

THE FORK IN THE ROAD: HOW RISING SEA LEVELS IMPOSE A CROSSROADS FOR PROPERTY RIGHTS

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The real x factor here is not the vagaries of climate science, but the complexity of human psychology. . . . Will we spend billions on adaptive infrastructure to prepare cities for rising waters—or will we do nothing until it is too late? . . . Either way, the water is coming.¹

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1. JEFF GOODELL, *THE WATER WILL COME: RISING SEAS, SINKING CITIES, AND THE REMAKING OF THE CIVILIZED WORLD* 14 (2017).

INTRODUCTION

Throughout the last few million years, Earth's climate has undergone natural fluctuations, shifting between glacial and interglacial periods in cycles that occur nearly every 100,000 years.² However, since the mid-twentieth century, the climate has been changing at an unprecedented rate not seen in many recent millennia.³ And the evidence unequivocally indicates that human activity, primarily human-produced greenhouse gases, is the principal cause.⁴ The most significant concern is that these gases trap heat in the Earth's atmosphere, and humans are emitting them 250 times faster than natural resources did after the most recent ice age.⁵ Consequently, the global temperature is rising unnaturally, oceans are warming, Arctic ice sheets are decreasing in mass, and glaciers worldwide are retreating.⁶ These substantial effects, combined with others, are impacting local climates by producing more frequent droughts, longer wildfire seasons, and altering weather patterns.⁷

Accordingly, there are two categories of responsive action to address these changes, "mitigation" and "adaptation." Mitigation involves policy decisions to decrease greenhouse gas emissions, such as using cleaner energy.⁸ Yet, even if the world instantly eliminates producing emissions, the gases that have already been released will remain in the atmosphere for the next 300 to 1,000 years.⁹ Thus, many components of climate

2. Alan Buis, *Milankovitch (Orbital) Cycles and Their Role in Earth's Climate*, NASA (Feb. 27, 2020), <https://climate.nasa.gov/news/2948/milankovitch-orbital-cycles-and-their-role-in-earths-climate/#:~:text=Not%20only%20does%20Earth's%20axis,relative%20to%20the%20elliptical%20plane>.

3. *How Do We Know Climate Change Is Real?*, NASA, <https://climate.nasa.gov/evidence/> (last visited Feb. 23, 2024).

4. See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS 4 (Valérie Masson-Delmotte et al. eds., 2021) [hereinafter IPCC REPORT], https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf; see also Mark Lynas et al., *Greater Than 99% Consensus on Human Caused Climate Change in Peer-Reviewed Scientific Literature*, ENV'T RSCH. LETTERS, OCT. 2021, at 1, 1 (surveying over 88,000 peer-reviewed climate studies and finding a ninety-nine percent consensus among scientists).

5. *How Do We Know Climate Change Is Real?*, *supra* note 3.

6. *Id.*

7. *The Effects of Climate Change*, NASA, <https://climate.nasa.gov/effects/> (last visited Feb. 23, 2024).

8. *Responding to Climate Change*, NASA, <https://climate.nasa.gov/solutions/adaptation-mitigation/> (last visited Feb. 23, 2024).

9. Alan Buis, *The Atmosphere: Getting a Handle on Carbon Dioxide*, NASA (Oct. 9, 2019), <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/#:~:text=Once%20it's%20added%20to%20the,timescale%20of%20many%20human%20lives>.

change are irreversible for millennia and require adaptation.¹⁰ Adaptation entails reducing our risks to the harms of climate change by adjusting our lives and preparing for the future.¹¹

Indeed, one of the most troubling crises to adapt to in our time, and for generations to come, is sea level rise (“SLR”). It is a fact that global ocean levels are rising, and the rate is accelerating every year.¹² The complicated aspect of managing SLR is that it is impossible to witness by standing on the beach for a few hours. Instead, SLR is experienced through more severe hurricanes, deadlier storm surges, and regular destructive flooding.¹³ Given that almost forty percent of the United States population resides along vulnerable coastlines,¹⁴ millions of coastal properties are already experiencing its devastating effects, with many more facing the risk of large-scale destruction in the future.¹⁵

Therefore, as the ravaging seas encroach upon the coasts, adaptive measures must be taken to protect vulnerable communities from this unavoidable threat.¹⁶ Although people in the past have attempted to use self-help to save their properties, these ad hoc approaches only compound the damage to neighboring counties.¹⁷ Because SLR adaptation requires a comprehensive and carefully planned strategy, the government is the only realistic option for implementing it.¹⁸

However, various regulatory measures that can be incorporated into an adaptive plan will likely violate coastal landowners’ property rights under the Fifth Amendment Takings Clause, exposing the government to liability.¹⁹ Thus, if the government acts decisively to adapt coastal

10. IPCC REPORT, *supra* note 4, at 21.

11. *Responding to Climate Change*, *supra* note 8.

