



2019

From Paris to Pittsburgh: U.S. State and Local Leadership in an Era of Trump

Vicki Arroyo

Georgetown University Law Center, vaa@georgetown.edu

This paper can be downloaded free of charge from:
<https://scholarship.law.georgetown.edu/facpub/2188>
<https://ssrn.com/abstract=3431317>

Georgetown Environmental Law Review, Vol. 31, Issue 3, 433.

This open-access article is brought to you by the Georgetown Law Library. Posted with permission of the author.
Follow this and additional works at: <https://scholarship.law.georgetown.edu/facpub>



Part of the [Environmental Law Commons](#), and the [State and Local Government Law Commons](#)

ARTICLES

From Paris to Pittsburgh: U.S. State and Local Leadership in an Era of Trump

VICKI ARROYO*

ABSTRACT

States and cities have long been leaders on clean energy and climate policy. Their work has informed development of federal policies including motor vehicle standards and the Clean Power Plan. With the election of President Trump and the increasingly severe impacts of climate change, subnational leadership has become even more important and urgent. In response, many states and cities have pledged to enact new policies to mitigate the effects of climate change and help communities adapt. This Article focuses on recent developments in subnational leadership on both climate mitigation and adaptation to demonstrate the breadth and depth of engagement by leading states and cities. It provides just some examples that illustrate how, despite the Trump Administration's best efforts to dismantle federal environmental policies, many states and cities are fighting federal rollbacks and moving forward with their own policies to address climate change, promote a clean energy economy, and prepare for the consequences of a changing climate. Taken together, these efforts are important in keeping the United States within reach of the Paris Agreement targets. However, broader participation and meaningful federal action will be necessary to meet international commitments and avoid the most catastrophic consequences of climate change.

TABLE OF CONTENTS

Introduction	434
I. Coalitions of the Willing Take the Lead	435
II. Pushing Back on Trump Rollbacks of Federal Carbon Policies	437
III. State and Regional Leadership on Climate and Clean Energy	438

* Executive Director, Georgetown Climate Center; Professor from Practice and Assistant Dean for Centers and Institutes, Georgetown University Law Center (Email: vaa@georgetown.edu). © 2019, Vicki Arroyo. The author is grateful to Annie Bennett and Katherine McCormick for their research and editorial assistance as well as to Thien Chau of GELR.

IV. Adaptation and Planning	447
V. Local Leadership	451
Conclusion	454

INTRODUCTION

From his earliest days in office, Donald Trump and his Administration have worked to unravel the climate policies and programs put in place under President Obama. Whether it is rolling back regulations or announcing his intention to withdraw from the Paris Climate Agreement, Trump’s controversial attacks on policies that mitigate and adapt to climate change have unleashed a rapid and strong response across the United States (“U.S.”) and around the world. This Article focuses on subnational government leadership—leadership that pre-dates this Administration but has grown more important, vocal, and urgent during the Trump era.

Subnational climate action began in earnest in the early days of the George W. Bush Administration when governors and state legislators began to fill the gap in climate action after the U.S. pulled out of Kyoto Protocol negotiations.¹ Since then, efforts such as the bipartisan Regional Greenhouse Gas Initiative (“RGGI”); California’s vehicle and fuels standards and cap-and-trade program; Colorado’s Clean Air Clean Jobs Act; and other greenhouse gas (“GHG”) reduction policies have helped demonstrate that climate action is not only possible, it is consistent with economic growth and opportunity. Moreover, shifts in electricity generation, catalyzed in part by renewable portfolio standards (“RPS”) in a majority of states, and innovation in electric vehicle technologies have led to more widespread leadership on clean energy innovation and GHG reduction.

Part I of this Article provides a discussion of the various alliances of states, businesses, government officials, and more that have come together to pledge adherence to the Paris Agreement and take steps to combat climate change and its effects. Part II describes the specific responses of governors, attorneys general, and other government officials to the Trump Administration’s rollbacks of federal GHG regulations. Part III details the bipartisan efforts of several state leaders to advance clean energy and climate policies through implementing renewable portfolio standards, participating in regional programs such as the Transportation and Climate Initiative, and providing incentives for adopting new technology such as electric vehicles. While the efforts to combat climate change and shift to cleaner energy alternatives are essential, states and communities across the country are already experiencing climate change impacts. Part IV discusses the various policies states have implemented to adapt and prepare for the effects of climate

1. See JOSEPH E. ALDY ET AL., BEYOND KYOTO: ADVANCING THE INTERNATIONAL EFFORT AGAINST CLIMATE CHANGE, PEW CTR. (Dec. 2003) for a concise summary of climate developments after the U.S. pulled out of the Kyoto Protocol Negotiations.

change. Part V takes a closer look at local action to reduce emissions and prepare for rising sea levels, increased flooding, and more frequent storms. Indeed, with increasingly severe climate-related impacts being observed, states and cities on the front lines are preparing for a new normal.

This Article describes just some of the many subnational activities contributing to meaningful climate action on both reducing greenhouse gas emissions and building resilience to climate change impacts despite the lack of federal leadership. While these activities are essential, they alone are not sufficient to achieve the significant reductions required at a national (and international) level to avoid the most serious climate impacts.

I. COALITIONS OF THE WILLING TAKE THE LEAD

Before Trump announced a planned withdrawal from the Paris Climate Agreement, a bipartisan group of state governors weighed in to urge that the U.S. remain in the Agreement.² Upon Trump's announcement in June 2017 of U.S. intent to withdraw from the agreement, Governors Jay Inslee of Washington, Andrew Cuomo of New York, and Jerry Brown of California formed the U.S. Climate Alliance ("USCA"), declaring an intent to honor the U.S.'s Paris Agreement commitments and quickly expand that coalition.³ As of the time of this publication, twenty-three U.S. governors have joined the USCA.⁴ Upon their swearing in, Governors Janet Mills (Maine), Gretchen Whitmer (Michigan), Michelle Lujan Grisham (New Mexico), J.B. Pritzker (Illinois), and Steve Sisolak (Nevada) added their states to the growing number of USCA members pledging to meet the Paris targets within their states.⁵ This bipartisan coalition of states and territories represents over 51% of the U.S. population and nearly \$11 trillion of the U.S.'s \$19.3 trillion gross domestic product ("GDP"). If it were a country, the Alliance would be the third largest economy in the world.⁶

2. Press Release, *12 Governors Urge Trump to Stay in Paris Agreement, Keep U.S. Commitments*, GEO. CLIMATE CTR. (May 3, 2017), <https://www.georgetownclimate.org/articles/12-governors-urge-trump-to-stay-in-paris-agreement-keep-u-s-commitments.html>; see also *States React to Trump's Decision to Abandon Paris Climate Agreement*, GEO. CLIMATE CTR. (June 1, 2017), <http://www.georgetownclimate.org/articles/states-react-to-trump-s-decision-to-abandon-paris-climate-agreement.html>.

3. Press Release, *New York Governor Cuomo, California Governor Brown, and Washington Governor Inslee Announce Formation of United States Climate Alliance*, GOVERNOR.NY.GOV (June 1, 2017), <https://www.governor.ny.gov/news/new-york-governor-cuomo-california-governor-brown-and-washington-governor-inslee-announce>.

4. *Governors*, U.S. CLIMATE ALLIANCE, <https://www.usclimatealliance.org/governors-1/> (last visited Mar. 3, 2019).

5. *Id.*

6. Press Release, *Maine Governor Janet Mills Joins U.S. Climate Alliance*, U.S. CLIMATE ALLIANCE (Feb. 28, 2019), <https://www.usclimatealliance.org/publications/2019/2/28/maine-governor-janet-mills-joins-us-climate-alliance>.

On its first anniversary in June 2018, USCA announced its continued progress in meeting the Paris Agreement Emissions Targets,⁷ cutting short-lived climate pollutants from the power sector, and financing cleaner, more efficient renewable energy sources.⁸ In September 2018, USCA released its annual report, declaring that, “[b]ased on climate and clean energy policies already in place across Alliance states, we are projected to have a combined 18–25% reduction in GHG emissions below 2005 levels by 2025.”⁹

On June 5, 2017, just four days after Trump’s Paris Agreement announcement, an even broader cross-sectoral coalition of businesses, investors, cities, states, universities and other organizations formed the “We Are Still In” coalition, pledging a shared commitment to helping the U.S. meet the Paris Agreement goals.¹⁰ Members include over 2,700 signatories, consisting of 2,121 business leaders, 281 cities and counties, 334 colleges and universities, and 10 states.¹¹ These leaders represent over 154 million people across all 50 states, totaling almost \$10 trillion in GDP.¹²

These new alliances built on previous work by state and regional subnational governments around the world, such as the Under2 Coalition, which has pledged to do their part to limit global temperature rise to 1.5 degrees Celsius and has members stretching across 200 governments—from 43 countries and 6 continents.¹³ That number represents 1.3 billion people, \$30 trillion GDP in US dollars, and almost 40% of global GDP.¹⁴

In addition, the Powering Past Coal Alliance has been an active coalition of subnational governments and countries, and it recently gained several new members at the Global Climate Action Summit (“GCAS”) in California in September 2018—including Hawaii, Minnesota, and New York State, as well as several cities.¹⁵ Members of the Powering Past Coal Alliance agree that phasing out coal use is one of the most important steps governments can take to tackle climate

7. Press Release, *Seventeen Governors in U.S. Climate Alliance Mark One-Year Anniversary with New Wave of Climate Actions*, U.S. CLIMATE ALLIANCE (June 1, 2018), <https://www.usclimatealliance.org/publications/oneyearanniversary>.

