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# The Climate Moratorium

Keith H. Hirokawa

Cinnamon P. Carlarne

# THE CLIMATE MORATORIUM

*by: Keith H. Hirokawa & Cinnamon P. Carlarne**

Abstract

*Climate change is our new reality. The impacts of climatic changes, including massive forest fires, floods, drought, severe storms, saltwater intrusion, and the resulting migration of people displaced by such impacts, will continue to ravage communities across the nation into the foreseeable future. In the meantime, communities continue to expand and growth continues unabated in many of the most climate-impacted areas. Given that most communities are unprepared for the onslaught of climate disasters and many continue to increase existing community vulnerabilities through unsustainable growth and development practices, we need legal tools that will provide space to engage in effective adaptation planning. The climate moratorium is one such tool. Moratoria, which have been used to temporarily halt development and associated impacts to facilitate effective land-use planning, have long been used by communities to address community and infrastructure vulnerabilities. This Article proposes a climate moratorium.*

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## I. Introduction

Late in the evening of March 10, 2023, water began bubbling up in farmland in Monterey County, California. Thirty minutes later, a levee on the Pajaro River failed. The levee failure "triggered massive flooding

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* Keith H. Hirokawa is a Distinguished Professor of Law at Albany Law School; Cinnamon P. Carlarne is the President & Dean at Albany Law School.

and prompted hundreds of evacuations and dozens of water rescues."[1] Among the more than 8,500 people in Monterey County under evacuation orders as a result of the failure and flooding were "roughly 1,700 residents – many of them Latino farmworkers – from the unincorporated community of Pajaro."[2] As the rains continued to fall and another atmospheric river descended on California,[3] Governor Newsom proclaimed a state of emergency in an additional 21 counties, bringing to 34 the number of counties in California declared under a state of emergency.[4]

The extreme California rains, coming in the wake of the worst megadrought in southwestern North America in at least 1,200 years,[5] devastated entire communities, destroyed hundreds of thousands of acres of crops,[6] and generally wreaked havoc across California for weeks on end.[7] The images of Californian communities inundated by water

1. Susanne Rust et al., *Levee Breach in Monterey County Triggers Massive Flooding, Prompts Evacuations, Rescues*, L.A. Times, (Mar. 11, 2023, 7:41 PM), https://www.latimes.com/california/story/2023-03-11/communities-along-central-coast-to-southern-sierra-hit-hardest-by-latest-storm [https://perma.cc/NTS3-TVP7].

2. *Thousands Evacuated After California Levee Breached by Flooding*, CBS News, (Mar. 12, 2023, 11:15 PM), https://www.cbsnews.com/news/hundreds-evacuated-california-levee-breach-flooding-pajaro-river-monterey-county/ [https://perma.cc/7S38-KUZB].

3. Kaitlyn Radde, *A Waterlogged California Is Bracing for Yet Another Atmospheric River*, NPR News (Mar. 13, 2023, 1:43 AM), https://www.npr.org/2023/03/12/1162936998/a-waterlogged-california-is-bracing-for-yet-another-atmospheric-river [https://perma.cc/88QB-T4LU].

4. Off. of Governor Gavin Newsom, *Governor Newsom Proclaims Storm State of Emergency Supporting 21 Additional Counties*, CA.gov (Mar. 8, 2023), https://www.gov.ca.gov/2023/03/08/governor-newsom-proclaims-storm-state-of-emergency-supporting-21-additional-counties/ [https://perma.cc/GK7Z-CGTN].

5. A. Park Williams et al., *Rapid Intensification of the Emerging Southwestern North American Megadrought in 2020–2021*, 12 Nature Climate Change 232, 232 (2022), https://doi.org/10.1038/s41558-022-01290-z; *see also* Columbia Climate Sch., *Megadrought in Southwest Is Now the Worst in at Least 1,200 Years, Study Confirms*, State of the Planet (Feb. 14, 2022), https://news.climate.columbia.edu/2022/02/14/megadrought-in-southwest-is-now-the-worst-in-at-least-1200-years-study-confirms/ [https://perma.cc/4FFW-CTUC] (explaining that, by February 2022, "95 percent of the western United States was experiencing drought conditions. And in summer 2021, according to the U.S. Bureau of Reclamation, two of the largest reservoirs in North America—Lake Mead and Lake Powell, both on the Colorado River—reached their lowest recorded levels since tracking began"); Rachel Ramirez, *As California's Big Cities Fail to Rein in Their Water Use, Rural Communities Are Already Tapped Out*, CNN (June 6, 2022, 11:26 AM), https://www.cnn.com/2022/06/05/us/california-rural-groundwater-crisis-climate/index.html [https://perma.cc/9MRV-K9M2].

6. *See, e.g.*, Maricela De La Cruz, *Excessive Rainfall Hurts California Farmworkers' Wallets as Crops Impacted*, KCRA (Mar. 22, 2023, 12:30 PM), https://www.kcra.com/article/california-farmworkers-rain-storms-crops-impacted/43381233# [https://perma.cc/6ARR-GUU4]; *California Family Farmer Emergency Fund: Support Family Farms in Crisis*, Cmty. All. Fam. Farmers, https://caff.org/emergencyfund/ [https://perma.cc/NJ5C-N6YF].

7. Nouran Salahieh et al., *Another Atmospheric River Will Thrash Storm-Ravaged California, Threatening More Flooding and Hurricane-Force Wind Gusts*, CNN

were catastrophic. But this was not an unanticipated set of events or an unavoidable series of catastrophes. Extreme precipitation was predicted.[8] The resulting levee failure was anticipated.[9] Scientists have been warning that "[a] large and growing body of evidence suggests that the frequency and intensity of precipitation extremes will increase in a warming climate"[10] and that California "faces a broadly underappreciated risk of severe floods," including the risk of a "megaflood."[11] Moreover, in Pajaro County, "[o]fficials ha[d] known for decades that the Pajaro River levee . . . was vulnerable but never prioritized repairs in part because they believed it did not make financial sense to protect the low-income area."[12]

Fires. Flooding. Drought. These disasters are the current reality in California. But not just in California and not just this year. Floods that previously occurred once in a hundred years are now regular occurrences nationwide,[13] and tidal flooding is now a normal feature of East Coast city living.[14] Massive forest fires across the Western United States,

(Mar. 20, 2023, 7:12 PM), https://www.cnn.com/2023/03/20/weather/california-atmospheric-river-monday/index.html [https://perma.cc/F6NS-QAGB].

8. Xingying Huang et al., *Future Warming and Intensification of Precipitation Extremes: A "Double Whammy" Leading to Increasing Flood Risk in California*, 47 Geophysical Rsch. Letters, Aug. 28, 2020, at 1, 1, https://doi.org/10.1029/2020GL088679 (noting that a "huge increase in runoff during the most extreme [atmospheric river] events could present major flood control challenges for the region"); UCLA Inst. of the Env't & Sustainability, *The Future of Extreme Precipitation in California* (2020), https://www.ioes.ucla.edu/project/future-extreme-precipitation-california/ ("California's most extreme precipitation events will get more intense.").

9. Susanne Rust, *Before Disastrous Flood, Officials Knew Pajaro River Levee Could Fail but Took No Action*, L.A. Times (Mar. 12, 2023), https://www.latimes.com/california/story/2023-03-12/authorities-knew-the-levee-could-fail [https://perma.cc/K6BU-JCAL].

10. Xingying Huang et al., *Future Precipitation Increase from Very High Resolution Ensemble Downscaling of Extreme Atmospheric River Storms in California*, 6 Sci. Advances, July 17, 2020, at 1, 1, https://doi.org/10.1126/sciadv.aba1323.

11. Xingying Huang & Daniel L. Swain, *Climate Change Is Increasing the Risk of a California Megaflood*, 8 Sci. Advances, Aug. 12, 2022, at 1, 1, https://doi.org/10.1126/sciadv.abq0995 (defining "megaflood" as "extreme runoff and adverse hydrologic outcomes").

12. Rust, *supra* note 9.

13. *See* Press Release, First St. Found., *NOAA's 1-in-100 Year Flooding Can Now Be Expected Every 8 Years* (June 26, 2023), https://firststreet.org/press/noaas-1-in-100-year-flooding-can-now-be-expected-every-8-years/ [https://perma.cc/TT4R-7JX8]; s*ee also* Ryan McNeill, *Rising Seas Seen Causing Routine Floods in U.S. Cities: Study*, Reuters (Oct. 7, 2014, 11:05 PM), https://www.reuters.com/article/us-sealevel-study/rising-seas-seen-causing-routine-floods-in-u-s-cities-study-idUSKCN0HX09I20141008 [https://perma.cc/UL5H-XSA9] ("[T]idal flooding along the U.S. coast is likely to become so common that parts of many communities, including the nation's capital, could become unusable within three decades.").

14. Jim Morrison, *Flooding Hot Spots: Why Seas Are Rising Faster on the U.S. East Coast*, Yale Env't 360 (Apr. 24, 2018), https://e360.yale.edu/features/flooding-hot-spots-why-seas-are-rising-faster-on-the-u.s.-east-coast [https://perma.cc/S6P3-HGH2]; Hadley Barndollar, *The East Coast Is Navigating a 'Perilous Course' Confronting Climate Change in Real Time*, Providence J. (Feb. 5, 2023, 5:48 PM), https://www.providencejournal.com/in-depth/news/2022/09/20/

which once seemed epic, are now seasonal occurrences.[15] Record-breaking droughts are now the background around which water, agriculture, and city planning in the Southwestern United States should take place.

In this context—one we might characterize as simultaneously seeking to prepare for overwhelming disasters *while* also envisioning a livable future—we are quite certain that we will fail on both counts without a significant degree of focused, place-based, and intensive adaptation planning. The problem addressed in this Article is that property owners continue to build in vulnerable places,[16] sometimes in flood- or wildfire-prone areas, sometimes without assurances of potable water, sewer service, transit or open space access, or access to protection from excessive heat, and so resiliency decreases, and vulnerabilities increase. As a result, we are stubbornly committing to engaging in emergency management to save lives in the near and distant future instead of anticipatory planning to avoid the worst climate impacts.

Local governments that find this circumstance unacceptable can choose to engage in adaptive regulatory measures. However, in the face of a changing regulatory arena, property owners often "race" the local government to secure the right to develop under old, outdated, and maladapted land use regulations.[17] This Article argues that adoption of a moratorium can provide the stop-gap relief local governments need to address a community's climate vulnerabilities. Moratoria have been used by local governments throughout the last century as tools to halt new development and provide some space and time to understand community needs, plan for future community well-being, and ensure the community is served by adequate infrastructure.[18] We refer to this tool as the *climate moratorium*. Local governments can employ the climate moratorium, based on the need to address the climate emergency, to understand and assess their vulnerabilities; identify and finance needed infrastructure improvements; and address historic, systemic inequities that will be exacerbated due to climatic changes. In what follows, Part II first explains the emergency circumstances presented by climate change. Part III then introduces the climate moratorium and explains its application in the face of the emergency. Part IV then explores critical planning needs that the moratorium would facilitate. Finally, Part V concludes by emphasizing the urgency of embracing the climate moratorium.

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east-coast-flooding-heat-severe-weather-climate-change/10308981002/ [https://perma.cc/B3VW-5299].

15. *Wildfire Climate Connection*, Nat'l Oceanic & Atmospheric Admin. (July 24, 2023), https://www.noaa.gov/noaa-wildfire/wildfire-climate-connection [https://perma.cc/6VH6-QEDR].

16. After an announcement by the Mayor of Phoenix, Arizona, the State of Arizona adopted controls on growth in Phoenix due to groundwater concerns. Oliver Milman, *Arizona Limits Future Home-building in Phoenix Area Due to Lack of Groundwater*, Guardian (June 2, 2023, 10:29 AM), https://www.theguardian.com/us-news/2023/jun/02/phoenix-arizona-limits-future-home-building-drought [https://perma.cc/6DC6-9UKK].

17. *See* Downham v. City Council of Alexandria, 58 F.2d 784, 788 (E.D. Va. 1932).

18. *See infra* notes 87–110 and accompanying text.

## II. The Climate Emergency

Climate emergencies can no longer be regarded as shocking or unexpected in either their slow-onset (e.g., drought) or sudden-onset (e.g., atmospheric river storms) forms. These disasters, which were once thought of as exceptional events, are now the backdrop for much of our shared lived experience. As the most recent report of the Intergovernmental Panel on Climate Change ("IPCC") confirms:

> Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people . . . .
>
> . . . .
>
> . . . Every increment of global warming will intensify multiple and concurrent hazards.[19]

Weather and climate extremes and resulting disasters are a reality of our contemporary, climate-changed world. We know to expect extreme events more frequently than in the past. As detailed in the *Fourth National Climate Assessment*:

> Climate change is altering the characteristics of many extreme weather and climate-related events. Some extreme events have already become more frequent, intense, widespread, or of longer duration, and many are expected to continue to increase or worsen, presenting substantial challenges for built, agricultural, and natural systems. . . . Individual extreme weather and climate-related events—even those that have not been clearly attributed to climate change by scientific analyses—reveal risks to society and vulnerabilities that mirror those we expect in a warmer world. . . . The National Oceanic and Atmospheric Administration estimates that the United States has experienced 44 billion-dollar weather and climate disasters since 2015 (through April 6, 2018), incurring costs of nearly $400 billion.[20]

Extreme events are our new reality.