12. Rebecca Lindsey, *Climate Change: Global Sea Level*, CLIMATE.GOV (Apr. 19, 2022), <https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level#:~:text=Global>.

13. GOODELL, *supra* note 1, at 12; *see also* Lindsey, *supra* note 12.

14. *Is Sea Level Rising?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://oceanservice.noaa.gov/facts/sealevel.html#:~:text=Yes%2C> (last visited Feb. 23, 2024).

15. Lindsey, *supra* note 12.

16. *See* Matt Soergel, *Scientists Agree: Sea-Level Rise Is Here, and It’s Dangerous*, JACKSONVILLE.COM, <https://www.jacksonville.com/story/news/2018/02/23/northeast-florida-scientists-agree-sea-level-rise-is-here-and-its-dangerous/13985440007/> (Mar. 1, 2018, 5:00 PM) (explaining how many cities in Northeast Florida are unable to ignore the damages caused by rising sea levels and are starting to plan).

17. *See* JESSICA GRANNIS, GEO. CLIMATE CTR., ADAPTATION TOOL KIT: SEA-LEVEL RISE AND COASTAL LAND USE 5–6 (2011), https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf (explaining how attempts to protect landowners’ properties caused compounded flood risks, effected wildlife, and led to lawsuits between landowners).

18. *Id.* at 6–8.

19. *See generally* Michael Allan Wolf, *Strategies for Making Sea-Level Rise Adaptation Tools “Takings-Proof”*, 28 J. LAND USE & ENV’T L. 157, 157–59 (2013) (examining various

communities, it will be required to compensate landowners whenever its measures negatively affect private property rights or values.²⁰ Alternatively, the government may forgo an adaptive strategy and only employ one in the future if SLR becomes a dangerous emergency for the public. In that case, although the adaptive plan would still violate the Fifth Amendment, the urgent threat would enable the government to invoke the Doctrine of Public Necessity as a complete defense to any takings liability incurred from its actions.²¹

As a result of these circumstances, SLR creates tension between the Fifth Amendment and the Doctrine of Public Necessity. Namely, the government's decision to be either proactive or reactive in implementing an adaptive strategy yields two divergent paths that give rise to a conceptual "fork in the road."²² On the one hand, if the government proactively enacts a plan to combat future SLR, it will generally be liable under the Fifth Amendment for infringing on coastal landowners' property rights.²³ On the other hand, suppose the disastrous predictions of SLR manifest without protective measures in place to mitigate the effects.²⁴ Then, the government will be compelled to defend coastal communities against the ongoing threat reactively, and courts may extend the Doctrine of Public Necessity to excuse liability from adaptive measures that would have otherwise violated the Fifth Amendment.

Therefore, to reconcile the doctrinal friction and promote decisive decision-making, this Note contends that SLR should be managed solely through the Fifth Amendment instead of permitting the Doctrine of Public Necessity to be used as a defense. Part I analyzes SLR and the large-scale threat it poses to coastal landowners' properties. Part II provides the legal framework of the Takings Clause and the Doctrine of Public Necessity. Part III describes the "fork in the road" by outlining how SLR adaptive measures implicate both doctrines. Finally, Part IV discusses the moral concerns over availing governments of the public necessity defense in an SLR context and concludes that the Takings Clause is the better alternative for encouraging action.

adaptive measures and the likelihood of successfully challenging them under the Takings Clause).

20. *Id.* at 184.

21. See Robin Kundis Craig, *Public Trust and Public Necessity Defenses to Takings Liability for Sea Level Rise Responses on the Gulf Coast*, 26 J. LAND USE & ENV'T L. 395, 434 (2010) (arguing that the acceleration of SLR along the Gulf Coast will likely be perceived as a public crisis and allow the public necessity defense to be viable in the future).