8. Dean Scott, *States to Target Climate Pollutants, in Contrast with Paris Exit*, BLOOMBERG ENV’T (June 1, 2018, 3:34 PM), <https://news.bloombergenvironment.com/environment-and-energy/states-to-target-climate-pollutants-in-contrast-with-paris-exit-1>.

9. FIGHTING FOR OUR FUTURE: GROWING OUR ECONOMIES AND PROTECTING OUR COMMUNITIES THROUGH CLIMATE LEADERSHIP, U.S. CLIMATE ALLIANCE (Sept. 11, 2018), available at https://static1.squarespace.com/static/5a4cfbfe18b27d4da21c9361/t/5b9bda1d1ae6cf830c7f80a7/1536940617096/USCA_2018+Annual+Report_20180911-FINAL.pdf.

10. *About*, WE ARE STILL IN, <https://www.wearestillin.com/about> (last visited Mar. 3, 2019).

11. *Who’s In*, WE ARE STILL IN, <https://www.wearestillin.com/signatories> (last visited Mar. 3, 2019).

12. *Home*, WE ARE STILL IN, <https://www.wearestillin.com/> (last visited Mar. 3, 2019).

13. *About*, UNDER2 COALITION, <https://www.under2coalition.org/about> (last visited Mar. 3, 2019).

14. *Id.*

15. Press Release, *Powering Past Coal Alliance Announces 10 New Members at Global Climate Action Summit*, GLOBAL CLIMATE ACTION SUMMIT (Sept. 14, 2018), <https://www.globalclimateactions summit.org/powering-past-coal-alliance/>.

change and meet their commitments to keep global temperature increase well below 2 degrees Celsius, and to pursue efforts to limit it to 1.5 degrees Celsius.¹⁶ As of September 14, 2018, members number seventy-four, including twenty-nine national and seventeen subnational governments and twenty-eight businesses.¹⁷

While these actions are laudable, analyses released during the GCAS show that cities, states, businesses, and market forces are poised to trim carbon emissions to 17% below 2005 levels by 2025—falling short of the Paris Agreement goal.¹⁸

II. PUSHING BACK ON TRUMP ROLLEBACKS OF FEDERAL CARBON POLICIES

In addition to launching and expanding coalitions to demonstrate leadership in their own jurisdictions, states are working together on a bipartisan basis to push back on the Trump Administration’s projected rollbacks. For example, regulators from twelve states wrote to the U.S. Environmental Protection Agency (“EPA”) in support of the Clean Power Plan in 2017, and numerous governors and state officials voiced opposition when the EPA announced a proposal to repeal the Plan.¹⁹ In February 2018, 236 mayors from 47 states submitted comments on the proposed repeal of the Clean Power Plan while urging then-administrator Scott Pruitt to retain the rule.²⁰ In August 2018, immediately after the replacement rule was proposed, senior officials from fourteen states—representing 43% of GDP and upwards of 123 million people—wrote EPA in opposition to the replacement.²¹ Simultaneously, seven governors also issued statements opposing the Administration’s proposal to replace the Clean Power Plan.²²

In August 2018, sixteen attorneys general requested an extension for comment period and additional public hearings regarding Trump’s rollback of fuel economy standards for vehicles.²³ Several statements were written by governors, as

16. *Id.*

17. *Id.*

18. FULFILLING AMERICA’S PLEDGE, HOW STATES, CITIES, AND BUSINESSES ARE LEADING THE UNITED STATES TO A LOW-CARBON FUTURE, BLOOMBERG PHILANTHROPIES at 9 (2018), available at <https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge-2018.pdf>.

19. *States Urge Trump Administration to Move Forward with Clean Power Plan*, GEO. CLIMATE CTR. (July 17, 2017), <https://www.georgetownclimate.org/articles/states-urge-trump-administration-to-move-forward-with-clean-power-plan.html>; *State Reactions to Trump Repealing the Clean Power Plan*, GEO. CLIMATE CTR. (Oct. 10, 2017), <https://www.georgetownclimate.org/articles/state-reactions-to-trump-repealing-the-clean-power-plan.html>.

20. Sabrina Shankman, *236 Mayors Urge EPA Not to Repeal U.S. Clean Power Plan*, INSIDE CLIMATE NEWS (Feb. 21, 2018).

21. Press Release, *Agency Leaders For 14 States Oppose Trump Administration’s Clean Power Plan Replacement*, GEO. CLIMATE CTR. (Aug. 21, 2018).

22. Press Release, *State Officials Oppose the Trump Administration’s Proposal to Replace the Clean Power Plan*, GEO. CLIMATE CTR. (Aug. 22, 2018), <https://www.georgetownclimate.org/articles/state-officials-oppose-the-trump-administration-s-proposal-to-replace-the-clean-power-plan.html>.

23. Xavier Becerra, et al., *Request for Extension of Comment Period and Additional Public Hearings Regarding Joint Proposed Rule to Roll Back Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards for Model* (Aug. 27, 2018), available at <https://oag.ca.gov/system/files/attachments/press-docs/states-ltr-re-extension-cars-comment-period-8-27-18-2.pdf>. For information on

well as other state officials, opposing the proposed rule.²⁴ Attorneys general wrote acting EPA Administrator Wheeler for another 60-day extension for comment, “consistent with past practice for matters of similar importance and complexity, including EPA’s 2014 proposal to adopt the Clean Power Plan and its 2017 proposal to repeal the Clean Power Plan.”²⁵ Similarly, states and surrogates asked for more time to comment on the Clean Power Plan replacement, or the Affordable Clean Energy Rule (“ACE”) rule.²⁶ The EPA responded by providing only one extra day. Before the end of the comment period, fourteen states joined together to submit a more robust set of formal comments with support from Georgetown Climate Center in opposition to the proposal.²⁷ These comments focused on the backward-looking approach of ACE and “voiced concern that EPA’s weak regulatory approach provides no minimum standards for states, has no definitive dates for compliance, and will facilitate a ‘race-to-the-bottom.’”²⁸ These states also noted that the Clean Power Plan built on successful state and regional programs, some of which are highlighted below.

III. STATE AND REGIONAL LEADERSHIP ON CLIMATE AND CLEAN ENERGY

Launched in 2009 on a bipartisan basis, the Regional Greenhouse Gas Initiative (“RGGI”) became the first multi-state cap-and-trade program in the U.S. for reducing carbon dioxide (CO₂) emissions from the power sector.²⁹ Participating states (a majority led by Republican governors) announced in August 2017 an agreement on a draft strategy to extend the program through 2030, including a 30% tightening of the emissions cap from 2020 to 2030, which would reduce the region’s power-sector emissions by 65% below 2009 levels.³⁰

Trump’s rollback of fuel economy standards for vehicles, *see The Safer Affordable Fuel Efficient (SAFE) Vehicles Proposed Rule for Model Years 2021–2026*, EPA, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-proposed> (last visited Mar. 3, 2019).

24. U.S. EPA and NHTSA *Propose to Freeze GHG Emissions and Fuel Economy Standards for Cars and Trucks*, GEO. CLIMATE CTR. (Aug. 2, 2018), <https://www.georgetownclimate.org/articles/u-s-epa-and-nhtsa-propose-to-freeze-ghg-emissions-and-fuel-economy-standards-for-cars-and-trucks.html>.

25. Xavier Becerra, et al., *supra* note 23, at 1.

26. Jessica Wentz, *6 Important Points About the “Affordable Clean Energy Rule,”* EARTH INST.: COLUM. U. (Aug. 22, 2018), <https://blogs.ei.columbia.edu/2018/08/22/affordable-clean-energy-rule/>. For the rule, *see* Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program, 83 Fed. Reg. 44,746 (Aug. 31, 2018).

27. Press Release, *14 States Submit Joint Comments Opposing Clean Power Plan Replacement*, GEO. CLIMATE CTR. (Oct. 31, 2018), <https://www.georgetownclimate.org/articles/10-31-2018-ace-joint-state-comments.html>.

28. *Id.*

29. *Elements of RGGI*, REGIONAL GREENHOUSE GAS INITIATIVE (2019), <https://www.rggi.org/program-overview-and-design/elements>.