### A. *The New Normal: Climate Extremes*

Sea level rise provides a simple but striking example. Globally, "the total urban population at risk from sea level rise, if emissions don't go down, could number over 800 million people, living in 570 cities, by 2050," and "the global economic costs to cities, from rising seas and inland

19. Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2023: Synthesis Report, Summary for Policymakers*, at 5, 12 (2023).

20. U.S. Glob. Change Rsch. Program, Fourth National Climate Assessment: Volume II, Impacts, Risks, and Adaptation in the United States, Report-in-Brief 57 (2018), https://doi.org/10.7930/NCA4.2018.RiB [hereinafter Fourth National Climate Assessment].

flooding, could amount to $1 trillion by mid-century."[21] As a result of sea level rise and ongoing climatic changes, coastal communities across the world already face common challenges, including storm surge, land submergence, erosion, flooding, saltwater incursion, and climate gentrification.[22] The global mean sea level has risen faster since 1900 than during any other century in at least 3,000 years.[23] Between 1901 and 2018, global mean sea level rose by .2 meters.[24] Moreover, sea levels will continue to rise over the 21st century, with estimates ranging from .15 to 2 meters.[25] In worst-case climate scenarios where warming increases to 4°C, coastal cities such as Mumbai, Shanghai, London, Venice, New York, and New Orleans will gradually become increasingly hostile places to live.[26]

As an example of what this looks like close to home, the *U.S. Fourth National Climate Assessment* ("NCA") warns that the increase in the frequency and extent of high tide flooding due to climate-driven sea level rise poses extensive threats to coastal communities, including coastal property and public infrastructure.[27] Specifically, the NCA suggests that "in the absence of significant global mitigation action and regional adaptation efforts, rising temperatures, sea level rise, and changes in extreme events are expected to increasingly disrupt and damage critical infrastructure and property, labor productivity, and the vitality of our communities."[28] This includes up to $1 trillion in coastal property threatened by sea level rise, higher storm surges, and high tide flooding.[29]

The realities of sea level rise for cities along the East Coast of the United States are stark. As Justice Kagan suggests, absent dramatically scaled-up efforts to mitigate climate change and adapt to the anticipated effects of climate change, "children born this year could live to see parts of the Eastern seaboard swallowed by the ocean."[30] For example, based on current emissions trajectories, NOAA "project[s] 10 to 14 inches

21. *Sea Level Rise and Coastal Flooding*, C40 Cities (2018), https://www.c40.org/what-we-do/scaling-up-climate-action/adaptation-water/the-future-we-dont-want/sea-level-rise/ [https://perma.cc/3FF8-PKS8].

22. Kara Consalo, *Vulnerable Populations: Climate Change and Extreme Weather Threats Facing Urban Communities*, 11 Chi.-Kent J. Env't Energy L., Spring 2022, at 1, 4–5, 7–8, 22.

23. *See, e.g.*, NASA Sea Level Change Team, *How Long Have Sea Levels Been Rising? How Does Recent Sea-level Rise Compare to that over the Previous Centuries?*, NASA https://sealevel.nasa.gov/faq/13/how-long-have-sea-levels-been-rising-how-does-recent-sea-level-rise-compare-to-that-over-the-previous/ [https://perma.cc/MEU6-V79X].

24. Danial Khojasteh et al., *The Evolving Landscape of Sea-level Rise Science from 1990 to 2021*, 4 Commc'ns Earth & Env't, July 14, 2023, at 1, 2, https://doi.org/10.1038/s43247-023-00920-4.

25. NASA Sea Level Change Team, *supra* note 23, at 20 tbl.2.3.

26. *See* J.B. Ruhl & Robin Kundis Craig, *4°C*, 106 Minn. L. Rev. 191, 225 (2021).

27. Fourth National Climate Assessment, *supra* note 20, at 17.

28. *Id.* at 12.

29. *Id.* at 38.

30. West Virginia v. EPA, 142 S.Ct. 2587, 2627 (2022) (Kagan, J., dissenting).

(25 to 35 centimeters) of rise on average for the East Coast"[31] and warns that sea level rise "will create a profound shift in coastal flooding over the next 30 years by causing tide and storm surge heights to increase and reach further inland. By 2050, 'moderate' (typically damaging) flooding is expected to occur, on average, more than 10 times as often as it does today."[32] Already, "from 2011 to 2015, sea level[s] rose up to 5 inches—an inch per year—in some locales from North Carolina to Florida."[33]

Meanwhile, many cities along the southeastern Atlantic coast are already experiencing regular disruption from tidal flooding, sometimes referred to as "sunny day flooding" or "King Tide flooding."[34] In Charleston, South Carolina, for example, "tidal flooding increased to 50 days in 2016, up from four days annually 50 years ago, causing millions of dollars in damage and disrupting travel to the city's hospital district."[35] Similarly, in Miami, Florida, one study found that since 2006, "rain-induced [flooding] events increased by 33% and tide-induced [flooding] events increased by more than 400%,"[36] while another study estimates that Miami-Dade County already faces more than $3 billion in anticipated costs to protect the city from coastal flooding.[37]

By now, the short- and long-term costs associated with sea level rise—including tidal flooding and storm-related events—are well understood. The scale and impact of these events will only increase over time. Yet we continue to build in, invest in, and shore up our most vulnerable coastal areas. That is, our coastal planning processes remain minimally responsive to inevitable climate impacts. But it is not just our coastal communities that are at risk and in need of realistic climate-responsive planning processes. Across the United States, increased incidence and intensity of fire, drought, excessive heat, and storm surges pose dire threats to humans and ecosystems and require a rethinking of development strategies and land management practices.[38] By mid-summer 2023,

31. Sally Younger, *NASA Study: Rising Sea Level Could Exceed Estimates for U.S. Coasts*, Jet Propulsion Lab'y (Nov. 15, 2022), https://www.jpl.nasa.gov/news/nasa-study-rising-sea-level-could-exceed-estimates-for-us-coasts [https://perma.cc/9XQM-MNF2].

32. Nat'l Ocean Serv., *2022 Sea Level Rise Technical Report*, Nat'l Oceanic Atmospheric Admin. https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html [https://perma.cc/U2PD-LK8R].

33. Morrison, *supra* note 14.

34. *King Tides*, City of Mia., https://www.miamigov.com/My-Government/ClimateChange/King-Tides [https://perma.cc/UE76-KEBK].

35. Morrison, *supra* note 14.

36. Shimon Wdowinski et al., *Increasing Flooding Hazard in Coastal Communities Due to Rising Sea Level: Case Study of Miami Beach, Florida*, 126 Ocean & Coastal Mgmt., June 2016, at 1, 1, https://doi.org/10.1016/j.ocecoaman.2016.03.002.

37. Sverre LeRoy & Richard Wiles, Ctr. for Climate Integrity, High Tide Tax: the Price to Protect Coastal Communities from Rising Seas 13 tbl.2 (2019).

38. *See, e.g.*, German Lopez, *Compounding Disasters*, N.Y. Times (July 13, 2023), https://www.nytimes.com/2023/07/13/briefing/extreme-weather.html [perma.cc/WKY4-QYUV].

for example, NOAA estimated that 12 weather disasters had already caused over $1 billion in damage.[39]

Consider the increased incidence and impact of wildfires in the United States. Exacerbating wildfire conditions are driven by changing weather and development patterns, including "rising temperatures and changing precipitation patterns, pest populations, and land management practices."[40] As detailed in the *Fourth National Climate Assessment*:

> Between 1979 and 2013, the number of days with weather conditions conducive to fire has increased globally, including in the United States. At the same time, human activities have expanded into areas of uninhabited forests, shrublands, and grasslands, exposing these human activities to greater risk of property and life loss at this wildland–urban interface. Over the last two decades, the amount of forest area burned and the expansion of human activity into forests and other wildland areas have increased. [41]

The report further explained that "[a]s the climate warms, projected increases in wildfire frequency and area burned are expected to drive up costs associated with health effects, loss of homes and infrastructure, and fire suppression."[42] Increased incidences of wildfires pose dire threats to human health, critical infrastructure, and property. As just one example, in October 2017, California experienced the most destructive fire to date. The Tubbs Fire, which burned parts of Napa, Sonoma, and Lake counties, "caused an estimated $1.2 billion in damages and destroyed over 5,000 structures, including 5% of the housing stock in the city of Santa Rosa."[43] And that was just one of more than a dozen fires that burned through Northern California in October 2017.[44]

As the climate continues to warm, "projected increases in wildfire frequency and area burned are expected to drive up costs associated with health effects, loss of homes and infrastructure, and fire suppression."[45] Communities in wildfire-prone areas—which will include an increasingly vast swath of the United States—will experience profound

39. *See* Jonathan Erdman, *12 Billion-Dollar Weather Disasters Hit the US This Year, Second Fastest Pace on Record, NOAA Says*, Weather Channel (July 13, 2023), https://weather.com/news/news/2023-07-11-billion-dollar-disasters-january-june-2023-noaa [https://perma.cc/NGT8-5TV4].

40. Fourth National Climate Assessment, *supra* note 20, at 36.

41. Thomas Loveland et al., *Land Cover and Land-Use Change*, *in* 2 Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment 202, 211 (David Reidmiller et al. eds., 2018), https://doi.org/10.7930/NCA4.2018.CH5.

42. *Id.* at 2.

43. Fourth National Climate Assessment, *supra* note 20, at 37 fig.1.5 ("In October 2017, more than a dozen fires burned through northern California, killing dozens of people and leaving thousands more homeless. Communities distant from the fires were affected by poor air quality as smoke plumes darkened skies and caused the cancellation of school and other activities across the region.").

44. *October 2017 Information*, Cal. Governor's Off. of Emergency Servs., https://wildfirerecovery.caloes.ca.gov/past-fires/october-2017-fires/oct-2017-info/ [https://perma.cc/3WWK-E583].

45. Thomas Loveland et al., *supra* note 41, at 2.

impacts on human health, economic activity, and social stability. Yet despite dramatic and increased incidences of devastating fires across the American West, we continue to allow development in fire-prone areas, and we continue to allow land-use management processes that increase the likelihood and severity of wildfire. The persistent "failure to anticipate [the] interconnected impacts" of climate change and land-use practices limits our ability to manage wildfire risks and increases the likelihood of future disasters—avoidable disasters.[46]

That is, despite all we know about the extensive threats that sea level rise, changing precipitation patterns, and changing wildfire patterns pose to communities nationwide, we continue to build in and invest in flood- and fire-prone areas. And while sea-level rise, flooding, and wildfires pose some of the most visible and dramatic climate-related threats to communities across the United States, the range of threats climate change poses is vast and includes everything from heat morbidity[47] and respiratory illness associated with extreme heat and worsening air pollution,[48] to economic collapse of primary industry.[49] The *Fourth National Climate Assessment* sums up the extensive range of economic threats climate change poses to communities in the United States:

> Without more significant global greenhouse gas mitigation and regional adaptation efforts, climate change is expected to cause substantial losses to infrastructure and property and impede the rate of economic growth over this century. Regional economies and industries that depend on natural resources and favorable climate

46. *Id.* at 13.

47. *See, e.g.*, KlimaSeniorinnen v. Switzerland, App. No. 53600/20, ¶ 1 (Nov. 26, 2020), https://hudoc.echr.coe.int/eng?i=002-13212 (explaining that an association of senior women sued the Swiss government in the European Court of Human Rights, alleging that their health was threatened by heat waves made worse by the climate crisis). For a description of the case, see Sabin Ctr. for Climate Change L., KlimaSeniorinnen v. Switzerland *(ECtHR)*, Climate Change Litig. Database, http://climatecasechart.com/non-us-case/union-of-swiss-senior-women-for-climate-protection-v-swiss-federal-council-and-others/ [https://perma.cc/TQ3U-WBQX]; *see also* Fourth National Climate Assessment, *supra* note 20, at 15 ("[H]eat-related deaths are projected to increase; in most regions, increases in heat-related deaths are expected to outpace reductions in cold-related deaths.").

48. *See* Fourth National Climate Assessment, *supra* note 20, at 98 ("More than 100 million people in the United States live in communities where air pollution exceeds health-based air quality standards. Unless counteracting efforts to improve air quality are implemented, climate change will worsen existing air pollution levels. This worsened air pollution would increase the incidence of adverse respiratory and cardiovascular health effects, including premature death. Increased air pollution would also have other environmental consequences, including reduced visibility and damage to agricultural crops and forests.").

49. *See, e.g.*, *id.* at 46 fig.1.15 ("The U.S. Caribbean Islands, Florida, Hawai'i, and the U.S.-Affiliated Pacific Islands face similar threats from coral bleaching and mortality due to warming ocean surface waters and ocean acidification. Degradation of coral reefs is expected to negatively affect fisheries and the economies that depend on them as habitat is lost in both regions."); *id.* at 128 ("Studies show that major shifts in fisheries distribution and changes to the structure and composition of marine habitats adversely affect food security, shoreline protection, and economies throughout the Caribbean.").