22. See discussion *infra* Part III.

23. See discussion *infra* Section III.A.

24. See discussion *infra* Section III.B.

I. EXAMINING THE SCOPE OF THE SEA LEVEL RISE PROBLEM

Before arriving at the “fork in the road,” our journey begins with assessing the complex nature of SLR and the severe risks posed to coastal landowners. Given the irreversible damage of climate change, the question is not *if* water levels will rise but rather *when* and by *how much* they will rise.²⁵

As a preliminary matter, determining the potential impact along the coastal United States is complicated and involves measuring trends on a global and regional level.²⁶ While changes in regional water levels are the most relevant measurements, global trends are still an essential piece of the puzzle.²⁷ Therefore, outlining the distinction and relationship between both measurements is necessary to understand the potential impact on U.S. coasts.²⁸

To start, the global mean sea level, the height of the ocean’s surface averaged throughout the world, has remained relatively stable for the past 2,000 years.²⁹ Yet, within the last century, it has risen at an unprecedented rate, faster than the past 2,800 years.³⁰ The primary reason for this increase is the addition of Arctic meltwater from glaciers and ice sheets contributing to the ocean’s volume, which is expected to continue for centuries.³¹ At the same time, ocean water is expanding as it warms.³² These effects have been continuously measured with tide gauges worldwide for over a century and satellite altimeters since the 1990s.³³

Moreover, data from these instruments indicate that the rate of global SLR is accelerating yearly. Since the start of record-keeping in the 1880s, the global mean sea level has risen nearly eight inches, with four inches occurring in the last few decades.³⁴ Notably, during most of the

25. WILLIAM V. SWEET ET AL., NAT’L OCEANIC & ATMOSPHERIC ADMIN., GLOBAL AND REGIONAL SEA LEVEL RISE SCENARIOS FOR THE UNITED STATES 1 (2022), <https://oceanservice.noaa.gov/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf>.

26. *Id.*

27. *Id.*

28. For a technical explanation of global and regional measurements see EPA, TECHNICAL DOCUMENTATION: SEA LEVEL 1 (2022), https://www.epa.gov/sites/default/files/2021-04/documents/sea-level_td.pdf.

29. DONALD J. WUEBBLES ET AL., U.S. GLOB. CHANGE RSCH. PROGRAM, CLIMATE SCIENCE SPECIAL REPORT: FOURTH NATIONAL CLIMATE ASSESSMENT 337 (2017), https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf.

30. *Id.*

31. SWEET ET AL., *supra* note 25, at 1.

32. *Id.*; *see also* IPCC REPORT, *supra* note 4, at 21.

33. Lindsey, *supra* note 12.

34. *Id.*

twentieth century, the global mean sea level rose roughly 0.06 inches per year and increased to about 0.1 inches per year in the 1990s.³⁵ Yet, the yearly rate accelerated to 0.14 inches within the last decade.³⁶

Nevertheless, SLR is not uniform worldwide, and rates in specific regions can deviate from the globally averaged mean.³⁷ The variation in regional rates is due to the combined influence of global average SLR and local factors, including the changes in ocean currents and land shifts.³⁸ In many locations in the United States, specifically the East and Gulf Coasts, regional sea levels have exceeded the global average.³⁹ For example, during the 100 years it took for global sea levels to rise 6.7 inches, local levels along the contiguous United States soared eleven inches simultaneously.⁴⁰

Furthermore, projecting future SLR is challenging due to a few sources of uncertainty. For instance, whether climate change accelerates vis-à-vis affecting the sensitivity of glaciers and ice sheets depends on whether or not humans increase greenhouse gas emissions.⁴¹ Factoring in these unknowns, several federal agencies develop a technical report every few years that predicts SLR trajectories for U.S. coasts by the years 2050 and 2100.⁴² Notably, the 2022 report indicates that, based on current science, sea levels are expected to rise ten-to-fourteen inches on the East Coast and fourteen-to-eighteen inches on the Gulf Coast by 2050.⁴³ Although predictions for 2100 are less precise, the report estimates that sea levels may increase further by three-to-four feet on the East Coast and four-to-five feet on the Gulf Coast.⁴⁴