30. Press Release, *Regional States Announce Proposed Program Changes: Additional 30 percent Emissions Cap Decline by 2030*, RGGI, INC. (Aug. 23, 2017), available at https://www.rggi.org/sites/default/files/Uploads/Program-Review/8-23-2017/Announcement_Proposed_Program_Changes.pdf.

In 2016, Terry McAuliffe, then-Governor of Virginia, signed an executive directive instructing the Virginia Department of Environmental Quality to develop and issue regulations to reduce CO₂ emissions from Virginia power plants, including regulation that is “trading-ready” and able to link to RGGI.³¹ The proposed program would impose a carbon cap of 33–34 million short tons starting in 2020, declining 3% annually for 10 years.³² In April 2018, Governor Ralph Northam vetoed a bill that would have limited the cap-and-trade program and has been actively working with his staff to take the program forward.³³ At the GCAS, Virginia also joined the regional Transportation and Climate Initiative—now thirteen members strong.³⁴

New Jersey Governor Phil Murphy directed state agencies to begin the rule-making process for New Jersey to rejoin RGGI.³⁵ The January 29th Executive Order, EO 7, directs the Department of Environmental Protection Commissioner and Board of Public Utilities President to immediately begin negotiations with RGGI states to determine how to best reenter the program, and discussions between New Jersey officials and RGGI states are underway.³⁶

In addition, Governor Murphy signed an executive order requiring that the state develop 3,500 megawatts of offshore wind power by 2030. Executive Order 8 directs the Board of Public Utilities and the New Jersey Department of Environmental Protection to develop an Offshore Wind Strategic Plan to focus on achieving scale to reduce costs, produce job growth, and encourage workforce development.³⁷ New Jersey also passed two major energy bills signed by Governor Murphy.³⁸ Assembly Bill 3723 sets an RPS requiring that power companies generate 35% of their power by using renewable energy by 2025 and 50% by 2030.³⁹ The state also approved a Zero Emission Credit program that provides

31. Va. Exec. Order No. 57 (2016), available at <https://www.naturalresources.virginia.gov/media/governorviriniagov/governor-of-virginia/pdf/eo/eo-57-development-of-carbon-reduction-strategies-for-electric-power-generation-facilities.pdf>.

32. *Id.* at art. 5; Robert Walton, *Virginia Advances Stricter Carbon Emissions Cap Rule*, UTILITY DIVE (Oct. 31, 2018), <https://www.utilitydive.com/news/virginia-advances-stricter-carbon-emissions-cap-rule/541013/>.

33. Capital News Service, *Gov. Northam Vetoes 7 Bills; 1 Would Block Higher Wages*, WTRV (Apr. 9, 2018, 6:35 PM), <https://wtrv.com/2018/04/09/gov-northam-vetoes-7-bills-1-would-block-higher-wages/>.

34. *About Us*, Transportation & Climate Initiative, <https://www.transportationandclimate.org/content/about-us> (last visited Mar. 3, 2019).

35. *Governor Murphy Signs Executive Order Directing New Jersey to Reenter the Regional Greenhouse Gas Initiative*, NJ.GOV (Jan. 29, 2018), https://www.nj.gov/governor/news/news/562018/approved/20180129a_eo.shtml.

36. N.J. Exec. Order No. 7 (Jan. 29, 2018), <https://www.nj.gov/infobank/eo/056murphy/pdf/EO-7.pdf>.

37. N.J. Exec. Order No. 8 (Jan. 31, 2018), <https://nj.gov/infobank/eo/056murphy/pdf/EO-8.pdf>.

38. Nick Corasaniti & Brad Plumer, *New Jersey Takes a Big Step Toward Renewable Energy (and Nuclear Gets Help, for Now)*, N.Y. TIMES (Apr. 12, 2018), <https://www.nytimes.com/2018/04/12/nyregion/new-jersey-renewable-energy.html>.

39. *Id.*

\$300 million annually to the state's remaining nuclear power plants, which provide 40% of the state's electricity.⁴⁰

New York announced a number of new clean energy initiatives in 2017 and 2018. In December 2017, New York enacted a law directing its State Energy Research and Development Authority ("NYSERDA") and its Department of Public Service to develop a package of energy storage policies.⁴¹ In January 2018, New York Governor Cuomo announced that NYSERDA will solicit proposals for at least 800 megawatts (MW) of offshore wind power in 2018 and 2019.⁴² This is part of the Governor's plan to achieve 2,400 MW of offshore wind by 2030.⁴³ Governor Cuomo also announced that the state will invest \$200 million in energy storage, in support of its goal of creating 1,500 MW of storage by 2025, and will provide free community solar to 10,000 low-income residents.⁴⁴ Cuomo also directed the Department of Environmental Conservation to develop policies to end the use of coal in the state by 2020.⁴⁵

In March 2018, Governor Cuomo announced that his state would commit \$1.4 billion to 26 renewable projects.⁴⁶ The proposed projects include twenty-two solar farms, three wind farms, and one hydroelectric project.⁴⁷ In total, the projects will add 1,380 MW of renewable energy to New York's generation portfolio.⁴⁸ In April 2018, Governor Cuomo announced that the state would increase its current 2025 energy efficiency goal by 50%.⁴⁹ New York will provide \$36 million in incentives for localities, homebuilders, residents and business to make efficiency investments.⁵⁰

40. *Id.*

41. Peter Maloney, *New York energy storage target official after Gov. Cuomo signs bill*, UTILITY DIVE (Dec. 1, 2017), <https://www.utilitydive.com/news/new-york-energy-storage-target-official-after-gov-cuomo-signs-bill/512056/>.

42. Press Release, *Governor Cuomo Releases First-in-the-Nation Offshore Wind Master Plan to Guide New York's Development of Renewable Energy*, NYSERDA (Jan. 29, 2018), <https://www.nyserda.ny.gov/About/Newsroom/2018-Announcements/2018-01-29-Governor-Cuomo-Releases-First-in-the-Nation-Offshore-Wind-Master-Plan>.

43. Kit Kennedy, *New York State Plans 2400 of Offshore Wind by 2030*, NRDC (Jan. 10, 2019), <https://www.nrdc.org/experts/kit-kennedy/new-york-state-plans-2400-mw-offshore-wind-2030>.

44. Press Release, *supra* note 42.

45. Press Release, *Governor Cuomo Announces Proposed Regulations to Make New York Power Plants Coal-Free by 2020*, NY.GOV (May 17, 2018), <https://www.governor.ny.gov/news/governor-cuomo-announces-proposed-regulations-make-new-york-power-plants-coal-free-2020>.

46. Megan Geuss, *New York commits \$1.4 billion to renewable energy projects*, ARS TECHNICA (Mar. 12, 2018), <https://arstechnica.com/tech-policy/2018/03/new-york-commits-1-4-billion-to-renewable-energy-projects/>.

47. *Id.*

48. *Id.*

49. Associated Press, *New York to Get New Energy Efficiency Standards*, U.S. NEWS (Apr. 20, 2018), <https://www.usnews.com/news/best-states/new-york/articles/2018-04-20/new-york-to-get-new-energy-efficiency-standards>.

50. *Id.*

The Massachusetts Department of Environmental Protection issued a suite of six regulations strengthening the state's reductions of GHGs.⁵¹ The regulations increased required reductions of short-lived climate pollutants,⁵² established a Clean Energy Standard,⁵³ set an annually-declining carbon emission standard for fossil-fuel power plants,⁵⁴ created enforceable carbon emissions standards for the state's passenger vehicle and mobile equipment fleet, and required reporting on statewide surface transportation carbon emissions.⁵⁵ The Clean Energy Standard requires utilities and power suppliers to provide at least 16% of electricity from clean energy sources (including hydro and nuclear power). The standard increases 2% annually, up to 80% in 2050.⁵⁶ The regulations are required by state law in order to meet legislatively mandated emissions reductions of 40% of 1990 levels by 2020 and 80% by 2050.⁵⁷ Additionally, Massachusetts announced that it selected an 800 MW project proposal as its first offshore wind development—the first accepted proposal resulting from the legislation signed by Governor Charlie Baker in 2016 that directed the state to hold competitive solicitations in order to reach 1,600 MW of offshore wind capacity.⁵⁸

Rhode Island Governor Gina Raimondo made a parallel announcement that the state selected a 400 MW offshore wind project in a competitive solicitation that was held jointly with Massachusetts.⁵⁹ Rhode Island also adopted several bills bolstering the state's clean energy programs.⁶⁰ The bills extend the existing renewable energy growth programs for ten years, streamline the permitting process for solar power and for connecting renewable generation to the grid, allow for renewable energy development on up to 20% of protected farmland and open space, and make schools, hospitals, and some non-profits eligible to participate in the state's virtual-net-metering program.⁶¹ Additionally, Rhode Island state agencies completed phase one of the Power Sector Transformation initiative, which aims to design a new regulatory framework for the electric power sector to help

51. *Reducing GHG Emissions Under Section 3(d) of the Global Warming Solutions Act*, MASS.GOV, <https://www.mass.gov/guides/reducing-ghg-emissions-under-section-3d-of-the-global-warming-solutions-act#Final%20Regulations> (last visited Mar. 3, 2019).