> conditions, such as agriculture, tourism, and fisheries, are increasingly vulnerable to impacts driven by climate change. Reliable and affordable energy supplies, which underpin virtually every sector of the economy, are increasingly at risk from climate change and weather extremes . . . . The potential for losses in some sectors could reach hundreds of billions of dollars per year by the end of this century.[50]

Climate change will wreak extensive damage on the U.S. economy. It will cost us hundreds of billions of dollars by the end of the century.[51] It will have immeasurable impacts on human health and well-being. It will fundamentally alter ecosystems and ecosystem services. It will redefine who we are and how we coexist with one another and our natural environments. Yet we are not helpless. Climate impacts are inevitable, but our response to them is not. How communities plan for climate change will profoundly impact the lives and well-being of their inhabitants.

To be blunt, we are currently unprepared to thrive amidst the brutal, existential threats of climate change. This includes the threats to our coastal cities, which are vastly unprepared for the rising seas that lap at their edges. It includes the threats to our southwestern and western cities, which are unprepared for the inevitable fires, droughts, and floods they face. It includes threats to cities nationwide, which face flooding, fire, heat, air pollution, disease, and economic decline.[52] We know with certainty that these threats exist. We also know with certainty that the impacts will become amplified over time. Yet we also know that very few localities are planning for the "anticipated scale of future change and emergent threats" that we now know to expect.[53] We are unprepared for the climate crisis.

Thus, we find ourselves at a critical juncture. Unless and until we confront climate change as the emergency that it is, we will continue to engage in planning processes that are, at best, performative acts of wishful thinking and, at worst, blatant acts of capitulation that knowingly sacrifice the futures of certain people and places for short-term gains.

Climate change is an emergency. As the UN has declared, "The science is clear. The world is in a state of climate emergency, and we need

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50. *Id.* at 36–37 (citations omitted).
51. *Id.* at 168.
52. *See, e.g.*, *id.* at 170.
53. *See, e.g.*, *id.* at 62 ("[T]he scale and scope of adaptation implementation has increased, including by federal, state, tribal, and local agencies as well as business, academic, and nonprofit organizations. While the level of implementation is now higher, it is not yet common nor uniform across the United States, and the scale of implementation for some effects and locations is often considered inadequate to deal with the projected scale of climate change risks. Communities have generally focused on actions that address risks from current climate variability and recent extreme events, such as making buildings and other assets incrementally less sensitive to climate impacts. Fewer communities have focused on actions to address the anticipated scale of future change and emergent threats, such as reducing exposure by preventing building in high-risk locations or retreating from at-risk coastal areas." (citation omitted)).

to shift into emergency gear."[54] Responding to the climate emergency requires rethinking many facets about of how we govern, including our land-use and city-planning processes.

### B. *Climate Emergency: The New Planning Environment*

There is a growing body of literature exploring the legal implications of defining climate change as a national emergency. [55] Much of this literature focuses on the scope of federal law and the repertoire of presidential powers potentially implicated by an emergency declaration. It explores how the President could draw on different emergency powers to fight climate change by taking actions ranging from suspending oil leases, to expanding electric vehicle production, to regulating fossil fuel companies.[56] Recognizing the importance of interrogating the complex implications of declaring climate change a national emergency, here we are focused on a different set of questions: Why are hundreds of local governments declaring climate emergencies? And how does defining climate change as an emergency at the local level advance efforts to better prepare for climate change?

The same factors that drive the conversation around declaring climate change a national emergency also underlie the urgency of treating climate change as a local emergency. Notably, as Nevitt, a professor at Emory University School of Law, highlights, "Climate change has three unique characteristics that penalize inaction and passivity: the rising severity of climate impacts, the irreversibility of climate impacts, and the urgency with which we must approach climate change to avert catastrophic harm."[57]

Recognizing the increasing urgency of the climate crisis, by mid-2023, more than 2,320 jurisdictions in 40 countries encompassing over 1 billion citizens had declared a climate emergency.[58] Those jurisdictions declaring a climate emergency include 18 national governments, the European Union, and a variety of sub-national jurisdictions.[59] This includes over 200 U.S. villages, towns, and cities.[60] Moreover, in 2021, in

54. *The Climate Emergency*, UN Env't Programme, https://www.unep.org/climate-emergency [https://perma.cc/R5GR-8UES].

55. *See generally* Mark P. Nevitt, *Is Climate Change a National Emergency?*, 55 U.C. Davis L. Rev. 591, 599 (2021), https://dx.doi.org/10.2139/ssrn.3803655 (noting that pinpointing the legal authorities authorized to address climate change is a novel contribution to the conversation).

56. Dan Farber, *Using Emergency Powers to Fight Climate Change*, Legal Planet (Jan. 14, 2019), https://legal-planet.org/2019/01/14/using-emergency-powers-to-fight-climate-change [https://perma.cc/25B7-7D6X].

57. Nevitt, *supra* note 55, at 645.

58. *Climate Emergency Declarations in 2,346 Jurisdictions and Local Governments Cover 1 Billion Citizens*, Climate Emergency Declaration (Sept. 8, 2023), https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/ [https://perma.cc/ZY9W-9CRA].

59. *Id.*

60. *Id.*

the largest-ever survey of climate opinion (*The People's Climate Vote*) of the 1.2 million respondents across 50 countries, 64% said that they believed that climate change was an emergency.[61]

While definitions of climate emergencies vary, in declaring "climate emergency" the word of the year in 2019, Oxford Languages defined it as "a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it."[62] From a governance perspective, declaring a climate emergency "refers to the act of naming a state of emergency."[63] It is the term that is used by governments at different levels when they want to emphasize the "catastrophic consequences of the changes in climate for humans," and although "a climate emergency declaration per se doesn't represent any formal or standard path to be followed, it admits the measures and actions taken so far to fight climate change haven't been enough and represents a formal commitment to set priorities to mitigate climate change."[64]

The form and implications of climate emergency declarations vary from place to place in the United States, but commonalities include a desire to recognize widespread concern about the seriousness of the climate crisis, the urgency of responding to climate change, and the need to create immediate space and capacity to accelerate governance responses.[65] For example, in declaring a climate emergency, the City of Portland stated:

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61. Cassie Flynn et al., People's Climate Vote: Results 15 (2021), https://www.undp.org/publications/peoples-climate-vote [https://perma.cc/XE48-KQVK] ("The Peoples' Climate Vote found that nearly two-thirds (64%) of people in 50 countries believe that climate change is a global emergency."). Notably, 65% of U.S. respondents indicated that they believe climate change is an emergency. *Id.* at 16 fig.3.

62. Oxford University Press, *Word of the Year 2019*, Oxford Languages, https://languages.oup.com/word-of-the-year/2019/ [https://perma.cc/SL5E-W54S]. The Cambridge Dictionary defines "climate emergency" as "serious or urgent problems that are being caused or likely to be caused by changes in the world's weather, in particular the world getting warmer as a result of human activity increasing the level of carbon dioxide in the atmosphere." Cambridge Univ. Press & Assessment, *Climate Emergency*, Cambridge Dictionary, https://dictionary.cambridge.org/dictionary/english/climate-emergency [https://perma.cc/5R2U-EDWQ].

63. *Climate Emergency Declaration Definition*, Youmatter (Jan. 21, 2020), https://youmatter.world/en/definition/definition-climate-emergency/ [https://perma.cc/DU28-CT48]

64. *Id.*

65. *See, e.g.*, Charles R. Corbett, *The Climate Emergency and Solar Geoengineering*, 46 Harv. Env't. L. Rev. 197, 204–06 (2022) (suggesting that "an emergency is a time-sensitive crisis in which the necessary response conflicts with 'normalcy,' a concept that includes established laws and social practices, constitutional norms, and so on"); J. Benton Heath, *The New National Security Challenge to the Economic Order*, 129 Yale L.J. 1020, 1037 (2020); Anne Barnard, *A 'Climate Emergency' Was Declared in New York City. Will That Change Anything?*, N.Y. Times (July 5, 2019), https://www.nytimes.com/2019/07/05/nyregion/climate-emergency-nyc.html [https://perma.cc/J8TZ-PPJR]; Mark Tutton, *UK Parliament Declares 'Climate Emergency,'* CNN (May 1, 2019,

> Whereas, the climate emergency is an existential threat to our community and economy, and combatting it will require government agencies, businesses, and residents to treat this as the crisis it is by taking bold steps to meet Portland's carbon reduction goals and building a healthy, resilient city in which everyone can thrive. Now, therefore, be it resolved, that the Portland City Council declares that a human-made climate emergency threatens our city, our region, our state, our nation, humanity, and the natural world, and that such an emergency calls for an immediate mobilization effort initiating greater action, resources, and collaboration that prioritizes frontline communities to restore a safe climate . . . .[66]

Notably, other jurisdictions have framed the climate crisis more specifically as a public health emergency. The City of Boston, for example, adopted a resolution affirming that the climate crisis is a public health emergency based on the myriad health impacts climate change will have, including "increased exposure to extreme heat, reduced air quality, more frequent and intense natural hazards, increased exposure to infectious diseases and aeroallergens, effects on mental health, and increased risk of population displacement and conflict."[67] In issuing its climate emergency resolution, the City of Boston, in common with many other jurisdictions, emphasized the disparate impact of climate change on those who are already the most vulnerable in society, including "children and pregnant women, people with low income, the elderly, people with disabilities and chronic illnesses, and marginalized people of all races and ethnicities."[68]

Other notable commonalities of local-level climate emergency declarations include an emphasis on achieving just transition with a particular focus on centering the economic needs and well-being of frontline communities, including workers and communities of color. Local emergency declarations also consistently focus on the importance of both mitigation and adaptation responses. For example, in its climate emergency resolution, the City of San Francisco emphasized that even as the city works on climate mitigation, it "shall continue to advance climate adaptation efforts to address unavoidable current and future climate change impacts."[69] The City of San Francisco also stressed that, in doing so, "labor unions and frontline environmental justice communities must be equitably and actively engaged in the City's transition to a fossil-fuel

5:46 PM), https://www.cnn.com/2019/05/01/europe/uk-climate-emergency-scn-intl/index.html [https://perma.cc/UE7D-M79R]; *see also* Clare Pledl, *Eco-Ableism in the Environmental Justice Movement*, 23 VT. J. ENV'T. L. 1, 12 (2021) (calling for consideration of the particular threats climate change poses to people with disabilities).

66. Portland, Or., Ordinance 37494 (June 30, 2020).

67. Bos. City Council, *City Council Affirms Climate Crisis as a Public Health Emergency*, CITY OF BOS., (Jan. 17, 2020), https://www.boston.gov/news/city-council-affirms-climate-crisis-public-health-emergency [https://perma.cc/UY7F-JUJW].

68. *Id.*

69. S.F., Cal., Resolution 160–19 (Apr. 2, 2019).

free economy and prioritized through local climate mitigation and adaptation planning, policy, and program delivery, ensuring a just transition for all people . . . ."[70] Similarly, the City of Boulder climate emergency proclamation calls for an emphasis on the "Just Transition," a "framework for a fair shift to an economy that is ecologically sustainable, equitable and just for all its members," and calls for actions to reduce greenhouse gas emissions and "measures to protect all people and species" from the impacts of climate change.[71]

The severity of the crisis. The urgent need for equitable mitigation and adaptation actions. The inadequacy of existing governance structures. Calls for immediate action. These are the commonalities that cut across the hundreds of local-level climate emergency declarations. But what is the practical impact of declaring a climate emergency? What comes next after a community declares a climate emergency?

There is no set formula for the work that a climate emergency declaration does. Some cities lay out specific commitments or goals in their climate emergency declaration. As one example, in its climate emergency declaration, Portland laid out "many ideas, aspirations, directions, and goals," including developing a new climate justice initiative, pursuing partnerships with youth-serving organizations, amending the City's emission reduction target, adopting new policies to reduce carbon from buildings and the transport sector, and enhancing the tree canopy.[72] These goals helped establish a roadmap for future actions. In contrast, other declarations are more aspirational and avoid laying out discrete goals or next steps. The City of Boulder's climate emergency proclamation, for example, simply calls for action:

> To support a countywide climate emergency mobilization and just transition effort to reverse global warming, including reducing countywide greenhouse gas emissions 45% below 2005 levels by 2030 and 90% below 2005 levels by 2050, and implementing adaptation and resilience strategies in preparation for intensifying climate

70. *Id.*

71. Bd. of Boulder Cnty. Comm'rs, A Proclamation Endorsing the Declaration of a Climate Emergency (2019), https://assets.bouldercounty.gov/wp-content/uploads/2019/07/climate-emergency-proclamation-july-2019.pdf[https://perma.cc/9UPL-4RYP]. The resolution also details the particular challenges Boulder faces, noting:

> [I]n Boulder County these [climate] impacts are already manifesting themselves in the form of wildfires burning twice as much acreage now as they did in 1980; more frequent and more severe flooding such as the devastating flood of 2013; and an increase in the number of summer days that will reach temperatures of over 95°F from an average of five between 1970-1999 to as many as 75 by the end of the 21st century . . . WHEREAS, restoring a safe and stable climate requires mobilization to reduce greenhouse gas emissions across all sectors, and to implement measures to protect all people and species from the consequences of abrupt climate change . . . .

*Id.*

72. City of Portland Bureau of Plan. & Sustainability, Climate Emergency Declaration: One-Year Progress Report (Resolution No. 37494) 7–8 (2021).