Even though a few inches of SLR over decades may seem minuscule, the consequences are significant for U.S. coastlines. To put the impact in perspective, scientists at NASA estimate, as a rule of thumb, that every inch of vertical SLR translates to nearly 100 inches of horizontal beach

35. *Id.*

36. *Id.*

37. SWEET ET AL., *supra* note 25, at 6.

38. *Sea Level Rise*, U.S. GLOB. CHANGE RSCH. PROGRAM, <https://www.globalchange.gov/browse/indicators/global-sea-level-rise> (last visited Feb. 23, 2024).

39. *Id.*

40. SWEET ET AL., *supra* note 25, at 1.

41. *Id.* at 10.

42. *See id.* at 4–5 (discussing the purpose and goals of the report). The report draws from the valuable scientific data included in the Intergovernmental Panel on Climate Change Six Assessment Report. *See generally* IPCC REPORT, *supra* note 4, at 1313–14.

43. SWEET ET AL., *supra* note 25, at 60.

44. *See id.* at 23 tbl.2.5.

loss.⁴⁵ For some cities in Florida, the difference between three feet of SLR by 2100 and six feet is the difference between living in a wet town and being fully submerged.⁴⁶

Consequently, the impact of SLR has already manifested across coastal communities in the United States and will continue to do so for decades into the future by intensifying natural disasters. One notable concern is the greater frequency of high tide flooding, which occurs when ocean waters surge higher than coastal infrastructure is designed to accommodate.⁴⁷ Decades ago, coastal flooding would have only been caused by powerful storms, but now, SLR regularly causes everyday wind events to inundate coastal communities with flooding.⁴⁸ In fact, the number of high tide flooding days along most of the East and Gulf Coast has increased 400–1,100% compared to the year 2000.⁴⁹ In addition, by 2050, “major” and “moderate” flooding events—generally damaging and destructive—are expected to occur ten times more often than today.⁵⁰ One study estimates that 2.5 million properties valued at \$1.07 trillion may be at risk of chronic flooding by the end of the twenty-first century.⁵¹

Furthermore, SLR magnifies the severity of hurricanes by producing more destructive storm surges.⁵² Many of the costliest hurricanes in U.S. history have occurred within the last twenty years, coinciding with the recent accelerated rise of ocean levels.⁵³ One economic report concluded that, of the total \$62.5 billion in damages from Hurricane Sandy in 2012, \$8.1 billion is likely attributed to human-caused SLR alone.⁵⁴ In addition to inflicting substantial destruction on buildings, these storms threaten

45. *The Waters Are Rising on NASA's Shores*, NASA: EARTH OBSERVATORY, <https://earthobservatory.nasa.gov/images/86655/the-waters-are-rising-on-nasas-shores> (last visited Feb. 23, 2024).

46. GOODELL, *supra* note 1, at 69.

47. Miyuki Hino et al., *High-Tide Flooding Disrupts Local Economic Activity*, SCI. ADVANCES, Feb. 2019, at 1, 1.

48. SWEET ET AL., *supra* note 25, at 61.

49. *High Tide Flooding*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <https://coast.noaa.gov/states/fast-facts/recurrent-tidal-flooding.html> (Jan. 26, 2024).

50. See SWEET ET AL., *supra* note 25, at 60.

51. UNION CONCERNED SCIENTISTS, UNDERWATER: RISING SEAS, CHRONIC FLOODS, AND THE IMPLICATIONS FOR US COASTAL REAL ESTATE 2 (2018), <https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf>.

52. Jeff Masters, *How Sea Level Rise Contributes to Billions in Extra Damage During Hurricanes*, YALE: CLIMATE CONNECTIONS (Oct. 27, 2022), <https://yaleclimateconnections.org/2022/10/how-sea-level-rise-contributes-to-billions-in-extra-damage-during-hurricanes/>.

53. NAT'L CENTERS FOR ENV'T INFO., COSTLIEST U.S. TROPICAL CYCLONES 2–3, <https://www.ncei.noaa.gov/access/billions/demi.pdf> (Jan. 9, 2024).