52. 310 C.M.R. 7.72, 7.73 (2017).

53. 310 C.M.R. 7.75.

54. 310 C.M.R. 7.74.

55. 310 C.M.R. 60.05, 60.06.

56. 310 C.M.R. 7.75.

57. *Leading by Example Initiatives*, MASS.GOV, <https://www.mass.gov/service-details/leading-by-example-initiatives> (last visited Mar. 8, 2019).

58. Saqib Rahim, *Vineyard Wind would put 100 turbines off Mass. coast*, ENERGYWIRE (May 24, 2018), <https://www.eenews.net/energywire/stories/1060082537>.

59. *Id.*

60. Press Release, *Raimondo Signs Bills Supporting Clean Energy Growth*, RI.GOV (August 9, 2017), <https://www.ri.gov/press/view/31127>.

61. *Id.*

enable vehicle electrification, distributed generation, and renewable energy integration.⁶²

Maryland revised its RPS to increase the state's electricity from qualified sources of renewable energy from 20% by 2022 to 25% by 2020.⁶³ Also, the Maryland Public Service Commission launched Public Conference 44 to review electric distribution systems and address rate-related issues affecting deployment of distributed energy resources and electric vehicles.⁶⁴

California has of course long been a leader in climate action. In 2017, Governor Jerry Brown signed legislation extending the state's cap-and-trade program.⁶⁵ AB 398 extends California's economy-wide cap-and-trade program, which requires companies to buy permits to release GHG emissions, to 2030.⁶⁶ In 2018, Gov. Brown signed SB 100 committing the state to 100% clean energy by 2045, making California "the most significant political jurisdiction in the world to take that step, by a wide margin."⁶⁷ To accommodate this target, as of early August 2018, California's three largest investor-owned electric utilities have procured or are seeking approval to procure almost 1,500 MW of energy storage.⁶⁸ California's climate and energy policies have spurred huge private and public investments in clean energy. As of 2018, the state led the country in solar jobs, with over 76,000 employees,⁶⁹ and has tripled its wind-energy capacity in recent years by creating 12 new wind manufacturing facilities—producing \$12.6 billion in investments through 2017.⁷⁰

In April 2018, Hawaii's legislature passed a law to reform utility regulation in the state, moving toward a performance-based model.⁷¹ The Ratepayer Protection Act (SB 2939) directs the Public Utility Commission to design incentives and

62. *Power Sector Transformation Initiative*, R.I. PUB. UTILITIES COMM'N & DIV. OF PUB. UTILITIES (Nov. 2017), http://www.ripuc.ri.gov/utilityinfo/electric/PST_home.html.

63. *Maryland increases renewable portfolio standard target to 25% by 2020*, U.S. ENERGY INFO. ADMIN.: TODAY IN ENERGY (March 24, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=30492>.

64. *Transforming Maryland's Electric Grid (PC44)*, MD. PUB. SERV. COMM'N, <https://www.psc.state.md.us/transforming-marylands-electric-grid-pc44/> (last visited Mar. 3, 2019).

65. Chris Megerian, *Gov. Jerry Brown Signs Climate Change Legislation to Extend California's Cap-and-Trade Program*, L.A. TIMES (July 25, 2017), <https://www.latimes.com/politics/essential/la-pol-ca-essential-politics-updates-jerry-brown-climate-change-1500992377-htlstory.html>.

66. *Id.*

67. David Roberts, *California Just Adopted Its Boldest Energy Target Yet: 100% Clean Electricity*, VOX (Sept. 10, 2018), <https://www.vox.com/energy-and-environment/2018/8/31/17799094/california-100-percent-clean-energy-target-brown-de-leon>.

68. *Energy Storage*, CAL. ENERGY COMM'N (Aug. 28, 2018), https://www.energy.ca.gov/renewables/tracking_progress/documents/energy_storage.pdf.

69. *Appendix A: Solar Jobs by State*, THE SOLAR FOUND. (2018), <http://www.thesolarfoundation.org/wp-content/uploads/2019/02/Appendix-A.pdf>.

70. Lauren Navarro, *100% by 2045: California Evaluates One of the Nation's Biggest Clean Energy Goals*, ENVTL. DEF. FUND (June 27, 2018), <http://blogs.edf.org/energyexchange/2018/06/27/100-by-2045-california-evaluates-one-of-the-nations-biggest-clean-energy-goals/>.

71. Julia Pyper, *Hawaii Gov Signs Performance-Based Ratemaking Into Law*, GREENTECH MEDIA (Apr. 24, 2018), <https://www.greentechmedia.com/articles/read/performance-based-ratemaking-becomes-law-in-hawaii#gs.97kAvKxQ>.

penalties that link utility revenue to several customer-focused performance metrics by 2020. Hawaii also enacted legislation that establishes a Hawaii Climate Change Mitigation and Adaptation Commission to lead and expand the state's efforts to reduce GHG emissions and improve resiliency in line with goals set out in the Paris Agreement, and it passed a law to become carbon neutral by 2045.⁷²

In 2017, Florida Governor Rick Scott signed Senate Bill 90—implementing the Amendment 4 ballot initiative that passed in 2016 with 73% approval⁷³—that exempts tangible personal property tax on solar or other renewable energy source devices installed on commercial and industrial property.⁷⁴ Ultimately, 80% of the assessed value of a renewable energy source device installed on real property on or after January 1, 2018 will be exempt from ad valorem taxation.⁷⁵

The Oregon Department of Environmental Quality released its final report on considerations for designing a cap-and-trade program to reduce GHG emissions in February 2018.⁷⁶ The report found that a cap-and-trade program could achieve emissions reductions with a limited economic effect.⁷⁷ Lawmakers in Oregon now have legislation under consideration that would create a cap-and-trade program that could be linked with California's program.⁷⁸

In Pennsylvania, newly re-elected Governor Tom Wolf recently signed Executive Order 2019-01, which established the first ever statewide goal to reduce carbon emissions in Pennsylvania.⁷⁹ The state is aiming to achieve a 26% reduction of emissions by 2025, with the ultimate goal of reducing carbon emissions by 80% by 2050 from 2005 levels.⁸⁰ To achieve this goal, the order created the GreenGov Council, which will work with agencies to promote sustainable, green practices throughout the government.⁸¹

In Connecticut, lawmakers passed a sweeping energy bill in May 2018, creating a renewable energy portfolio increase of 40% by 2030.⁸² The bill, signed into

72. S.B. 559, H.D. 2, S.D. 1, 29th Leg., Reg. Sess. (2017); *see also* Adele Peters, *Hawaii just passed a law to make the state carbon neutral by 2045*, FAST COMPANY (June 4, 2018), <https://www.fastcompany.com/40580669/hawaii-just-passed-a-law-to-make-the-state-carbon-neutral-by-2045>.

73. *Florida Voters Pass Amendment 4; Tax Breaks for Solar Energy*, CBSMIAMI (August 30, 2016, 8:45 PM), <https://miami.cbslocal.com/2016/08/30/amendment-4-would-make-solar-cheaper-for-property-owners-2/>.

74. Fla. Sen. Bill 90 (2017), *available at* <https://www.flsenate.gov/Session/Bill/2017/00090>.

75. *Id.*

76. CONSIDERATIONS FOR DESIGNING A CAP-AND-TRADE PROGRAM IN OREGON, OR. DEPT. OF ENVTL. QUAL. (February 14, 2017), *available at* <https://www.oregon.gov/deq/FilterDocs/ghgmarketstudy.pdf>.

77. *See id.* at 30–42.

78. H.B. 2020, 80th Leg. Assemb., Reg. Sess. (Or. 2019).

79. Penn. Exec. Order 2019-01 (Jan. 8, 2018), *available at* <https://www.oa.pa.gov/Policies/eo/Documents/2019-01.pdf>; Press Release, *Governor Wolf Establishes First Statewide Goal to Reduce Carbon Pollution in Pennsylvania*, GOVERNOR TOM WOLF (Jan. 8, 2019), <https://www.governor.pa.gov/governor-wolf-establishes-first-statewide-goal-reduce-carbon-pollution-pennsylvania/>.