> impacts, the Board of Boulder County Commissioners hereby proclaim a climate emergency.[73]

To date, climate emergency declarations have focused more on creating space and a sense of urgency for action as opposed to dictating specific outcomes.[74] Here, we argue for one specific action that should follow a climate emergency declaration—a climate moratorium. As will be discussed in greater detail in Section III, a climate moratorium is a natural response to a climate emergency. It is a legal tool that recognizes and responds to an emergency situation and creates the space for responsive governmental action before it is too late.

In the context of the climate crisis, the possibility of actions coming too late to avoid severe negative outcomes is very real. This is especially true in the context of local-level planning and development decisions that could either advance or undermine climate adaptation. In its most recent report, the IPCC accentuated the urgent nature of prioritizing adaptation planning, noting that:

> Adaptation options that are feasible and effective today will become constrained and less effective with increasing global warming. With increasing global warming, losses and damages will increase and additional human and natural systems will reach adaptation limits. Maladaptation can be avoided by flexible, multi-sectoral, inclusive, long-term planning and implementation of adaptation actions . . . .[75]

More specifically, in the context of urban planning decisions, the report emphasized the urgency of creating inclusive planning processes that recognize and respond to the complex ways that climate change will impact existing infrastructure and governance systems.[76] Specifically, the report finds that:

> Effective multilevel governance for mitigation, adaptation, risk management, and climate resilient development is enabled by inclusive decision processes that prioritise equity and justice in planning and implementation, allocation of appropriate resources, institutional review, and monitoring and evaluation. Vulnerabilities and climate risks are often reduced through carefully designed and implemented laws, policies, participatory processes, and interventions that address context specific inequities such as those based on gender, ethnicity, disability, age, location and income.[77]

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73. Bd. of Boulder Cnty. Comm'rs, *supra* note 71.
74. *See, e.g.*, *supra* notes 64–73 and accompanying text.
75. IPCC, *supra* note 19, at 20.
76. *See id.* at 28–32.
77. *Id.* at 34. With respect to urban planning, the report suggests:
> Key adaptation and mitigation elements in cities include considering climate change impacts and risks (e.g. through climate services) in the design and planning of settlements and infrastructure; land use planning to achieve compact urban form, co-location of jobs and housing; supporting public transport and active mobility (e.g., walking and cycling); the efficient design, construction, retrofit, and use of buildings; reducing and changing energy and material consumption; sufficiency; material substitution; and electrification in combination

The inclusive, multilevel, equity-oriented governance processes the IPCC identifies as essential to advancing adaptation and avoiding maladaptation are possible, but they are not the norm. Local governments need to rethink their planning processes. They need tools to allow them to do so. The climate moratorium is one such tool. The climate moratorium responds to the emergency situations that the climate crisis creates. It pushes pause on development to allow local governments to engage in the type of planning processes the IPCC envisions.

In assessing progress towards achieving the goals set out in its climate emergency resolution, the City of Portland defined 2020–2021 as "[n]ot a normal year."[78] While it may be true that 2020–2021 was an exceptionally abnormal year due to the global pandemic, the reality is that climate change is destabilizing our entire understanding of what a "normal year" is and what normal conditions are. It is urgent that we rethink our governance processes in response to our new normal. As we describe in the following section, the climate moratorium advances this work.

## III. The Climate Moratorium

Ever since the Supreme Court approved of zoning in *Village of Euclid v. Ambler Realty Co.*,[79] courts have recognized that land use planning is a critical tool in controlling threats to the community.[80]

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> with low emissions sources (*high confidence*). Urban transitions that offer benefits for mitigation, adaptation, human health and well-being, ecosystem services, and vulnerability reduction for low-income communities are fostered by inclusive long-term planning that takes an integrated approach to physical, natural and social infrastructure (*high confidence*). Green/natural and blue infrastructure supports carbon uptake and storage and either singly or when combined with grey infrastructure can reduce energy use and risk from extreme events such as heatwaves, flooding, heavy precipitation and droughts, while generating co-benefits for health, well-being and livelihoods (*medium confidence*).

*Id.* at 31 (citation omitted).

In terms of the effectiveness of specific adaptation responses, the report notes:

> Policy mixes that include weather and health insurance, social protection and adaptive social safety nets, contingent finance and reserve funds, and universal access to early warning systems combined with effective contingency plans, can reduce vulnerability and exposure of human systems. Disaster risk management, early warning systems, climate services and risk spreading and sharing approaches have broad applicability across sectors. Increasing education including capacity building, climate literacy, and information provided through climate services and community approaches can facilitate heightened risk perception and accelerate behavioural changes and planning.

*Id.* at 32.

78. City of Portland Bureau of Plan. & Sustainability, *supra* note 72, at 10.

79. Village of Euclid v. Ambler Realty Co., 272 U.S. 365, 395 (1926).

80. *See generally* John R. Nolon, *In Praise of Parochialism: The Advent of Local Environmental Law*, 26 Harv. Env't. L. Rev. 365, 366 (2002) ("[E]xplain[ing] the role that local governments have assumed in protecting the environment . . . and discuss[ing] how this enhanced municipal role should influence environmental and land use policy . . . ."); *see also* Keith H. Hirokawa, *Sustaining Ecosystem Services*

Technological, cultural, social, and economic conditions *change*, and with it come new threats to public safety and welfare. In *Euclid*, the Court noted:

> Until recent years, urban life was comparatively simple; but with the great increase and concentration of population, problems have developed, and constantly are developing, which require, and will continue to require, additional restrictions in respect of the use and occupation of private lands in urban communities. Regulations, the wisdom, necessity and validity of which, as applied to existing conditions, are so apparent that they are now uniformly sustained, a century ago, or even half a century ago, probably would have been rejected as arbitrary and oppressive. Such regulations are sustained, under the complex conditions of our day, for reasons analogous to those which justify traffic regulations, which, before the advent of automobiles and rapid transit street railways, would have been condemned as fatally arbitrary and unreasonable.[81]

Almost fifty years after the *Euclid* decision, state courts continue to discuss land use controls as essential and well-settled. In *Cappture Realty Corp. v. Board of Adjustment*, the New Jersey court stated:

> The considerations which prompted legal recognition of comprehensive municipal planning of land uses are now history. The population explosion, industrial and commercial growth, the race for ratables, the constantly accelerating trend towards greater urbanization, and many other factors precipitated the utilization of zoning as a method of guarding against haphazard land usage detrimental to the public welfare.[82]

Of course, we now know that the "advent of automobiles and rapid transit street railways,"[83] the constantly accelerating trend toward greater urbanization,[84] and the burning of fossil fuels that goes with them, were major causes of the climatic changes we now experience. And we know that climate change is one of those circumstances that requires a deep dive into the regulatory toolbox, repurposing of conventional regulatory tools, and even the creation of new ones.[85] We need to engage in this kind of thinking to save lives and maintain livable conditions in our communities.

So, what tools do we have at our disposal to engage in the kind of planning that is needed—planning that will save lives and enable

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*Through Local Environmental Law*, 28 Pace Env't. L. Rev. 760, 770 (2011), https://doi.org/10.58948/0738-6206.1676 (exploring the ecosystem services perspective and its relevance to environmental regulation at the local government level).

81. *Euclid*, 272 U. S. at 386–87.

82. Cappture Realty Corp. v. Bd. of Adjustment, 313 A.2d 624, 630 (N.J. Super. Ct. Law Div. 1973).

83. *Euclid*, 272 U. S. at 387.

84. *See id.* at 392.

85. *See* Cinnamon P. Carlarne & Keith H. Hirokawa, *Climate Law Leaps*, 108 Iowa L. Rev. Online 102, 110–16 (2023).

community flourishing not just next year but into our inevitably climate-changed future? As explained in detail below, adaptation planning surely includes an identification of the most vulnerable in our communities to climatic changes and an inventory of infrastructure deficiencies that account for today's infrastructure needs, as well as those that will arise as climate conditions worsen. Adaption planning also requires forward-looking planning that focuses on the vulnerabilities that stretch across the socio-economic platform and exposes the demands of equity and fairness in planning resilient communities. The problem, in our view, is that the potential gains for adaptation planning come at a time when past planning and development interests continue to influence our adaptive capacity: we increase vulnerabilities by building in flood-prone and wildfire-prone areas, failing or refusing to build housing that protects residents from excessive heat, and increasing water demand in arid areas. In the meantime, many communities are already facing failing infrastructure, housing shortages, food deserts, and already stressed hydrological systems, not to mention poverty, racism, and a wide variety of bigotries. In other words, we are making it more difficult to survive climate change, day by day, and we were not prepared to begin with. The need for change may indeed have been yesterday, and the slow pace of change comes with the realization that adaptation planning appears as "locking the stable after the horse is stolen."[86]

Enter the climate moratorium.[87]

A land-use moratorium,[88] often referred to as an interim zoning ordinance,[89] is a temporary suspension on the issuance of building and other development permits.[90] The suspension—essentially making space to engage in land use and community planning—is designed to give local governments time to study and make considered decisions with respect to adopting or amending comprehensive land-use plans, zoning ordinances, or other land-use regulations.[91] This tool is especially relevant in the climate change context, where local governments already lack the infrastructure or public facilities needed to serve both existing and new developments.[92] In such cases, a moratorium allows a local government to engage in planning activities for the financing and construction of critical infrastructure,[93] including the protection of ecosystem services

86. Downham v. City Council of Alexandria, 58 F.2d 784, 788 (E.D. Va. 1932).

87. We introduced this idea in *Climate Law Leaps*, *supra* note 85, at 110–14.

88. *See generally* Robert H. Freilich, *Interim Development Controls: Essential Tools for Implementing Flexible Planning and Zoning*, 49 J. Urb. L. 65, 65–67 (1971) (discussing the use of land-use controls to temporarily prevent land development).

89. *See* Matthew G. St. Amand & Dwight H. Merriam, *Defensible Moratoria: The Law Before and After the* Tahoe-Sierra *Decision*, 43 Nat. Res. J. 703, 709 (2003).

90. *See, e.g.*, *Downham*, 58 F.2d at 788.

91. *See id.*; *see also* Town of Mendon v. Ezzo, 278 A.2d 726, 729 (Vt. 1971).

92. *See* Belle Harbor Realty Corp. v. Kerr, 323 N.E.2d 697, 699 (N.Y. 1974).

93. Am. Plan. Ass'n, Growing Smart Legis. Guidebook 179–80 (Stuart Meck ed., 2002); *see also* James A. Kushner, Subdivision Law and Growth Management § 2.4 (2d ed. 2022) (surveying state statutory authority and case law on moratoria authority).

that are provided by functioning ecosystems,[94] that will meet the resiliency needs of the affected community.[95]

Through the climate moratorium, a local government can temporarily maintain the status quo to protect public safety and welfare against community threats. Moratoria have been used to engage in comprehensive land-use planning,[96] to address increasing congestion,[97] to preserve opportunities for affordable housing development,[98] to preserve opportunities for commercial development,[99] to address infrastructure inadequacies (particularly in the face of new development),[100] to understand and mitigate threats to water quality,[101] to plan for energy facility development,[102] to address erosion[103] and environmental concerns from forest practices,[104] to plan for historic property protection,[105] to consider land acquisition for park purposes,[106] and to address water scarcity.[107] Courts regularly (but not always) uphold moratoria that are limited to a reasonable period of time,[108] that are reasonably formulated to

94. For an explanation of the identification and use of ecosystem services to protect communities, especially in the context of climate change, see Keith H. Hirokawa et al., *Mapping Ecosystem Benefit Flows to Normalize Equity*, 54 Ariz. St. L.J. 819, 847–48 (2023).

95. Some state agencies are providing guidance to local governments on how to adopt effective moratoria to increase resilience. *See, e.g.*, *Guidance for Local Governments*, N.Y. Dept. of State, https://dos.ny.gov/guidance-local-governments [https://perma.cc/G773-GLUE].

96. *See, e.g.*, Nolen v. Newtown Township, 854 A.2d 705, 706–07 (Pa. Commw. Ct. 2004) (discussing a moratorium to create a comprehensive plan); Droste v. Bd. of Cnty. Comm'rs, 159 P.3d 601, 603 (Colo. 2007).

97. *See* Associated Home Builders, Inc. v. City of Livermore, 557 P.2d 473, 475 (Cal. 1976) (congestion in schools); WCI Cmtys., Inc. v. City of Coral Springs, 885 So. 2d 912, 915 (Fla. Dist. Ct. App. 2004) (noting the purpose of the ordinance at hand was "[t]o enable the city to undertake a thorough analysis of the Comprehensive Plan and the residential development regulations for RC & RM zoning districts including, but not limited to the impact of said development on parks, recreation and open space, the availability of infrastructure and accessibility of emergency and public service vehicular traffic and public safety and public facilities").

98. Bellingham, Wash., Emergency Ordinance No. 2020-03-006 (2020) (enacting a moratorium on single-family detached dwellings to plan for greater housing diversity).

99. Edgewood, Wash., Ordinance No. 19-0547 (2019) (enacting a moratorium on residential development to prevent loss of land left for commercial development).

100. Belle Harbor Realty Corp. v. Kerr, 323 N.E.2d 697, 698 (N.Y. 1974).

101. *See, e.g.*, Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 535 U.S. 302, 306 (2002) (discussing pollution in Lake Tahoe).