54. Benjamin H. Strauss et al., *Economic Damages from Hurricane Sandy Attributable to Sea Level Rise Caused by Anthropogenic Climate Change*, NATURE COMM'N, May 2021, at 4, 4.

to undermine critical coastal infrastructure, including water utilities and energy systems.⁵⁵

A. *The Choice to Prepare for Rising Sea Levels*

Although preparing for an uncertain and “barely perceptible threat[] that gradually accelerate[s] over time”⁵⁶ is challenging, the failure to adapt strategically could produce severe social and economic consequences for millions of families living along the coasts.⁵⁷ In the past, private landowners have attempted to implement ad hoc measures to protect their properties against SLR, but these efforts have proven ineffective and disastrous.⁵⁸

For instance, after being battered by Hurricane Dennis, coastal homeowners in Florida pressured their local government to temporarily construct a fifteen-foot high by twenty-six-mile wide seawall to protect themselves from the waters.⁵⁹ Yet, not only did this erode natural resources that defended against flooding, but it also amplified the damage in adjacent towns without the seawall.⁶⁰ Additionally, because adaptive measures are costly, not every landowner will have the necessary financial resources to implement them uniformly with their neighbors.⁶¹

Therefore, if vulnerable coasts are going to adapt and be adequately protected against SLR, the only feasible solution is for the government to create a comprehensive adaptation strategy. More specifically, considering federalism concerns and SLR rates affecting each region differently, state and local government officials are best positioned to coordinate and implement an adaptive plan tailored to their

55. See generally JAMES BRADBURY ET AL., CLIMATE CHANGE AND ENERGY INFRASTRUCTURE EXPOSURE TO STORM SURGE AND SEA-LEVEL RISE 4 (2015), <https://www.energy.gov/policy/articles/climate-change-and-energy-infrastructure-exposure-storm-surge-and-sea-level-rise> (assessing the risks of SLR and storm surge on energy infrastructure); Michelle A. Hummel et al., *Sea Level Rise Impacts on Wastewater Treatment Systems Along the U.S. Coasts*, EARTH'S FUTURE, Apr. 2018, at 622, 622.

56. GOODELL, *supra* note 1, at 12–13.

57. See Irina Ivanova, *How Rising Sea Levels Could Create Zombie Towns Around U.S.*, CBS NEWS (Sept. 9, 2022, 8:20 AM), <https://www.cbsnews.com/news/climate-change-rising-sea-levels-will-erode-local-tax-bases-zombie-towns/> (discussing the financial risks for coastal homeowners as water levels continue to rise).

58. GRANNIS, *supra* note 17, at 5.

59. *Id.*

60. *Id.* at 5–6.

61. See Michelle A. Hummel et al., *Economic Evaluation of Sea-Level Rise Adaptation Strongly Influenced by Hydrodynamic Feedbacks*, PROC. NAT'L ACAD. SCI., July 2021, at 1, 1–2, <https://www.pnas.org/doi/epdf/10.1073/pnas.2025961118> (evaluating the economic cost on towns resulting from an uncoordinated plan).

communities.⁶² This is especially so because restrictions on private land use decisions, coastal development, and building regulations are the domain of state and local policymakers.⁶³ In fact, local governments have an assortment of adaptive tools available to them that can be deployed in a uniform strategy, including zoning ordinances, development and rebuilding restrictions, exactions, and setbacks.⁶⁴

However, the decision to implement a plan is problematic for two reasons. First, various adaptive tools will likely interfere with coastal landowners' property rights and affect property values, which exposes the government to liability under the Takings Clause of the Fifth Amendment.⁶⁵ Indeed, many scholars suggest that several SLR-related measures have a high risk of violating the Fifth Amendment.⁶⁶ This Note accepts that contention and does not aim to assess the probability of specific actions. For present purposes, it is sufficient to assume that adaptive measures can violate an individual's constitutional rights, which is explained further in Part III.

Second, in addition to the fact that governmental decisions affecting properties are inherently controversial, local governments must also account for the "intergenerational transfer of risk" associated with SLR.⁶⁷ This consideration entails a risk-benefit analysis of the short and long-term consequences of implementing an adaptive plan now or forgoing one until the future.⁶⁸ Conversely, coastal governments may still deliberately or unintentionally overlook the threat. Yet, if SLR projections are accurate, these states will be forced to take adaptive measures as the dangers become more pronounced over time.