80. *Id.*

81. *Id.*

82. Robert Walton, *Connecticut Lawmakers Pass Sweeping Energy Bill*, UTILITY DIVE (May 10, 2018), <https://www.utilitydive.com/news/connecticut-lawmakers-pass-sweeping-energy-bill/523264/>.

law by Governor Malloy, also creates incentives to develop and use renewables as an energy source and goes toward Connecticut's overall goal of cutting greenhouse gases by 45% by 2030, in comparison to their 2001 levels—the most aggressive in the U.S.⁸³

Illinois approved the Long Term Renewable Resources Procurement Plan in April 2018, charting how utilities are to achieve 25% renewable generation by the year 2025.⁸⁴ The Plan includes the Illinois Solar for All Program, which aims to provide a solar market for low-income households and communities.⁸⁵

In August 2018, Colorado adopted the Colorado Energy Plan, incentivizing increases in renewable production within the state.⁸⁶ Most of the renewable energy is expected to come from wind and solar resources.⁸⁷ Ultimately, the plan is expected to cut carbon emissions by 60%, increase renewable energy sources to 55% of the state's mix by 2026, and save customers about \$213 million by 2026.⁸⁸ A third of Colorado's coal generation is to be retired during this time period as well in order to meet the 60% emissions cut stipulated within the plan.⁸⁹

In Maine, the Legislature unanimously passed Bill LD 1657, "An Act to Update the Allowance Budget for the Regional Greenhouse Gas Initiative," in February 2018. The bill commits the state to RGGI from 2021 to 2030.⁹⁰

At the GCAS in September 2018, several states, including New York, Maryland, and Connecticut, announced their plans to "phase out super-polluting hydrofluorocarbons (HFCs) and replace them with climate-friendlier coolants" in various consumer products.⁹¹ New York regulations, expected this year, will phase out HFCs in new equipment by 2024. Connecticut and Maryland both announced that state agencies would begin developing regulations.⁹²

83. *Id.*; Conn. S.B. No. 9 (2018), available at https://www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?selBillType=Bill&which_year=2018&bill_num=9.

84. Christie Hicks and David Kolata, *Ambitious Plan Solidifies Illinois as Renewable Energy Leader*, ENVTL. DEF. FUND (Apr. 3, 2018), <https://www.edf.org/media/ambitious-plan-solidifies-illinois-renewable-energy-leader>.

85. Jason W. Allen & Larry J. Bonney, *Illinois Approves Long-Term Renewable Plan*, THE NAT'L L. REV. (Apr. 9, 2018), <https://www.natlawreview.com/article/illinois-approves-long-term-renewable-plan>.

86. Judith Kohler, *Colorado Regulators Green-Light Xcel's Plan Boosting Renewables, Cutting Coal*, THE DENVER POST (Aug. 27, 2018), <https://www.denverpost.com/2018/08/27/xcel-plan-boosting-renewables-greenlighted/>.

87. *Id.*

88. *Id.*

89. *Id.*

90. Phelps Turner, *Maine Commits to Cutting Carbon Pollution*, CONSERVATION L. FOUND. (Mar. 3, 2018), <https://www.clf.org/blog/maine-cutting-carbon-pollution/>; Me. LD 1657 (2018), available at <http://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280067066>.

91. Courtney Lindwall, *Tracking Climate Commitments from the Global Climate Action Summit*, NRDC (Sept. 12, 2018), <https://www.nrdc.org/stories/tracking-climate-commitments-global-climate-action-summit>.

92. Phil McKenna, *3 States Announce Plans to Phase Out Climate Super-Pollutants Used in Cooling*, INSIDE CLIMATE NEWS (Sept. 13, 2018), <https://insideclimatenews.org/news/10092018/new-york-ban-hfcs-potent-greenhouse-gas-climate-pollutant-cooling-refrigeration>.

Newly-elected Wisconsin Governor Tony Evers proposed carbon-free electricity by 2050 in his new energy budget, which was released in early 2019.⁹³ In addition, the budget includes \$75 million in funds to facilitate the development of energy conservation projects, one third of which would be allotted to state-owned facilities.⁹⁴ The State Energy Office would also be transformed “into the Office of Sustainability and Clean Energy, which would be overseen by a political appointee and administer a \$4 million clean energy research grant. Evers would transfer the office and five employees from the Public Service Commission to the Department of Administration.”⁹⁵

North Carolina has entered the climate fight as well. In October 2018, Governor Roy Cooper issued Executive Order No. 80, emphasizing the state’s need to combat the effects of climate change.⁹⁶ Calling for the state to grow its clean energy output and capacity, the EO commits North Carolina to reducing its emissions to 40% below 2005 levels by 2025. Additionally, it “calls for an increase in registered, zero-emissions vehicles (‘ZEVs’) in North Carolina to at least 80,000 and a 40% reduction in energy consumption in state-owned buildings.”⁹⁷

Many other states in addition to North Carolina are looking to reduce greenhouse gas emissions through innovative transportation policies that can encourage electric vehicle (“EV”) use and deployment and lower-carbon fuels. For example, in December of 2018, nine states from the mid-Atlantic through New England as well as Washington, D.C. announced that they would be working together on a bipartisan basis to design a regional low-carbon transportation policy proposal, capping carbon emissions and investing the proceeds in low carbon and more resilient transportation infrastructure through the Transportation and Climate Initiative.⁹⁸ Such an approach builds upon the successful RGGI

93. Chris Hubbuch, *Tony Evers Proposes Carbon-Free Electricity by 2050*, WISCONSIN STATE JOURNAL (Mar. 1, 2019), https://madison.com/wsj/news/local/environment/evers-proposes-carbon-free-electricity-by/article_47e58324-d301-537f-adf6-61cddf6760cc.html.

94. *Id.*

95. *Id.*

96. N.C. Exec. Order No. 80 (Oct. 29, 2018), available at <https://files.nc.gov/governor/documents/files/EO80-%20NC%27s%20Commitment%20to%20Address%20Climate%20Change%20%26%20Transition%20to%20a%20Clean%20Energy%20Economy.pdf>.

97. Press Release, *Governor Cooper Commits to Clean Energy Economy for NC to Combat Climate Change, Create Jobs*, GOVERNOR NC (Oct. 29, 2018), <https://governor.nc.gov/news/governor-cooper-commits-clean-energy-economy-nc-combat-climate-change-create-jobs>.

98. *Nine States and D.C. to Design Regional Approach to Cap Greenhouse Gas Pollution from Transportation*, TRANSP. & CLIMATE INITIATIVE (Dec. 18, 2018), <https://www.transportationandclimate.org/nine-states-and-dc-design-regional-approach-cap-greenhouse-gas-pollution-transportation>. Initially launched in 2010, TCI includes a total of twelve states plus Washington, D.C. working together to support a transition to clean transportation alternatives. TCI is facilitated by the Georgetown Climate Center. For more information, see *Home*, TRANSP. & CLIMATE INITIATIVE, <https://www.transportationandclimate.org/> (last visited Mar. 25, 2019).

experience in reducing power sector emissions and investing in clean energy alternatives in this region.

The Public Utilities Commission in California approved \$780 million to fund the acceleration of the electrification of light, medium, and heavy duty transportation in May of 2018.⁹⁹ Colorado, Massachusetts, and Virginia have identified transit bus electrification as a priority for investment with the funding received from the Volkswagen (“VW”) diesel emissions settlement. Rhode Island has already launched early deployments of electric transit buses purchased with VW settlement funding¹⁰⁰ and has prioritized routes that travel through neighborhoods that currently suffer from higher levels of air pollution.¹⁰¹

Washington Governor Jay Inslee announced his Washington Maritime Blue 2050 Initiative in 2017 to create and expand a sustainable ocean industry through the combined use of electric ferries and ships and zero-carbon-emissions port terminals.¹⁰² Washington State plans to use around 45% of its VW settlement money to fund the electrification of public vessels, with a particular focus on ferries, recognizing that in Washington State, “ferries account for more than half of the air pollution generated by harbor vessels.”¹⁰³

In November 2017, Governor Kate Brown signed two executive orders, one of which aims to accelerate the adoption of electric vehicles, whereas the other aims to increase efficiency.¹⁰⁴ Oregon also is seeking to develop a more sustainable source of funding for transportation projects as fuel economy improves and electric vehicle usage increases (thereby decreasing revenues from gas taxes). Oregon completed two pilot programs to test out mileage-based user fees, and following the pilots, launched a permanent voluntary program to charge drivers for road usage.¹⁰⁵

At the end of 2017, Minnesota Governor Mark Dayton signed an executive order that set fifteen-year environmental performance goals for all state agencies.

99. Chloe Looker, *California Regulators Approve \$780 Million to Drive Clean Transportation*, ENVTL. DEF. FUND (May 31, 2018), <https://www.edf.org/media/california-regulators-approve-780-million-drive-clean-transportation>.

100. Press Release, *Raimondo, Congressional Delegation Unveil RIPTA's First Electric Buses*, RI. GOV (Oct. 22, 2018), <https://www.ri.gov/press/view/34479>.

101. *Id.*

102. Tara Lee, *Leading in the Maritime Sector: Washington Launches Maritime Blue 2050 Initiative*, WASH. GOVERNOR JAY INSLEE (Dec. 12, 2017), <https://www.governor.wa.gov/news-media/leading-maritime-sector-washington-launches-maritime-blue-2050-initiative>.