102. *See, e.g.*, Ecogen, LLC v. Town of Italy, 438 F. Supp. 2d 149, 152–53 (W.D.N.Y. 2006) (discussing a moratorium preventing wind energy development).

103. Sun Ridge Dev., Inc. v. City of Cheyenne, 787 P.2d 583, 584, 586–87 (Wyo. 1990).

104. Clark County, Wash. Code § 40.260.080(A)(1) (2023).

105. City of Dallas v. Crownrich, 506 S.W.2d 654, 655–56 (Tex. App. 1974).

106. Santa Fe Vill. Venture v. City of Albuquerque, 914 F. Supp. 478, 480 (D.N.M. 1995) (discussing a moratorium to allow Congress to consider creating the Petroglyph National Monument).

107. *See, e.g.*, Marin Mun. Water Dist. v. KG Land Cal. Corp., 235 Cal. App. 3d 1652, 1657 (1991) (discussing a moratorium issued in connection with a community water shortage).

108. *See, e.g.*, Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 535 U.S.

advance the stated public interest,[109] and that result in actual planning or construction.[110]

In the context of climate change, the danger associated with planning activities that respond to new or pressing challenges is the "race of diligence," the idea that upon notice of the pendency of new land use planning or proposal of a new development control ordinance, property owners will literally race to secure permits and build before being prevented from doing so. The idea of the race of diligence is attributed to the early Virginia case of *Downham v. City Council of Alexandria*, in which the court stated:

> [I]t seems to the court that it would be a rather strict application of the law to hold that a city, pending the necessary preliminaries and hearings incident to proper decisions upon the adoption and the terms of a zoning ordinance, cannot, in the interim, take reasonable measures temporarily to protect the public interest and welfare until an ordinance is finally adopted. Otherwise, any movement by the governing body of a city to zone would, no doubt, frequently precipitate a race of diligence between property owners, and the adoption later of the zoning ordinance would in many instances be without effect to protect residential communities—*like locking the stable after the horse is stolen*.[111]

Likewise, in *Tahoe-Sierra*, the Supreme Court recognized that, in the absence of temporary controls pending the outcome of an investigation of the public need for regulations, "landowners will have incentives to develop their property quickly before a comprehensive plan can be enacted, thereby fostering inefficient and ill-conceived growth."[112] The fear is that landowners will rush to develop to beat the clock on new laws and, in the process, defeat the purposes of the new laws.[113]

In *Tahoe-Sierra*, the Court noted that Lake Tahoe was widely recognized as a treasure: "Lake Tahoe is 'uniquely beautiful,' that President

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302, 341–42 (2002) ("[A]ny moratorium that lasts for more than one year should be viewed with special skepticism.").

109. *See, e.g.*, Ecogen, LLC v. Town of Italy, 438 F. Supp. 2d 149, 158 (W.D.N.Y. 2006) (refusing to enjoin a moratorium on wind energy development that was applied to substations, even though the substations had minimal impacts on the aesthetic purpose of the moratorium).

110. *See, e.g.*, Belle Harbor Realty Corp. v. Kerr, 323 N.E.2d 697, 698 (N.Y. 1974).

111. Downham v. City Council of Alexandria, 58 F.2d 784, 788 (E.D. Va. 1932) (emphasis added).

112. *Tahoe-Sierra Pres. Council, Inc.*, 535 U.S. at 339.

113. As the Court noted, the Compact itself identified this challenge:

> A finding in the 1980 Compact itself, which presumably was endorsed by all three legislative bodies that participated in its enactment, attests to the importance of that concern. ("The legislatures of the States of California and Nevada find that in order to make effective the regional plan as revised by the agency, it is necessary to halt temporarily works of development in the region which might otherwise absorb the entire capability of the region for further development or direct it out of harmony with the ultimate plan").

*Id.* (quoting Tahoe Reg'l Plan. Compact, Pub. L. 96-551, 94 Stat. 3233, 3243 (1980)).

Clinton was right to call it a 'national treasure that must be protected and preserved,' and that Mark Twain aptly described the clarity of its waters as 'not *merely* transparent, but dazzlingly, brilliantly so.'"[114] Unfortunately, the beauty of the lake attracted many to the area, and development that accommodated the population influx increased the amount of impervious surfaces in the region, increasing unmitigated stormwater runoff into the lake and causing increased nutrient loading.[115] The result was a threat to the characteristics of the lake that made it attractive. The Court noted:

> Lake Tahoe's exceptional clarity is attributed to the absence of algae that obscures the waters of most other lakes. Historically, the lack of nitrogen and phosphorous, which nourish the growth of algae, has ensured the transparency of its waters. Unfortunately, the lake's pristine state has deteriorated rapidly over the past 40 years; increased land development in the Lake Tahoe Basin (Basin) has threatened the "noble sheet of blue water" beloved by Twain and countless others. As the District Court found, "[d]ramatic decreases in clarity first began to be noted in the late 1950's/early 1960's, shortly after development at the lake began in earnest." The lake's unsurpassed beauty, it seems, is the wellspring of its undoing.[116]

To control the impacts of development, participating state and regional governmental entities formed the Tahoe Regional Planning Agency ("TRPA") (under the Tahoe Regional Planning Compact) and tasked it with "develop[ing] regional 'environmental threshold carrying capacities'—a term that embraced 'standards for air quality, water quality, soil conservation, vegetation preservation and noise'" within an identified timeframe.[117] However, early into the planning process, the TRPA realized more time was needed to formulate an effective plan.[118] In a series of acts that reflected the complexity of the planning goals, the TRPA adopted multiple moratoria on new development that would remain in effect until the plan was finalized—which amounted to a total of 32 months.[119]

While rejecting the notion that *any* temporary deprivation of use constitutes a regulatory taking,[120] the Court was reminded that "[a]s Justice Holmes warned in *Mahon*, '[g]overnment hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in the general law.'"[121] Indeed, the Court

114. *Id.* at 307 (quoting Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 34 F. Supp. 2d 1226, 1230 (Nev. 1999)).
115. *Id.* at 308.
116. *Id.* at 307 (alteration in original) (citation omitted).
117. *Id.* at 310 (quoting Tahoe Reg'l Plan. Compact, Pub. L. 96-551, 94 Stat. 3235, 3239 (1980)).
118. *Id.* at 311.
119. *Id.* at 311–12.
120. *Id.* at 337.
121. *Id.* at 335 (quoting Pa. Coal Co. v. Mahon, 260 U.S. 393, 413 (1922)).

noted, "[a] rule that required compensation for every delay in the use of property would render routine government processes prohibitively expensive or encourage hasty decisionmaking."[122]

The Court observed that there was no evidence the TRPA was acting in bad faith or otherwise trying to avoid engaging in considerate planning.[123] Rather, the Court noted that there is an "interest in facilitating informed decisionmaking by regulatory agencies . . . ."[124] The moratorium was a tool designed and used for that very purpose. As the Court stated:

> Unlike the "extraordinary circumstance" in which the government deprives a property owner of all economic use, moratoria . . . are used widely among land-use planners to preserve the status quo while formulating a more permanent development strategy. In fact, the consensus in the planning community appears to be that moratoria, or "interim development controls" as they are often called, are an essential tool of successful development.[125]

Given the context in which local governments have relied on moratoria, including the purposes for which moratoria are effective, and the need to engage in land-use planning and infrastructure repair, the climate moratorium will be an effective tool in the adaptation toolbox.

### A. *The Mechanics of Moratoria*

A preliminary judicial inquiry involves whether the local government has the authority to adopt a moratorium. In some states, moratorium authority is often premised on home rule charters:[126] specific enabling legislation that either includes the power to adopt interim measures[127] or specific limitations on the use of moratoria.[128] However, where local governments act in the absence of specific statutory authority (or beyond express authority), courts have often found that a statutory scheme may imply the authority to adopt a moratorium under either planning and zoning enabling authority[129] or pursuant to the more extensive powers

122. *Id.*
123. *Id.* at 334.
124. *Id.* at 339.
125. *Id.* at 337–38 (citations omitted) (quoting Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1017 (1992)).
126. *See, e.g.*, Fletcher v. Porter, 21 Cal. Rptr. 452, 454 (Dist. Ct. App. 1962).
127. *See, e.g.*, WASH. REV. CODE § 36.70.790 (1963).
128. *See* N.J. STAT. § 40:55D-90 (1975); OR. REV. STAT. § 197.520(1) (1980).
129. *See, e.g.*, Brazos Land, Inc. v. Bd. of Ctny. Comm'rs, 848 P.2d 1095, 1101 (N.M. Ct. App. 1993); Almquist v. Town of Marshan, 245 N.W.2d 819, 825 (Minn. 1976); Schoeller v. Bd. of Cnty. Comm'rs, 568 P.2d 869, 878 (Wyo. 1977). Although many moratoria cases involve delays in land use development to facilitate efforts to engage in local land use planning, there seems to be no basis for distinguishing between emergency planning needs and stop-gap needs for consideration of floodplain development regulations, economic development, or historic structures. *See, e.g.*, Woodbury Place Partners v. City of Woodbury, 492 N.W.2d 258, 262 (Minn. Ct. App. 1992).

authorized under the general police power.[130] Although most moratoria are prompted by the consideration of jurisdiction-wide planning needs, some moratoria are upheld even where they are in response to a specific development proposal.[131] Hence, in some cases, courts have even been willing to uphold the denial of a single building permit where the approval would be contrary to a pending new zoning ordinance, despite the proposed use being in compliance with the existing ordinance.[132]

Where the court does find authority to adopt a moratorium, local governments may be subject to procedural requirements that can slow down the regulatory process.[133] Most land use control ordinances are subject to public notice and hearing requirements, and given the crises that often surround the use of moratoria, local governments often move quickly to adopt them.[134] In some cases, particularly where local government is unable to demonstrate exigency, courts have invalidated hastily-approved moratoria.[135] However, as further discussed below, many courts are willing to uphold an interim measure adopted without notice or a public hearing,[136] particularly where the moratorium responded to an emergency circumstance.[137]

130. *See, e.g.*, Collura v. Town of Arlington, 329 N.E.2d 733, 736–37 (Mass. 1975) (finding implied authority to adopt moratoria in the broad delegation of police power to local governments and in-home rule provisions of the state constitution); *Almquist*, 245 N.W.2d at 825 (finding that Municipal Planning Act provided implied authority to adopt temporary measures); Rubin v. McAlevey, 282 N.Y.S.2d 564, 568 (Sup. Ct. 1967), *aff'd*, 288 N.Y.S.2d 519 (App. Div. 1968) (upholding under enabling act interim ordinances that controlled growth from overtaxing infrastructure). In contrast, some state courts have invalidated moratoria in the absence of express statutory authority. *See, e.g.*, Naylor v. Township of Hellam, 773 A.2d 770, 777 (Pa. 2001); Schrader v. Guilford Plan. & Zoning Comm'n, 418 A.2d 93, 94 (Conn. Super. Ct. 1980); Bd. of Supervisors v. Horne, 215 S.E.2d 453, 459 (Va. 1975).

131. *See Almquist*, 245 N.W.2d at 825–26 (upholding interim control even when done in response to a specific development proposal, where a planning process would be the most effective response).

132. A.J. Aberman, Inc. v. City of New Kensington, 105 A.2d 586, 589–90 (Pa. 1954); Hunter v. Adams, 4 Cal. Rptr. 776, 784 (Ct. App. 1960); Russian Hill Improvement Ass'n v. Bd. of Permit Appeals, 423 P.2d 824, 832–33 (Cal. 1967).

133. *See, e.g.*, City of Sanibel v. Buntrock, 409 So. 2d 1073, 1075 (Fla. Dist. Ct. App. 1981) (finding that notice and hearing requirements in state zoning enabling laws applied to adoption of moratoria in the absence of an emergency); Matson v. Clark Cnty. Bd. of Comm'rs, 904 P.2d 317, 320 (Wash. Ct. App. 1995) (noting that to make sure interim zoning efforts are effective, they "must not be subject to time-consuming notice and hearing requirements applicable to ordinary zoning").

134. *See Buntrock*, 409 So. 2d at 1074–75.

135. *See e.g.*, Montana v. Miller, 545 P.2d 660, 662 (Mont. 1976) (stating that an interim ordinance was null and void for failure to comply with notice and hearing requirements).

136. *See, e.g.*, Duncanson v. Bd. of Supervisors, 551 N.W.2d 248, 250 (Minn. Ct. App. 1996) ("[N]o notice is required when an interim ordinance is enacted.").

137. *See* Metro Realty v. Cnty. of El Dorado, 222 Cal. App. 2d 508, 517–19 (Dist. Ct. App. 1963) (stating that no notice was required before adopting an emergency measure for the purpose of developing a water development and conservation plan); Jablinske v. Snohomish Cnty., 626 P.2d 543, 545–46 (Wash. Ct. App. 1981) (finding that emergency measures intended to preserve the status quo during comprehensive plan process were not subject to notice and hearing requirements).

