be ineffective, given that no suit or statute has yet to establish liability for GHG emitters.²⁰⁹

However, for all its limitations, liability policy remains one of the few avenues whereby *liability pursuing* states or localities might impact emissions beyond their own borders. This is because a finding of liability would effectively put a price on emissions by assigning remedies, imposing a “de facto” carbon tax and incentivizing emission reduction.²¹⁰ Additionally, even the prospect of climate liability might prod federal legislative action on emission regulation²¹¹ because potential liability could change the political payoffs around *emissions inaction*. Indeed, fossil fuel interests were apparently concerned enough about liability that they signaled a willingness to accept climate regulation if it included immunity from potential liability.²¹²

205. See, e.g., Adler, *supra* note 140, at 247–48 (“Global climate change is anything but a local or regional problem. To the contrary, global climate change is just that—a *global* environmental concern. As a consequence, the traditional arguments for allowing state and local governments a relatively free hand to protect their own backyards may not apply with equivalent force. Under principles of subsidiarity, the global nature of climate change would counsel greater centralization of policy decisions into national, if not international, hands, and *less* authority for state and local governments.”); Jonathan B. Wiener, *Think Globally, Act Globally: The Limits of Local Climate Policies*, 155 U. PA. L. REV. 1961 (2007) (explaining why national climate policies are preferable to state or local policies).

206. Lesley Clark, *New Jersey Invokes Superstorm Sandy Wreckage in New Climate Lawsuit*, SCI. AM. (Oct. 19, 2022), <https://www.scientificamerican.com/article/new-jersey-invokes-superstorm-sandy-wreckage-in-new-climate-lawsuit/>. For criticism of liability efforts as mere showmanship, see also Adler, *supra* note 140, at 249 (“In the context of public nuisance suits, it is reasonable to fear that state officials who file such suits get the political benefits of appearing to take action against climate change, without having to bear the costs of imposing economic burdens on in-state firms.”).

207. Leah Aronowsky, *The Limits of Climate Change Litigation*, N.Y. REV. (Nov. 3, 2021), <https://www.nybooks.com/online/2021/11/03/the-limits-of-climate-change-litigation/>.

208. See generally *City of New York v. Chevron Corp.*, 993 F.3d 81 (2d Cir. 2021).

209. Moreover, even if there were a liability finding, it is likely that major emitters could shed most liability through corporate structuring. See, e.g., Hester, *supra* note 142.

210. See Zasloff, *supra* note 175 (arguing that successful climate nuisance claims against fossil fuel companies could result in the imposition of a de facto carbon tax).

211. See Farber, *supra* note 135, at 1649 (“Realistically, the greatest function of litigation may be to prod legislative action.”).

212. See, e.g., Drugmand, *supra* note 138 (reporting on Democratic legislators’ rejection of proposals for legal immunity for climate liability); Raskin Press Release, *supra* note 138; Irfan, *supra* note 138.

This suggests that pursuing liability could not only secure compensation funds and emission reduction incentives but also serve as negotiating leverage regarding *emission regulation* policy.

These prospects make a case for renewing *liability pursuing* strategies. For all their limitations, they represent a policy approach that is not politically strangled and that holds potential to break gridlock over emission reduction policies.

CONCLUSION

In its report, *Climate Policy in 2023 and Beyond*, the U.S. Clean Air Task Force concluded that in the current political climate, “Congress can and must identify and take advantage of opportunities for bipartisan agreement on climate and clean energy legislation.”²¹³ After examining the structural dynamics of U.S. climate policy across federal, state, and local levels, this Article suggests that those bipartisan opportunities are likely limited when it comes to *emission regulation* policy, but it also identifies some other policy approaches, formerly thought to be second-best, that may be fruitful despite the nation’s political division.

While the pathway of *emission regulation* has limited potential absent a shift in political payoffs, *emission reduction subsidy* policies have a greater political feasibility and practical upside. *Adaptation* policies are also likely to remain disparate and reflect political divisions based on state and local priorities, but there is room for federal policies to enhance their coordination efforts to better match state and local policy choices. Finally, *liability policies* represent an uncertain but potentially worthwhile avenue. Despite criticisms of litigation as an approach to climate policy, liability policies may have the potential to break some of the gridlock surrounding emission regulation.

213. *Climate Policy in 2023 and Beyond*, *supra* note 13.