103. The Washington State Plan notes that converting diesel to all-battery electric ferries will significantly reduce diesel and carbon emissions, improve fleet reliability, virtually eliminate engine noise that can harm marine animals, and reduce ferry operating costs by up to 20%. Brett Rude & Mike Boyer, *State of Washington Volkswagen Beneficiary Mitigation Plan*, DEP'T OF ECOLOGY: STATE OF WASH. (Nov. 2018), <https://fortress.wa.gov/ecy/publications/documents/1802023.pdf>.

104. Hillary Borrud, *Kate Brown adopts broad green building mandates and electric vehicle goals*, THE OREGONIAN: OR. LIVE (Nov. 6, 2017), https://www.oregonlive.com/politics/2017/11/kate_brown_adopts_broad_green.html.

105. *About*, OREGO, <http://www.myorego.org/about/> (last visited Feb. 19, 2019).

Particularly, each agency is mandated to cut their gas and diesel use by 30% and their water use by 15%, while 75% of any waste produced must be compostable or recyclable.¹⁰⁶ Additionally, the transit agency recently announced a 2040 full electrification goal.¹⁰⁷ The new Minnesota Governor, Tim Walz, also announced in March 2019 a proposal to power the electricity sector using 100% carbon-free sources by 2050.¹⁰⁸

At the first meeting of Nevada Governor Sandoval's Ahead of the Curve: Innovation Governors initiative, Colorado Governor Hickenlooper announced that seven states will work together to create a Regional Electric Vehicle Plan for the West—"REV West Plan."¹⁰⁹ A bipartisan group of states signed a Memorandum of Understanding ("MOU") with the goal to promote a network of electric vehicle corridors. The MOU calls for coordinating EV charging station buildout to reduce range anxiety and optimize EV utilization.¹¹⁰ This coordination across states in the region continues despite recent elections and leadership changes in 2019.

This section provides just some examples of individual and collective leadership by U.S. states on climate change mitigation through efforts to reduce GHG emissions and promote renewable energy and efficiency. As significant climate impacts are already underway, states and local governments are acting on adaptation as well—as the next section highlights.

IV. ADAPTATION AND PLANNING

Extreme weather events are increasing in frequency and severity, leading to ever costlier consequences for communities, infrastructure, and natural systems. In fact, nearly one-third of total costs from billion-dollar disaster events since 1980 have come from events in just the past five years.¹¹¹ In 2018, there were

106. Josephine Marcotty, *California Did It. North Carolina Did It. Can Minnesota Government Go Green?*, STAR TRIBUNE (Dec. 12, 2017, 5:18 AM), <http://www.startribune.com/california-did-it-north-carolina-did-it-can-minnesota-government-go-green/463519113/>.

107. *Metro Transit's 100% Electric Bus Fleet Target Is a Big Step*, FRESH ENERGY (Dec. 10, 2018), <https://fresh-energy.org/metro-transit-100-percent/>.

108. Adam Uren, *Governor Walz Reveals Plan for 100% Clean Energy in Minnesota by 2050*, BRING ME THE NEWS (Mar. 4, 2019), <https://bringmethenews.com/minnesota-news/governor-walz-reveals-plan-for-100-clean-energy-for-minnesota-by-2050>.

109. *Seven-State Electric Vehicle Highway Unveiled at Energy Summit*, NAT'L GOVERNORS ASSOC. (Oct. 4, 2017), <https://www.nga.org/news/press-releases/seven-state-electric-vehicle-highway-unveiled-at-energy-summit/>. Those states are Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

110. *Memorandum of Understanding*, COLORADO.GOV (Oct. 12, 2017), https://www.colorado.gov/governor/sites/default/files/rev_west_plan_mou_10_12_17_all_states_final_1.pdf.

111. The total cost of the 241 disasters since 1980 that have each caused over \$1 billion is estimated at over \$1.6 trillion (CPI-adjusted), with approximately \$500 billion of this coming from events in the years 2014-2018. *Billion Dollar Weather and Climate Disasters: Overview*, NOAA: NAT'L CTRS. FOR ENVTL. INFO., <https://www.ncdc.noaa.gov/billions/overview>; (last visited Mar. 15, 2019) *Billion Dollar Weather and Climate Disasters: Time Series*, NOAA: NAT'L CTRS. FOR ENVTL. INFO., <https://www.ncdc.noaa.gov/billions/time-series> (last visited Mar. 15, 2019).

fourteen weather and climate disaster events with losses exceeding \$1 billion, including Hurricanes Florence and Michael and wildfires in California that broke state records dating back to 1933 in terms of overall cost, acreage burned, and lives lost.¹¹² Furthermore, 2017 was the most expensive year in history in terms of U.S. disaster events, exceeding \$300 billion in damages.¹¹³

At the same time, the Trump Administration is pulling back from financial and technical support to assist with preparing for—and responding to—climate impacts. The Trump Administration has reversed most of the Obama Administration’s policies promoting adaptation and resilience to climate change at all levels—federal, state, and local.¹¹⁴ In 2017, Trump revoked many supervisory documents that originally were intended to guide agency decision-making when it came to adaptation.¹¹⁵ As a result, strategic plans released by agencies charged with policymaking have either de-emphasized or omitted reference to climate change or what to do in the face of its increasing effects.¹¹⁶ Nevertheless state and local efforts move forward on a bipartisan basis.¹¹⁷

In August 2018, New England Governors and Eastern Canadian Premiers signed a Resolution at their annual conference to explore opportunities on climate adaptation and resilience strategies.¹¹⁸ Ohio, Kentucky, and Indiana, through their Regional Council of Governments, developed a tool in 2018 to help government councils, permitting committees, and contractors integrate green infrastructure into city planning designs.¹¹⁹

In November 2017, Alaska Governor Bill Walker issued an administrative order establishing an Alaska Climate Change Strategy and a Climate Action for Alaska Leadership Team to advise on adaptation, mitigation, and other actions to help safeguard the states from climate impacts.¹²⁰ In late July 2018, a draft of an Alaska Climate Change Policy was released while the Leadership Team

112. *U.S. Billion-Dollar Weather and Climate Disasters*, NOAA: NAT’L CTRS. FOR ENVTL. INFO., <https://www.ncdc.noaa.gov/billions/events/US/1980-2018> (last visited Mar. 15, 2019).

113. Arianna Skibell, *Hurricanes, wildfires make 2017 most expensive year on record*, E&E NEWS (Jan. 8, 2018), <https://www.eenews.net/eenewspm/stories/1060070387>.

114. Andrew Schatz, et al., *Climate Change, Sustainable Development, and Ecosystems: 2017 Annual Report*, 2017 ABA ENV’T ENERGY, & RES. L.: YEAR IN REV. 321, 339 (2017).

115. *Id.*

116. *Id.* at 340.

117. *See State and Local Adaptation Plans*, GEO. CLIMATE CTR., <https://www.georgetownclimate.org/adaptation/plans.html> (last visited Mar. 3, 2019).

118. Pat Bradley, *New England Governors and Eastern Canadian Premiers Hold Annual Meeting in Stowe*, WAMC (Aug. 16, 2018), <https://www.wamc.org/post/new-england-governors-and-eastern-canadian-premiers-hold-annual-meeting-stowe>; *Resolution 42-1*, NEW ENGLAND GOVERNORS AND EASTERN CANADIAN PREMIERS (Aug. 13, 2018), available at https://www.coneg.org/wp-content/uploads/transferred/Data/Sites/1/media/documents/correspondence/42-1_en.pdf.

119. *Greenspace Program*, OKI REGIONAL COUNCIL OF GOV’TS, <https://www.oki.org/plans-and-programs/greenspace-program-2/> (last visited Mar. 8, 2019).

120. Alaska Admin. Order No. 289 (Oct. 31, 2017), available at <https://gov.alaska.gov/admin-orders/administrative-order-no-289/>; Margaret Kriz Hobson, *State on ‘Front Lines’ Drafts New Climate Team*, CLIMATEWIRE (Nov. 1, 2017), <https://www.eenews.net/climatewire/2017/11/01/stories/1060065279>.

developed a Climate Action Plan.¹²¹ Unfortunately, in February 2019, newly-elected Alaska Governor Mike Dunleavy rescinded Governor Walker's administrative order¹²² and disbanded the leadership team before the draft policy had been implemented.¹²³ This abrupt change in direction illustrates one of the challenges associated with relying solely on state executive authority and leadership.