A third requirement, which often consumes judicial review of moratoria, focuses on the duration of the development delay. Where the length of a moratorium is not statutorily limited, courts will typically uphold moratoria that are limited to a "reasonable" delay.[138] As the court noted in *Deal Gardens, Inc. v. Board of Trustees*:

> Although the municipality may adopt a "stop gap" zoning ordinance, which if not temporary might be considered unconstitutional, such power is strictly limited and must be exercised with great caution. One of the more dangerous aspects of this type of legislation, arises from the damage which may result if there is no restriction of the period of time during which a restraint against some land use is permitted to continue. Plainly there must be some terminal point. It is impossible to establish an inflexible rule applicable to every case. Each situation must be assayed in its own particular factual setting to ascertain whether the elapsed time during which the ordinance has been in effect is reasonable.[139]

There are a variety of factors that are relevant to reasonableness, including the complexity of the public welfare threat to be studied, whether the local government is pursuing a solution in good faith, and the burden borne by the property owners.[140] Courts have upheld delays that could have extended an entire generation (18 years) when designed as an effective growth-control approach.[141] In many of these cases, courts are willing to display extraordinary deference to local legislatures that are, in good faith, responding to a threat to human health and safety.[142]

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138. Valley View Indus. Park v. City of Redmond, 733 P.2d 182, 195–96 (Wash. 1987) (stating that time was a relevant factor justifying a delay in processing building permit applications, and here the delay did not exceed a reasonable period for issuance of a permit); Gisler v. Deschutes Cnty., 945 P.2d 1051, 1055 (Or. Ct. App. 1997) (stating a delay of over a year was not excessive); Guinnane v. City of S.F., 241 Cal. Rptr. 787, 791–92 (Ct. App. 1987), *cert. denied*, 488 U.S. 823 (1988) (stating that the delay was not excessive); *see also* Robert H. Freilich, *Time, Space, and Value in Inverse Condemnation: A Unified Theory for Partial Takings Analysis*, 24 U. Haw. L. Rev. 589, 592–94, 600–10 (2002) (reviewing cases involving the reasonableness of the duration of moratoria); Dwight H. Merriam & Gurdon H. Buck, *Smart Growth, Dumb Takings*, 29 Env't. L. Rep. 10746, 10751–53 (1999) (reviewing cases involving the reasonableness of the duration of moratoria).

139. Deal Gardens, Inc. v. Bd. of Trustees, 226 A.2d 607, 611 (N.J. 1967).

140. Peacock v. Cnty. of Sacramento, 77 Cal. Rptr. 391, 398 (Ct. App. 1969) (finding that a moratorium effectively lasting three years was reasonable time to study land use problems, but beyond that time would be considered a taking). In *Westwood Forest Estates, Inc. v. Village of South Nyack*, the court stated that a reasonable duration of a moratorium will be: (1) temporary, (2) limited to necessary improvements, and (3) not designed so that individual property owners shoulder the burdens instead of the community. 244 N.E.2d 700, 703 (N.Y. 1969). In *Westwood Forest*, the court invalidated the moratorium where the village did not suffer inadequate sewer capacity but instead had failed to provide adequate treatment of sewage effluent over a long period of time. *Id.* at 701–03. The court did not dispute the need to repair the problem but found that the village's refusal to allow one property owner to develop unfairly burdened the individual. *Id.* at 702.

141. Golden v. Plan. Bd., 285 N.E.2d 291, 304–05 (N.Y. 1972).

142. As the court noted in *Cappture Realty*, "[a]lthough this case now involves a moratorium for flood alleviation construction, there is no rational basis for holding that

Hence, on remand in *First English Evangelical Lutheran Church v. County of Los Angeles*, for instance, the California court found that "[t]he study was completed and a report containing recommended restrictions submitted in less than two years. County decision-makers took another six months to hold hearings, ponder and pass the somewhat less restrictive permanent ordinance."[143] Under such circumstances, the County did not "owe any of these landowners a duty to cut any corners in the study or take any risks that anything might be overlooked which could produce a permanent ordinance less restrictive than public safety concerns demanded."[144]

An additional requirement considered by courts is whether the local government is actually making use of the development delay to accomplish the purposes of the moratorium.[145] In *Wincamp Partnership, OTC v. Anne Arundel County*, the court was faced with an overtaxed sewage system and difficult choices about where, when, and how to update and expand the system.[146] Plaintiffs were owners (and financiers) of approximately 580 acres of undeveloped property in Anne Arundel County, Maryland.[147] Those properties were served by the county-operated Patuxent Wastewater Treatment Plant, which was engaged in a lengthy process of expansion to accommodate capacity needs that pre-existed the plaintiffs' development proposals.[148] Then-recent amendments to the state's subdivision laws prohibited approval of subdivisions that were not served by adequate sewer facilities.[149] After the plaintiffs were informed that the County would not approve their subdivision

a municipality may not provide sufficient breathing space in order to complete construction of such flood control projects where the health, safety and welfare (as well as property values) of the people in the municipality are involved." Cappture Realty Corp. v. Bd. of Adjustment, 313 A.2d 624, 631 (N.J. Super. Ct. Law Div. 1973).

143. First Eng. Evangelical Lutheran Church v. Cnty. of L.A., 258 Cal. Rptr. 893, 906 (1989) (considering a "temporary measure—in effect a total moratorium on any construction on First English's property—while the County conducted a study to determine what uses and what structures, if any, could be permitted on this property consistent with considerations of safety").

144. *Id.*

145. In general, municipalities or counties enacting moratoria must act on a rational basis and proceed in good faith. Hence, in *Wincamp Partnership, OTC v. Anne Arundel County*, state and local laws prohibited the issuance of building permits where the applicant could not show adequate sewer capacity. 458 F. Supp. 1009, 1012 (D. Md. 1978). The court deferred to the decision of the county, which had decided against immediately financing sewer improvements that would have allowed the development of plaintiff's land, where the county illustrated good faith efforts to repair the deficiencies and acted rationally in adopting priorities for service to new users. *Id.* at 1029–30. In contrast, in *Charles v. Diamond*, the court remanded the case for consideration of whether the town's ten-year delay in permitting to make improvements was unreasonable. 360 N.E.2d 1295, 1302 (N.Y. 1977).

146. *Wincamp P'ship, OTC*, 458 F. Supp. at 1012–16.

147. *Id.* at 1011.

148. *Id.*

149. *Id.* at 1012.

proposals until sewage capacity was secured, the plaintiffs sued, alleging a taking for failure to maintain adequate sewage capacity.[150]

Against the challenges, the court found that the County's actions were "reasonably related to the public welfare in terms of geographical extent, duration and purpose."[151] The court's reasonableness determination was based on findings that the County "is about to appropriate funds" for the sewer expansion, "has developed a plan . . . for attacking the water and sewerage problems occasioned by its rapid growth," and "[t]here is no evidence in the record that the County has been overly lax in implementing that plan though it would hardly seem to have acted as speedily as it might have."[152] The court's conclusion illustrates the municipality's dire need to be able to adopt stop-gap and interim measures to protect the public welfare:

> Municipalities must retain the authority to modify their policies with respect to community development, without having the burden of demonstrating that the consequences of change fall evenly upon interested parties. A contrary rule would prevent local government from reacting to changed conditions or from implementing alterations in municipal priorities.[153]

Although moratorium requirements are construed in a wide variety of ways across jurisdictions, many courts recognize that moratoria can be an effective way to meet challenges before they grow into community problems. In the next section, we offer examples of successful moratoria that illustrate the tool's potential in addressing much-needed climate adaptation planning.

### B. *Use for Relevant Purposes: The Climate Emergency*

As noted above, courts often defer to local governments when moratoria are adopted in response to an emergency. Notably, several states have adopted specific legislation that authorizes interim zoning ordinances but limits the exercise of that power to the diligent pursuit of solutions to identified emergencies. For instance, New Jersey authorizes moratoria "where the municipality demonstrates on the basis of a written opinion by a qualified health professional that a clear imminent danger to the health of the inhabitants of the municipality exists . . . ."[154] Likewise, Minnesota law provides:

> If a county is conducting or in good faith intends to conduct studies within a reasonable time, or has held or is holding a hearing for the purpose of considering a comprehensive plan or official controls

150. *Id.* at 1012, 1015.
151. *Id.* at 1029.
152. *Id.*
153. *Id.* at 1030 (quoting City of Highland Park v. Train, 374 F. Supp. 758, 773 (N.D. Ill. 1974), *aff'd*, 519 F.2d 681 (7th Cir. 1975)).
154. N.J. STAT. § 40:55D-90(b) (1975).

> or an amendment, extension, or addition to either, or in the event new territory for which no zoning may have been adopted, may be annexed to a municipality, the board in order to protect the public health, safety, and general welfare may adopt as an emergency measure a temporary interim zoning map or temporary interim zoning ordinance, the purpose of which shall be to classify and regulate uses and related matters as constitutes the emergency. Such interim resolution shall be limited to one year from the date it becomes effective and to one year to renewal thereafter.[155]

In some ways, requiring local governments to demonstrate an actual emergency has slowed the use of moratoria.[156] In the context of climate change, the question of whether an actual emergency exists is likely a moot point. Nonetheless, in addition to the water quality challenges discussed above in *Tahoe-Sierra*, it is worthwhile to consider a few examples of the types of emergencies that have justified moratoria in the past. These are exactly the challenges local governments will face in the coming decades.

First, moratoria have been used to facilitate sewer improvements intended to correct a deficiency.[157] In *Belle Harbor Realty Corp. v. Kerr*, the municipality was faced with an "already overloaded, overflowing, backing-up, antiquated sewer system."[158] Under such circumstances, the court was less concerned with development delays than the good faith pursuit of repairs for the problem:

> Consequently a municipality may not invoke its police powers solely as a pretext to assuage strident community opposition. To justify interference with the beneficial enjoyment of property the municipality must establish that it has acted in response to a dire necessity, that its action is reasonably calculated to alleviate or prevent the crisis condition, and that it is presently taking steps to rectify the problem. When the general police power is invoked under such circumstances it must be considered an emergency measure and is circumscribed by the exigencies of that emergency.[159]

In *Belle Harbor*, the court upheld the revocation of a permit for construction of a nursing home where the sewer system was inadequate for

155. MINN. STAT. § 394.34 (1959); *accord* COLO. REV. STAT. § 30-28-121 (1963); ME. REV. STAT. tit. 30-A, § 4356 (1989).

156. *See* N.J. Shore Builders Ass'n v. Mayor of Middletown, 561 A.2d 319, 324 (N.J. Super. Ct. Law Div. 1989) (invalidating a six-month subdivision moratorium based on finding that the testimony about water availability did not meet the "clear imminent danger" standard).

157. *See, e.g.*, Est. of Scott v. Victoria Cnty., 778 S.W.2d 585, 591 (Tex. App. 1989) ("[T]he evidence in the instant case established that there was a crisis situation at the Aloe sewer plant. . . . The evidence conclusively established that the moratorium was necessary to prevent a further hazard to the health and safety of the public.").

158. 323 N.E.2d 697, 699 (N.Y. 1974).

159. *Id.*

current use.[160] The court ordered a new proceeding to determine if the revocation was necessary to prevent health risk.

Likewise, moratoria have been employed to address flooding risks. In *Cappture Realty Corp. v. Board of Adjustment*, the court reviewed challenges to a moratorium that allowed a community time to consider flood control needs.[161] The original ordinance stated:

> WHEREAS, it is of immediate and vital importance that all construction in the flood prone and flood plain areas be prohibited for a reasonable time to enable the Borough of East Paterson to study and put into operation flood control plans and to study and adopt necessary amendments to its Zoning Ordinances and Building Code to prevent and alleviate flood conditions in such areas . . . .[162]

The moratorium was expressly limited to one year but then was extended for two additional years by successive ordinances.[163] Prior to the original moratorium ordinance, the County had retained an engineering firm to study the flood dangers from the relevant waterbody, Fleischer Brook.[164] In April or May 1972, the engineering report entitled "Flood Control Study, Fleischer Brook" was circulated to the affected municipalities.[165] Notably, because there were few undeveloped properties within the affected flood-prone area, the report recommended construction and engineering solutions rather than additional land use regulations to minimize flood risks.[166]

In response to the argument that moratoria only provide time and space for local governments to make planning and zoning adjustments, rather than infrastructure improvements, the court found "no rational basis for holding that a municipality may not provide sufficient breathing space in order to complete construction of such flood control projects where the health, safety and welfare (as well as property values) of the people in the municipality are involved."[167] The court also reasoned that development without a reasonable, planned basis for floodplain development could raise liability concerns for a developer who, through construction, increases the amount of flood waters reaching other properties, and in any event, courts had increasingly recognized the propriety of moratoria to address "lack of adequate sewage treatment facilities or other health reasons."[168]

160. *Id.* at 698–99.
161. Cappture Realty Corp. v. Bd. of Adjustment, 313 A.2d 624, 626 (N.J. Super. Ct. Law Div. 1973).
162. *Id.*
163. *Id.*
164. *Id.*
165. *Id.*
166. *Id.* at 627.
167. *Id.* at 631.
168. *Id.* at 631–32.

Third, moratoria have provided opportunities to find water to serve the community.[169] In *Metro Realty v. County of El Dorado*, El Dorado County was actively engaged in "studying a comprehensive county-wide water development and conservation plan to meet the needs of its growing population."[170] The County adopted a moratorium to immediately prevent development in areas being considered for development as a reservoir.[171] In upholding the moratorium, the court was "impressed" by the idea that the temporary development restrictions were "necessitated" by the need to address water scarcity in a county-wide water plan, "the execution of which would certainly be seriously impeded and might be completely blocked should subdivision developments be permitted to proceed willy-nilly during the plan's formulation stages."[172]

As a final and more recent example, consider the state intervention in Petaluma, California, where the community was deeply engaged in climate emergency planning. Petaluma declared a climate emergency in 2019[173] and adopted a temporary ban on new gas station construction, followed by the creation of a Climate Action Commission[174] on the grounds that "restoring a safe and stable climate requires mobilization of all levels of government and society on a scale, scope, and speed not seen since World War Two."[175] In preparation for a City Council meeting, the Climate Action Commission prepared the Recommended Actions for City Council and Staff.[176] Among other things, the Commission identified transportation as a problematic source of emissions and the dangers of sea level rise and storm surges as "unaccounted for" in their past planning efforts.[177] Included in the Recommended Actions was a pitch to coordinate planning with California Native peoples, adopt a Climate Emergency Framework, assess climate impacts by neighborhood and demographic groups, and establish and implement climate-action equity principles.[178] In addition, the Commission recommended: 1) a

169. *See e.g.*, Swanson v. Marin Mun. Water Dist., 128 Cal. Rptr. 485, 492–93 (Ct. App. 1976) (upholding a moratorium on new water service as reasonable, given a threatened water shortage, but recognizing a continuing obligation on the part of the district to "exert every reasonable effort to augment its available water supply in order to meet increasing demands").

170. Metro Realty v. Cnty. of El Dorado, 35 Cal. Rptr. 480, 509 (Dist. Ct. App. 1963).

171. *Id.* at 512.

172. *Id.* at 515.

173. Petaluma City Council, Resol. No. 2019-055 (Cal. 2019).

174. Petaluma, Cal., Ordinance No. 2689 N.C.S. (2019).

175. Climate Action Commission, *Climate Action Commission Recommended Actions for City Council and Staff 12/10/20*, https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fstorage.googleapis.com%2Fproudcity%2Fpetalumaca%2Fuploads%2F2021%2F01%2F20210111B-Climate-Action-Commission-Recommended-Actions-for-City-Council.docx&wdOrigin=BROWSELINK [https://perma.cc/8FW2-Q387].

176. *Id.*

177. *Id.*

178. *Id.*

moratorium on City acquisition of fossil-fuel powered vehicles, 2) making permanent the moratorium on gas stations, and 3) a "temporary emergency moratorium on all riparian, vernal pool/wet meadow, wetland and floodplain development" pending environmental review and adoption of a Climate Adaptation and Resilience Plan.[179]

With little fanfare, Petaluma reportedly became the first American city to impose a moratorium on the construction of new gasoline stations,[180] and perhaps the first city to impose a climate moratorium. However, the crux of this story lies in the Commission's recommendations on halting development in wetlands and floodplains. In response to the Recommended Actions, California's Department of Housing and Community Development ("HCD") sent a comment to the City that strongly suggested that the HCD opposed the floodplain moratorium.[181] HCD pointed out that the Emergency Framework "is largely void of consideration for increasing housing supply, choices and affordability or specific targets for lower-income households, special-needs populations or frontline and underserved communities."[182] HCD recommended that the City "harmonize[]" the recommended moratorium with the adopted housing goals unless the moratorium was intended to "protect against an imminent threat to the health and safety of persons."[183] HCD further argued that California law did not permit the city to restrict housing development "until the City has submitted the ordinance and received approval from HCD."[184] Finally, HCD threatened enforcement action.[185]

Notably, the HCD letter recognizes that the agency's leverage is found in the Housing Crisis Act of 2019,[186] which prohibits local governments from adopting development policies that limit housing development or limit population.[187] The HCD letter points out that the relevant provision limits the City's authority to adopt or enforce moratoria "other than to specifically protect against an imminent threat to the health and safety of persons."[188] The problem, in the context of climate change and its imminent and exacerbated impacts on vulnerable populations, is that where affordable housing is relegated to floodplains, a temporary loss of development opportunities in those areas should not qualify as a loss

179. *Id.*
180. Josh Marcus, *Inside the First Town in America to Ban Gas Stations*, INDEPENDENT (Jan. 18, 2022, 6:57 PM), https://www.independent.co.uk/climate-change/news/petaluma-ban-gas-stations-california-b1995730.html [https://perma.cc/6XPR-72N7].
181. Letter from Shannon West, Land Use & Plan. Unit Chief, Cal. Dep't of Hous. and Cmty. Dev., to Peggy Flynn, Petaluma City Manager (Mar. 11, 2021) (hereinafter HCD Letter).
182. *Id.*
183. *Id.* (emphasis omitted) (quoting CAL. GOV'T CODE § 66300(b)(1)(B)(i)).
184. *Id.* (citing Gov't § 66300(b)(1)(B)(ii)).
185. *Id.*
186. *Id.*
187. *Id.* (citing Gov't § 66300(b)(1)(A)).
188. *Id.* (emphasis omitted) (quoting Gov't § 66300(b)(1)(B)(i)).

of affordable housing opportunities; at best, preventing new affordable housing in the floodplain prevents the perpetuation of racial capitalism in the housing market.[189] Nobody, especially populations shouldering exacerbated vulnerabilities, should be forced to decide between living in flood-prone areas or living in unaffordable housing.

The Petaluma City Council ultimately adopted the Climate Emergency Framework in 2021[190] and ordered the integration of climate goals into its existing land use planning policies with the goal of achieving carbon neutrality by 2030.[191] The City did not deliberate on or adopt the recommended floodplain development moratorium. This was a missed opportunity.

To be clear, moratoria are not (in their currently used iteration) novel legal tools. Rather, the moratorium is a tried-and-true legal tool that assists governments who find their communities unprepared for complex challenges and who seek time to think through how to adequately address these challenges as they make planning decisions. Yet, the outer edges of the use of moratoria have yet to be discovered. Until now. Now, we argue that we need to add the moratorium to our adaptation toolbox; we need the climate moratorium. The climate moratorium provides an opportunity for climate preparedness that is at once timely and effective and facilitates something more than incremental planning and progress.

## IV. Adaptation Planning During the Moratorium

Given the foregoing, the climate moratorium provides a novel and potentially powerful tool for stimulating new and more effective systems of climate change governance, especially climate adaptation planning. By now, climate adaptation is a topic familiar to most communities, even as climate adaptation planning remains fragmented and inchoate nationwide. As defined by the IPCC, adaptation includes "adjustment[s] in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."[192] Simply put, "[a]daptation is used broadly to refer to all the varied efforts undertaken at multiple levels of governance to prepare for climate change, whether the intent is to maximize opportunities or minimize risks associated with climate change."[193] Adapting to

189. *See generally* Carmen G. Gonzalez & Athena D. Mutua, *Mapping Racial Capitalism: Implications for Law*, 2 J.L. & Pol. Econ. 127 (2022), https://doi.org/10.5070/LP62258224 (defining and explaining the concept of racial capitalism).

190. City of Petaluma, Cal., Climate Emergency Framework 16 (2021).

191. *Id.* at 11.

192. Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2007: Adaptation and Vulnerability*, at 6 (2007).

193. *See* Daniel A. Farber & Cinnamon P. Carlarne, Climate Change Law 224 (2022).

climate change is a particularly challenging planning process because of all the different physical, social, political, and economic dimensions it requires us to consider. As Neil Adger suggests, adaptation planning "involves cascading decisions across a landscape made up of agents from individuals, firms and civil society, to public bodies and governments at local, regional and national scales, and international agencies."[194] Simply put, adaption planning is a complex planning process.

As explored in depth in the expansive climate adaptation legal literature,[195] three basic strategies have come to dominate adaptation policy planning. According to J.B. Ruhl, these include strategies to resist climate impacts—e.g., through construction of a sea wall to protect the existing built environment; strategies to increase resilience to climate impacts such as changing the form and function of the built environment along the coast to absorb and recover from flooding impacts; and strategies to retreat from the impacts by moving away, such as by shifting the built environment away from the coast.[196] We have seen instances of all these strategies employed in communities nationwide. But, to date, adaptation planning remains not only uneven across communities but also often ill-informed because good, equitable, and effective climate adaptation planning requires careful and engaged efforts that consider, for example, risks and vulnerabilities, ecosystem services mapping, and much more.[197] Again, one of the main impediments to good adaptation planning is time. Hence the need for a climate moratorium.

As a framing example, we return to coastal communities. In coastal communities, the climate moratorium can be used to advance climate adaptation planning that could slow down maladapted development proposals (such as coastal development that fails to consider sea level rise, zoning that allows building in high-risk fire zones, or development patterns that lead to climate gentrification). It can also be used to facilitate community risk and vulnerability assessments, undertake natural resource inventories, and engage in climate equity assessments—all of which are essential to comprehensive climate adaptation planning. Here, we briefly discuss how a climate moratorium creates space for better planning in each of these contexts with the goal of beginning the

194. W. Neil Adger et al., *Successful Adaptation to Climate Change Across Scales*, 15 Glob. Env't. Change 77, 79 (2005), https://doi.org/10.1016/j.gloenvcha.2004.12.005.

195. *See, e.g.*, Michael B. Gerrard & Katrina Fischer Kuh, The Law of Adaptation to Climate Change: U.S. and International Aspects 3 (Michael B. Gerrard & Katrina Fischer Kuh eds., 2012); J.B. Ruhl, *Climate Adaptation Law*, *in* Global Climate Change and U.S. Law 611–12 (Michael B. Gerrard et al., eds., 3d ed. 2023); Robert L. Glicksman, *Climate Change Adaptation: A Collective Action Perspective on Federalism Considerations*, 40 Env't L. 1159, 1159 (2010).

196. Ruhl & Craig, *supra* note 26, at 231–46.

197. For a discussion of the slow place and challenges associated with adaptation planning in the United States, see Keith H. Hirokawa & Cinnamon P. Carlarne, Comment, *Disputing Dominance*, 35 Geo. Env't L. Rev. (forthcoming 2023), http://dx.doi.org/10.2139/ssrn.4249025.

process of mapping out the multitude of opportunities and benefits the climate moratorium creates.

### A. *Vulnerability Assessments*

Risk assessments evaluate a community's vulnerability, exposure, sensitivity, and adaptive capacity to climate change. Of particular relevance here are vulnerability assessments. Vulnerability is the propensity or predisposition of a community to be adversely impacted.[198] A community's vulnerability to climate change can be determined by weighing its exposure and sensitivity to the hazards of climate change against its ability to cope, adapt, or recover from climate impacts (that is, its adaptive capacity).[199] Higher exposure and sensitivity result in greater vulnerability, while higher adaptive capacity corresponds with lower vulnerability.[200]

Understanding a community's vulnerability to climate change is essential to climate adaptation planning—both in the short- and long-term. This is particularly important because past practice suggests that planning decisions often focus on protecting physical assets and infrastructure at risk, especially high-value properties (and wealthier communities), as opposed to risks posted to particular communities—especially historically excluded communities. This all too often leads to planning decisions that not only disregard but also often exacerbate the already inequitable distribution of climate risks that vulnerable communities experience.[201]

As just one example, an assessment of sea level rise along the Atlantic and Gulf coasts found that 22% of the most socially vulnerable

198. W. Neil Adger, *Vulnerability*, 16 Glob. Env't Change 268, 269 (2006), https://doi.org/10.1016/j.gloenvcha.2006.02.006. For examples of different tools for mapping and assessing vulnerability, see United Nations Framework Convention on Climate Change, Assessing Climate Change Impacts and Vulnerability: Making Informed Adaptation Decisions (2011); Jonathan Cook et al., U.S. Agency Int'l Dev., Climate Vulnerability Assessment: An Annex to the USAID Climate-Resilient Development Framework 2–4 (2016); Jacob Assa & Riad Meddeb, United Nations Dev. Programme, Towards a Multidimensional Vulnerability Index 2, 14 (2021); Katharine Vincent, United Nations Dev. Programme, Mapping Climate Change Vulnerability and Impact Scenarios 3–5 (2010); United Nations High Comm'r for Refugees & Int'l Det. Coal., Vulnerability Screening Tool: Identifying and Addressing Vulnerability: A Tool for Asylum and Migration Systems 1–6 (2016).

199. Adaptive capacity is the ability or potential of a system to respond successfully to climate variability and change, and includes adjustments in both behavior and in resources and technologies. The presence of adaptive capacity has been shown to be a necessary condition for the design and implementation of effective adaptation strategies to reduce the likelihood and the magnitude of harmful outcomes resulting from climate change. Adaptive capacity also enables sectors and institutions to take advantage of opportunities or benefits from climate change, such as a longer growing season or increased potential for tourism. IPCC, *supra* note 192, at 21, 28, 335–36, 344.

200. For an excellent discussion of adaptation law in the context of efforts to increase the resilience and adaptive capacity of socio-ecological systems, see Robin Kundis Craig, *"Stationarity Is Dead"—Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 Harv. Env't L. Rev. 9, 10–18 (2010).