In September 2017, Rhode Island took actions to enhance climate preparedness in the state with legislation (H 5042/S 1005, signed by Governor Raimondo) that will require local planning board members to participate in training on the effects of sea-level rise and developing in floodplains.¹²⁴ Governor Raimondo also signed Executive Order 17-10, establishing a State Chief Resiliency Officer and requiring the preparation of a new climate action plan.¹²⁵ In early July 2018, Resilient Rhody was released, and implementation of the strategy has already begun.¹²⁶

Mid-Atlantic states are expanding efforts to improve coastal resilience. For example, Maryland passed HB 1350 in April 2018, expanding existing requirements under the Coast Smart Program to apply to more state and state-funded local projects and mandating that certain local jurisdictions develop plans to address nuisance flooding.¹²⁷ In Virginia, Governor Ralph Northam issued an executive order in November 2018 that designates a new position of Chief Resilience Officer and requires the state to develop a Coastal Resilience Master Plan.¹²⁸

In 2018, California enacted legislation directing its Insurance Commissioner to convene a group to assess opportunities to promote investments in natural infrastructure that will reduce risk from climate hazards through "risk transfer market

121. See Kevin Gullufsen, Gov Accepts Climate Change Plan, JUNEAU EMPIRE (Sept. 28, 2018, 7:00 PM), <https://www.juneauempire.com/news/gov-accepts-climate-change-plan/>.

122. Alaska Admin. Order No. 309 (Feb. 22, 2019), available at <https://gov.alaska.gov/admin-orders/administrative-order-no-309/> (rescinding Admin. Order No. 289).

123. *Governor Disbands State Climate Change Strategy Team*, GREENWIRE (Feb. 26, 2019), <https://www.eenews.net/greenwire/2019/02/26/stories/1060122439>.

124. Press Release, *New law creates flooding and sea rise training requirement for planning boards*, R.I. GEN. ASSEMBLY (Oct. 6, 2017), [http://www.rilin.state.ri.us/pressrelease/_layouts/RIL.PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31-3c10-431c-8dcd-9dbbe21ce3e9&ID=13236;Rhode Island H 5042/S 1005 2017: Flooding and Sea Level Rise Training for Municipal Planning Boards and Commissions](http://www.rilin.state.ri.us/pressrelease/_layouts/RIL.PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31-3c10-431c-8dcd-9dbbe21ce3e9&ID=13236;Rhode%20Island%20H%205042/S%201005%202017:%20Flooding%20and%20Sea%20Level%20Rise%20Training%20for%20Municipal%20Planning%20Boards%20and%20Commissions), GEO. CLIMATE CTR.: ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/rhode-island-h-5042-s-1005-2017-flooding-and-sea-level-rise-training-for-municipal-planning-boards-and-commissions.html> (last visited Mar. 3, 2019).

125. *Rhode Island E.O. 17-10: Action Plan to Stand up to Climate Change*, GEO. CLIMATE CTR.: ADAPTATION CLEARINGHOUSE, <https://www.adaptationclearinghouse.org/resources/rhode-island-e-o-17-10-action-plan-to-stand-up-to-climate-change.html> (last visited Mar. 3, 2019).

126. *Resilient Rhody*, R.I. INFRASTRUCTURE BANK (July 2, 2018), <https://www.riib.org/ResilientRhody>.

127. *Policy Spotlight: Maryland Bill to Address Sea Level Rise Inundation and Coastal Flooding*, NCEL (Apr. 27, 2018), <https://www.ncel.net/2018/04/27/policy-spotlight-maryland-bill-to-address-sea-level-rise-inundation-and-coastal-flooding/>; see also Md. H.B. 1350 (2018), available at <http://mgaleg.maryland.gov/webmg/frmMain.aspx?id=HB1350&stab=01&pid=billpage&tab=subject3&ys=2018rs>.

128. Va. Exec. Order No. 24 (Nov. 2, 2018).

mechanisms.”¹²⁹ Agencies within the state also have developed numerous resources, including the Fourth California Climate Assessment, as well as updated sea-level rise guidance, which is used by state agencies and local governments.¹³⁰ California’s Climate-Safe Infrastructure Working Group released recommendations on how to better integrate climate science into planning, design, and construction of infrastructure projects.¹³¹ California has launched the Climate Change and Health Equity Program which “embeds health and equity in California climate change planning, and embeds climate change and equity in public health planning” by working with state and local partners to “assure that climate change mitigation and adaptation activities have beneficial effects on health while not exacerbating already existing unfair and preventable difference in health status of some groups.”¹³²

In August 2018, Massachusetts Governor Baker signed legislation authorizing over \$2.4 billion for adaptation and environmental stewardship efforts at both state and local levels.¹³³ Along with providing funding, the legislation codifies in statute essential components of Executive Order 569 (issued in September 2016), including requirements that the state develop and update every five years a state-wide adaptation strategy and that each executive office designate a climate change coordinator.¹³⁴ In January 2019, Governor Baker proposed a 0.2% tax increase to a real estate transfer tax, which would raise funds to assist communities across the state in protecting property and infrastructure from damage wrought by climate change.¹³⁵

In Connecticut, legislation (SB 7) was enacted in June 2018 that requires the updating of sea-level rise projections every ten years and the use of the most recent projections in state and local planning.¹³⁶ For development that is required

129. S.B. 30, 2017-2018 Sess. (Cal. 2018).

130. CAL. NAT. RES. AGENCY AND CAL. OCEAN PROT. COUNCIL, STATE OF CALIFORNIA SEA-LEVEL RISE GUIDANCE: 2018 UPDATE (Mar. 2018); STATE OF CALIFORNIA, CALIFORNIA’S FOURTH CLIMATE ASSESSMENT (Aug. 2018).

131. CAL. CLIMATE-SAFE INFRASTRUCTURE WORKING GRP., PAYING IT FORWARD: THE PATH TOWARD CLIMATE-SAFE INFRASTRUCTURE IN CALIFORNIA (Sept. 2018), available at <http://resources.ca.gov/climate/climate-safe-infrastructure-working-group/>.

132. *Climate Change & Health Equity Program (CCHP)*, CAL. DEP’T OF PUB. HEALTH, <https://www.cdph.ca.gov/programs/OHE/pages/CCHP.aspx> (last visited Mar. 13, 2019).

133. Press Release, *Governor Baker Signs Legislation Directing \$2.4 Billion to Climate Change Adaptation, Environmental Protection, and Community Investments*, MASS.GOV (Aug. 21, 2018), <https://www.mass.gov/news/governor-baker-signs-legislation-directing-24-billion-to-climate-change-adaptation>; see also Mass. H.4835 (2018), available at <https://malegislature.gov/Bills/190/H4835>.

134. See Mass. H.4835 (2018); Mass. Exec. Order No. 569 (Sept. 16, 2016), available at <https://www.mass.gov/executive-orders/no-569-establishing-an-integrated-climate-change-strategy-for-the-commonwealth>.

135. Steve Brown, *Baker Proposes Real Estate Tax To Pay for Local Climate Resiliency Projects*, WBUR (Jan. 18, 2019), <https://www.wbur.org/news/2019/01/18/baker-real-estate-tax-climate-change-plan>.

136. Conn. SB 7, Pub. Act No 18-82 (2018), available at <https://www.cga.ct.gov/2018/ACT/pa/2018PA-00082-R00SB-00007-PA.htm>.

to be “flood-proofed,” it requires a minimum two-foot freeboard plus any additional freeboard necessary for the most recent sea-level rise projections.¹³⁷

In 2017, Louisiana updated its Coastal Master Plan, detailing the state’s long-term plans to address sea-level rise and land loss through coastal restoration and protection projects.¹³⁸ Louisiana also moved forward in the implementation of the Louisiana Strategic Adaptations for Future Environments (“LA SAFE”) process, a community-focused adaptation planning and flood-risk reduction effort.¹³⁹ Since the initial efforts to engage with communities in high-risk areas, LA SAFE has resulted in a wide range of approaches to improve community resilience in six different parishes, including flood risk reduction projects, resilient housing prototypes, and wetland education centers.¹⁴⁰ Using funding secured through the National Disaster Resilience Competition, the state also is moving forward with the purchase of land for the relocation of the community on Isle de Jean Charles to a more northern part of Terrebone Parish.¹⁴¹

While states are already facing and preparing for climate impacts, the effects of climate change are most often felt locally at the community and neighborhood level. This next section discusses leadership in cities and communities which have unique authorities and responsibilities related to both GHG emissions and building resilience to climate impacts.

V. LOCAL LEADERSHIP

In June 2017, 407 members of the U.S. Conference of Mayors¹⁴² adopted several resolutions, including one that explicitly recognized the importance of the Paris Agreement, the Clean Power Plan, and the importance of federal action to support clean transportation alternatives and to provide cities the tools they need to combat climate change and prepare for its impacts on communities.¹⁴³ It also adopted resolutions encouraging utilities, the federal government, and others to help accelerate the electrification of the transportation sector and encouraging cities to pursue a transition to “100 percent clean, renewable energy” by 2035.¹⁴⁴

137. *See id.*

138. Schatz, *supra* note 114, at 341.

139. *See Home, LA.’S STRATEGIC ADAPTATION FOR FUTURE ENV’TS*, <https://lasafe.la.gov/> (last visited Mar. 3, 2019).