201. *See* Hirokawa & Carlarne, *supra* note 197, at 21–23.

populations were at risk of having their property inundated.[202] The study also found that those areas with high levels of social vulnerability are more likely to be abandoned than areas with low social vulnerability scores.[203]

In coastal communities, vulnerability assessments provide critical tools for determining the neighborhoods or segments of the population that will be most affected by climate change, as well as understanding why those vulnerabilities exist. Used properly, vulnerability assessments provide information that can be used to understand and respond to short-term risks, as well as to encourage long-term adaptation planning that is more informed, inclusive, and equitable.

But vulnerability assessments take time—something that local governments often lack—and require system-wide thinking—something local governments rarely have time to do. A climate moratorium creates space for communities to undertake vulnerability assessments. Very simply, the climate moratorium creates planning space to complete the vulnerability assessments that are essential to facilitating climate planning and minimizing the climate emergency.

### B. *Infrastructure Inventories*

Second, a climate moratorium would allow communities to undertake inventory assessments—including, for example, natural resource inventories and inventories of relevant grey and green infrastructure. Grey infrastructure—including water and sewer infrastructure, transportation systems, and other critical built facilities—is notoriously outdated and often inadequate to serve even current needs, much less climate-exacerbated needs.[204] Here, we focus on one particularly

202. Jeremy Martinich et al., *Risks of Sea Level Rise to Disadvantaged Communities in the United States*, 18 MITIGATION & ADAPTATION STRATEGIES FOR GLOB. CHANGE 169, 175 tbl.1, 177 (2012), https://doi.org/10.1007/s11027-011-9356-0.

203. *Id.* at 178.

204. Recognizing that "investment in infrastructure underpins modern economic growth," the Global Commission on the Economy and Climate reports that the carbon-intensive economy results in significant infrastructure needs: "The infrastructure requirements for a high-carbon economy, across transport, energy, water systems and cities, are estimated at around US$90 trillion, or an average of US$6 trillion per year over the next 15 years." GLOB. COMM'N ON ECON. AND CLIMATE, BETTER GROWTH, BETTER CLIMATE: THE NEW CLIMATE ECONOMY REPORT 7 (2014). Likewise, in the 2021 Infrastructure Report Card, ASCE reports that our infrastructure is in dire circumstances for transportation ("Unfortunately, the growing wear and tear to our nation's roads has left 43% of our public roadways in poor or mediocre condition, a number that has remained stagnant over the past several years." AM. SOC'Y OF CIV. ENG'RS, 2021 REPORT CARD FOR AMERICA'S INFRASTRUCTURE 107 (2021)), wastewater ("The majority of the nation's [wastewater treatment plants] are designed with an average lifespan of 40 to 50 years, so the systems that were constructed in the 1970s, around the passing of the Clean Water Act in 1972, are reaching the end of their service lives." *Id.* at 152), and water provision ("In 2019, the total capital spending on water infrastructure at all levels was approximately $48 billion, while capital investment needs were $129 billion, creating an $81 billion gap." *Id.* at 156). Moreover, much of the existing infrastructure

helpful type of inventory that a climate moratorium would enable—an ecosystem services inventory.

Ecosystem services embody the idea that functioning ecosystems are critical to both human resiliency and economic wealth. Ecosystem services research explores how ecosystems provide "basic life support for human and animal populations and are the source of spiritual, aesthetic, and other human experiences that are valued in many ways by many people,"[205] as well as how those services have substantial economic worth.[206] Research on ecosystem services has produced a substantial body of literature on ways to understand the value provided by these services in economic terms, the policies that might be used to guide ecosystem services' legal tools, and even regulatory mechanisms that might effectively capture the value of ecosystems as we continue to build on the land. In short, ecosystem service research attempts to make the value of ecosystems visible, in part by translating that value into monetary terms.

Ecosystem services research has been put to many good uses. It has been used as a communication tool and as a tool for creating markets for the benefits ecosystems provide.[207] However, the research has been underutilized to identify the social dimensions of ecosystem services.[208] This gap impedes efforts to understand and address the distribution of power and resources in an ecosystem services context.[209] Moreover, in common with many other environmental challenges, ecosystem services research is often difficult to understand by all stakeholders: those who control the flow of ecosystem services, those who need to receive ecosystem benefits, and those who govern.[210] One response to these challenges is to inventory ecosystem services and map the flows of these services—see where the services exist, who controls the availability of

lies in flood-prone areas and hence is susceptible to climate change impacts. *Id.* at 59, 157.

205. Science Advisory Board, EPA, Valuing the Protection of Ecological Systems and Services 8 (2009).

206. *See, e.g.*, David C. Holzman, *Accounting for Nature's Benefits: The Dollar Value of Ecosystem Services*, 120 Env't Health Perspectives A153 (2012), https://doi.org/10.1289/ehp.120-a152.

207. *See* S.A. Bekessy et al., *Ask Not What Nature Can Do for You: A Critique of Ecosystem Services as a Communication Strategy*, 224 Biological Conservation 71, 71 (2018), https://doi.org/10.1016/j.biocon.2018.05.017; Sarah Schomers & Bettina Matzdorf, *Payments for Ecosystem Services: A Review and Comparison of Developing and Industrialized Countries*, 6 Ecosystem Servs. 16, 16 (2013), https://dx.doi.org/10.1016/j.ecoser.2013.01.002.

208. *See* Brendan Fisher et al., *Defining and Classifying Ecosystem Services for Decision Making*, 68 Ecological Econ. 643, 645 (2009) ("[T]he social value of the benefits that ecosystems provide could potentially be enumerated so that society can make more informed policy and management decisions.").

209. *See* Hirokawa et al., *supra* note 94, at 821.

210. *Id.*

those services, and who benefits from those services.[211] This is known as ecosystem benefit flows mapping.

Mapping the flows of ecosystem benefits between and among geographically distinct communities allows us to identify and integrate social dimensions into ecosystem services mapping while also creating a more inclusive and accessible tool for communities to use in planning processes.[212] Mapping ecosystem benefit flows changes how we think about the distribution of ecosystem services, the control of ecosystem services, and the power structures that shape past and future ecosystem services use.[213] Benefit flows mapping thus not only makes the technical languages of ecology and economics more visually accessible, but also contextualizes ecosystem services within the power structures that shape who controls and benefits from these services.[214] It changes how we see and think about ecosystem services and, inevitably, how we think about planning decisions.

In the climate change context, this process—mapping ecosystem benefit flows—is essential to understanding risks and opportunities and the distribution of those risks and opportunities in climate-affected communities. However, to engage in benefit flows mapping, a community needs the time to assess ecosystem services supply and to undertake a socio-economic assessment of these services. This takes time. Time that generally seems impossible to capture, but which a climate moratorium would offer.

### C. *Climate Equity Planning*

Ultimately, good adaptation planning mandates our third category of planning, climate equity planning. As noted in Petaluma's Climate Action Framework, "Climate change is expected to create a series of shocks and burdens that Petaluma's underserved communities will experience more negatively due to their limited options and resources for avoiding, recovering from, or adapting to the damage caused by climate change."[215] Petaluma's vision mandates policies centered on inclusion: "Everyone in Petaluma deserves the right to experience a healthy, sustainable future."[216]

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211. *See* Karrigan Börk et al., *Adapting to a 4˚C World*, 52 Env't L. Rep. 10211, 10227 (2022).

212. *See* Jennifer Hauck et al., *"Maps Have an Air of Authority": Potential Benefits and Challenges of Ecosystem Service Maps at Different Levels of Decision Making*, 4 Ecosystem Servs. 25, 27 (2013), https://doi.org/10.1016/j.ecoser.2012.11.003.

213. *See id.* at 29–31.

214. *See id.* at 27–28.

215. City of Petaluma, *supra* note 190, at 13. The Climate Action Framework defines "frontline and underserved communities" to include "low-income residents, residents with disabilities, and seniors, indigenous peoples, communities of color, immigrants, as well as residents experiencing food insecurity and lack of shelter." *Id.*

216. *Id*.

Petaluma's underserved communities are indeed vulnerable to climate change, but their vulnerabilities are illustrative of a greater problem. Indeed, the scale and breadth of climate change impacts in communities across the United States are profound. But, the impacts of climatic changes will neither be uniform nor constant.[217] Rather, massive variability in topography, population, culture, political stability, and socio-economic systems will render these seemingly shared challenges highly disparate across different coastal communities and for the individuals living within these communities.[218] The risks will be unevenly distributed, and the effects of those risks will be differently experienced even among members of the same communities. That is, although climate impacts will be ubiquitous, there will be no common experience of climate change. Individuals and communities will face different risks at different times and in different ways. And those communities that are already vulnerable will be hardest hit unless existing forms of power and vulnerability are exposed and disrupted. Many of those people who are most vulnerable to the risks of climate change include Indigenous people, low-income communities, communities of color, as well as the elderly.[219] Right now, the voices and needs of these people are underrepresented in climate adaptation planning, and existing power structures will keep it that way absent intentional efforts to disrupt those structures. Climate equity planning is one tool to begin to erode climate dominance and advance more inclusive and, ultimately, effective climate planning.

In this context, the climate moratorium creates room for equity planning and could enable planning along the lines of what we are starting to see in certain forward-looking communities. As just one example, in Providence, Rhode Island, the City Council in coordination with local planners, residents, interest groups, and consultants, have engaged in some of the most progressive and accountable climate equity planning nationwide.[220] This planning includes creating a *Climate Justice Plan* that develops an inclusive, collaborative framework for adaptation planning that advances an initiative to "[p]artner with the [Racial and Environmental Justice Committee] and other frontline communities to ensure those most impacted by the impacts of climate change are centered in the process of designing and implementing a plan to prepare the city for the impacts of climate change."[221] In the *Climate Justice Plan*, Providence identifies and seeks to respond to the same types of climate impacts that threaten many other U.S. coastal communities: excessive heat, flooding, coastal storms, sea-level rise and other related

217. *See, e.g.*, FOURTH NATIONAL CLIMATE ASSESSMENT, *supra* note 20, at 14–18.
218. *See* Hirokawa & Carlarne, *supra* note 197, at 1.
219. *Id.* at 2.
220. For a full discussion of the equity-oriented planning efforts in Providence, see Hirokawa & Carlarne, *supra* note 197.
221. CITY OF PROVIDENCE, CLIMATE JUSTICE PLAN 35 (2019) (emphasis omitted).

climate change impacts. In contrast to most other coastal communities, however, Providence centers its planning process on "those who are most impacted by the climate crisis,"[222] not as mere stakeholders, but as *owners* of a process that will result in equitable city policies.[223] That is, Providence is engaged in a form of climate equity planning, not merely climate adaptation planning. The equity-centered approach is unique and is reflected in the insistence that Providence planning be collaborative,[224] participatory, and inclusive, with the purpose of transforming decision-making from "community engagement to ownership."[225] This type of inclusive, community centered planning takes time.

A growing number of cities are engaging in climate equity planning, but these efforts remain few and far between. A climate moratorium could create room for communities to engage in planning that is more uniquely adapted to their particular region and their particular local history. Whatever the climate equity planning looks like, it is essential, and the climate moratorium is a tool that can facilitate such planning.

These brief snapshots into climate adaptation planning illustrate the urgency of finding new and better planning tools to address the climate emergency. They demonstrate how uniquely suited the climate moratorium is as a tool for facilitating more effective climate adaptation planning.

## V. Conclusion

Upon the release of the most recent IPCC report, UN Secretary General António Guterres declared, "I've seen many reports, but nothing like the new [IPCC] climate report, an atlas of human suffering [and] damning indictment of failed climate leadership."[226] This report warns us, yet again, that "[i]t is unequivocal that human influence has warmed the atmosphere, ocean and land," and that human-induced climate change is "affecting many weather and climate extremes in every region across the globe," bringing about "changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones . . . ."[227] We are living in a world defined by climate change. Climate change pervades every aspect of contemporary life and should underpin every

222. *Id.* at 3.
223. *Id.* at 30.
224. *Id.* at 31.
225. *Id.* at 30 (cleaned up).
226. António Guterres (@antonioguterres), Twitter (Feb. 28, 2022, 5:18 AM), https://twitter.com/antonioguterres/status/1498256378506448899?s=10 [https://perma.cc/S9SN-N9WB].
227. Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2022: The Physical Science Basis, Headline Statements from the Summary for Policymakers* (2022), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Headline_Statements.pdf [https://perma.cc/K7QB-JSPA].

planning decision. The climate emergency is upon us, and it demands innovative legal thinking.

We need to engage in faster and better planning, and we need a regulatory toolbox that allows us to more directly confront climatic changes—this toolbox may include the incremental tools we traditionally rely on in environmental law (e.g., air, water, and land pollution prevention) or land use law (e.g., zoning and land use planning), but it also needs to include more innovative, ambitious, and even transformative tools. As J.B. Ruhl and Robin Craig have suggested, historically, "[t]he emphasis in the United States (and elsewhere) has been on using incremental adaptation to keep human communities mostly intact, in situ, and close to normal, with place-based security for people and property the overarching goal."[228] However, incremental adaptation, while pivotal to our early responses to climate change, is simply not enough. We are dramatically unprepared for the challenges we face, and we need to act on the basis that resiliency requires us to do much more.

Climate change is an emergency. Preparing for climate change means (urgently) rethinking how we plan for change in the short- and long-term. The climate moratorium is an indispensable tool in these planning efforts. Now is the time for the climate moratorium.

228. Ruhl & Craig, *supra* note 26, at 239.