140. Travis Lux, *Louisiana Unveils ‘Flood Resilience’ Projects in Six Coastal Parishes*, WWNO (Apr. 20, 2018), <https://www.wwno.org/post/louisiana-unveils-flood-resilience-projects-six-coastal-parishes>.

141. Chevel Johnson, *As Louisiana Island Shrinks, State Paying to Move Residents*, AP NEWS (Mar. 22, 2018), <https://apnews.com/5974b9a7bdac415398e667301f18c9f8>.

142. Schatz, *supra* note 114, at 333.

143. *Resolutions: 84th Annual Meeting, In Support of Climate Action*, U.S. CONF. OF MAYORS, <https://www.usmayors.org/the-conference/resolutions/?category=a0F61000003rjqsEAA&meeting=84th%20Annual%20Meeting> (last visited Mar. 19, 2019).

144. *Resolutions: 86th Annual Meeting, 100% Renewable Energy in American Cities*, U.S. CONF. OF MAYORS, <https://www.usmayors.org/the-conference/resolutions/?category=c9169&meeting=86th%20Annual%20Meeting> (last visited Mar. 19, 2019).

At the GCAS, the C40 announced that twenty-seven of its member cities had peaked in their carbon emissions, and since that time, emissions have declined.¹⁴⁵

In October 2017, twelve cities—including London, Los Angeles, Mexico City, and Paris—pledged to procure only zero-emission buses for municipal transit fleets beginning in 2025.¹⁴⁶ Also in October, Atlanta and Detroit both released plans designed to improve their cities' resilience and sustainability. Atlanta, a participant in the Rockefeller Foundation's 100 Resilient Cities Initiative, released its comprehensive resilience strategy, "Resilient Atlanta: Actions to Build a More Equitable Future."¹⁴⁷ Detroit released its first Climate Action Plan, focusing on strategies to mitigate and adapt to climate change.¹⁴⁸

In July 2018, the Honolulu Mayor signed a directive mandating that government agencies plan for future sea-level rise. The directive was based on a brief prepared by Honolulu's Climate Change Commission, which stated that the city should plan for a sea-level rise of at least three feet by 2050. Because of that rise, the brief concluded that if action is not taken, "nearly 4,000 structures on Oahu would be flooded, and nearly 18 miles of coastal roads would become impassable."¹⁴⁹

Cities in southeast coastal regions are taking action to improve flood resilience through funding and zoning changes. In Houston, voters in August 2018 approved a new \$2.5 billion bond proposal aimed at flood mitigation. The Harris County Flood Control District, which would oversee use of the funds, has identified over 200 projects that could potentially be funded by the bond.¹⁵⁰ The vote marked the anniversary of Hurricane Harvey, with many Houston residents still dealing with its devastating effects. The bond vote followed earlier action by the Houston City Council in April 2018, wherein the Council voted 9-7 to enact stronger floodplain regulations.¹⁵¹ "The changes, which are slated to go into effect

145. Matt McGrath, *Cities Lead the Way on Curbing Carbon Emissions*, BBC (Sept. 14, 2018), <https://www.bbc.com/news/science-environment-45515216>. The C40 Leadership Group "is a network of the world's megacities", which is dedicated to "tackling climate change and driving urban action that reduces greenhouse gas emissions and climate risks, while increasing the health, wellbeing, and economic opportunities of urban citizens." *About, C40 Cities*, <https://www.c40.org/about> (last visited Mar. 3, 2019).

146. Alister Doyle, *Twelve big cities to buy zero emissions buses, extend green areas*, REUTERS (October 23, 2017), <https://www.reuters.com/article/us-climatechange-cities/twelve-big-cities-to-buy-zero-emissions-buses-extend-green-areas-idUSKBN1CS13J>.

147. RESILIENT ATLANTA: ACTIONS TO BUILD AN EQUITABLE FUTURE, RESILIENT ATLANTA (2017), available at <http://www.100resilientcities.org/wp-content/uploads/2017/11/Atlanta-Resilience-Strategy-PDF-v2.pdf>.

148. DETROIT CLIMATE ACTION PLAN, DETROITERS WORKING FOR ENVTL. JUSTICE (Oct. 24, 2017), available at https://detroitenvironmentaljustice.org/wp-content/uploads/2017/10/CAP_WEB.pdf.

149. Nikki Schenfeld, *Mayor Issues Directive on Climate Change*, KHON2 (July 16, 2018), <https://www.khon2.com/news/local-news/mayor-issues-directive-on-climate-change/1306968449>.

150. Edward Klump & Mike Lee, *Houston Area Backs \$2.5B Flood Prevention Bond*, GREENWIRE (Aug. 27, 2018), <https://www.eenews.net/greenwire/2018/08/27/stories/1060095285>.

151. Edward Klump and Mike Lee, *Houston Sees 'Defining Moment' With New Regulations*, ENERGYWIRE (Apr. 5, 2018), <https://www.eenews.net/energywire/2018/04/05/stories/1060078211>.

in September, include a requirement that new construction in the 100- and 500-year floodplains be at least 2 feet above the 500-year level.”¹⁵²

Norfolk, Virginia adopted a new zoning ordinance with components designed to improve flood resilience significantly. The ordinance, which took effect in March 2018, requires that construction in the 100-year floodplain be built with at least 3 feet of freeboard, and construction in areas within the 500-year (0.2% chance) floodplain be elevated or flood-proofed to 1.5 feet above the flood elevation.¹⁵³ Norfolk’s ordinance also includes an innovative “resilience quotient” system which assigns points for practices that promote flood risk reduction, stormwater management, and energy resilience, among other practices.¹⁵⁴

In Miami, voters passed a \$400 million bond measure in November 2017, nearly \$200 million of which will fund flood mitigation projects and other measures to adapt to sea-level rise.¹⁵⁵ Also in Miami, Mayor Suarez signed the nation’s first climate gentrification resolution in November 2018, directing the city to study how lower-income communities living on higher ground are being affected by climate gentrification driven by sea-level rise and other coastal impacts and to study ways for the city to help stabilize property tax rates in these areas.¹⁵⁶

Cities in the Northeast also are implementing new development requirements designed to improve the resilience of buildings and facilities. In April 2018 in New York City, the Mayor’s Office of Recovery and Resiliency released new Climate Resiliency Design Guidelines to be used in the planning and design of city facilities.¹⁵⁷ Additionally, while attending GCAS, Mayor de Blasio announced a new goal of doubling New York City’s investments into climate change solutions to \$4 billion within the next three years.¹⁵⁸ And in Boston, the Planning and Development Agency approved a Smart Utilities Policy in June 2018, requiring new large developments to make investments that will help prepare utility infrastructure for climate change impacts like flooding and heat waves.¹⁵⁹

152. *Id.*

153. Norfolk Zoning Ordinance, art. 3.9.7(M)(1), (J)(1) (2019), available at <https://www.norfolk.gov/DocumentCenter/View/35581>.

154. *Id.* at art. 5, § 5.12.

155. Adam Aton, *Climate funding passes; vulnerable cities get new mayors*, CLIMATEWIRE (Nov. 8, 2017), <https://www.eenews.net/climatewire/2017/11/08/stories/1060065971>.

156. Ines Kagubare, *Miami passes first-ever climate gentrification resolution*, CLIMATEWIRE (Dec. 5, 2018), <https://www.eenews.net/climatewire/2018/12/05/stories/1060108749>.

157. See CLIMATE RESILIENCY DESIGN GUIDELINES, N.Y.C. MAYOR’S OFFICE OF RECOVERY AND RESILIENCY (Apr. 2018), available at https://www1.nyc.gov/assets/orr/pdf/NYC_Climate_Resiliency_Design_Guidelines_v2-0.pdf.

158. Michelle Froese, *NYC to Double Investment Funds for Climate Change*, WINDPOWER (Sept. 14, 2018), <https://www.windpowerengineering.com/business-news-projects/nyc-to-double-investment-funds-for-climate-change/>.

159. *BPDA Passes Smart Utilities Policy*, BOSTON PLANNING & DEV. AGENCY (June 14, 2018), <http://www.bostonplans.org/news-calendar/news-updates/2018/6/14/bpda-passes-smart-utilities-policy>.

CONCLUSION

Cities, states, and regions have long been leaders on climate change, clean energy policy, and efforts to prepare for climate impacts. This subnational leadership has never been more important or more urgent as federal environmental and clean energy policies are dismantled by the Trump Administration. But while subnational action is essential given different authorities and roles, and while it provides models and substantial benefits in its own right, state and local actions alone cannot secure sufficient emission reductions. Subnational governments also benefit from federal expertise, guidance, and support in adapting to climate impacts as well. Ultimately, federal and international solutions to global climate challenges must be enacted and implemented. Scaling up the policies and technology solutions discussed in this Article will be important to achieving the significant changes required. Without comprehensive “top down” federal leadership, the best hope may well be to connect and extend the diverse “bottom up” approaches described in this Article across states and regions in order to ultimately achieve a path consistent with the Paris Agreement goals and what the science demands.