Therefore, two possibilities exist: state governments overseeing vulnerable communities can either accept the scientific evidence and plan for the future or, for various reasons, disregard the early warning signs of SLR only to deal with the consequences in the future.⁶⁹ In either case, the government will eventually face liability for burdening property rights.

62. See PETER FOLGER & NICOLE T. CARTER, SEA-LEVEL RISE AND U.S. COASTS: SCIENCE AND POLICY CONSIDERATIONS 28–29 (2016), <https://crsreports.congress.gov/product/pdf/R/R44632>.

63. *Id.* at 28.

64. See GRANNIS, *supra* note 17, at 2–4 tbl.1 (synopsizing various adaptation tools available to the government).

65. See *generally* Wolf, *supra* note 19, at 159 (analyzing the level of risk that the Takings Clause poses to various SLR adaptive tools).

66. *Id.*

67. FOLGER & CARTER, *supra* note 62, at 28–29.

68. *Id.*

69. See *id.*

II. THE DIVERGING PATHS OF THE TAKINGS CLAUSE AND THE DOCTRINE OF PUBLIC NECESSITY

Although SLR has the potential to generate widespread destruction, the risks can be mitigated depending on the policy choices made today. This unprecedented circumstance provides state and local governments with decades to plan for SLR. However, the possibility exists that some may not use this interim period to prepare properly.⁷⁰

Consequently, two distinct outcomes result from whether governments are decisive or delay until SLR worsens. First, if adaptive measures are implemented now, many will subject local governments to legal scrutiny under the Takings Clause. In contrast, if governments decide only to act when SLR intensifies in the future, then the public necessity defense may excuse any liability. Thus, addressing both doctrines provides the framework for conceptualizing the tension SLR imposes on property rights.

A. *The Takings Clause*

The Takings Clause, found in the Fifth Amendment of the U.S. Constitution, provides, “nor shall private property be taken for public use, without just compensation.”⁷¹ Applying to the states through the Fourteenth Amendment, the provision empowers the government to acquire private property only if it is for “public use” and when compensation is given to the landowner for the loss.⁷² These two conditions do not prevent the government from interfering with private property but rather secure compensation if proper interference amounts to a “taking.”⁷³ Accordingly, it is necessary to identify the different forms of takings claims and then define the “public use” requirement.

The inquiry begins with determining whether a particular governmental action encumbers a landowner's property rights so much that it is equivalent to the government “taking” the individual's private property. These claims against the government come in various flavors, presenting hurdles for many adaptive measures.⁷⁴ One well-recognized umbrella of takings claims, particularly relevant to SLR, is when the

70. See *generally State Adaptation Progress Tracker*, GEO. L.: GEO. CLIMATE CTR., <https://www.georgetownclimate.org/adaptation/plans.html> (last visited Feb. 23, 2024) (tracking whether or not state and local governments have an adaptation plan in place).

71. U.S. CONST. amend. V.

72. *Chicago, Burlington & Quincy R.R. v. City of Chicago*, 166 U.S. 226, 238–39 (1897).

73. *Lingle v. Chevron U.S.A. Inc.*, 544 U.S. 528, 536–37 (2005).

74. See *id.* at 537–39 (categorizing the different claims recognized under takings jurisprudence).

government “goes too far” in regulating private property.⁷⁵ These so-called “regulatory takings,” however unintentional, fall into four categories.

First, a regulation that does not fall within any other category could constitute a partial taking under the *Penn Central* framework.⁷⁶ Yet, it is doubtful that a coastal landowner’s claim will prevail under this ad hoc approach due to the substantial amount of evidence that must be presented.⁷⁷ Nevertheless, the Supreme Court defined pertinent factors that can serve as guideposts for most other regulatory takings.⁷⁸ In determining whether there has been a partial taking of private property, courts engage in a fact-intensive inquiry by considering the regulation’s economic impact on the owner, the extent to which it interferes with the owner’s reasonable investment-backed expectations, and the character of the government’s action.⁷⁹

For instance, it cuts in favor of finding a partial taking if the government’s regulation diminishes a portion of the property’s economic benefit that the owner intended to use when they acquired the title.⁸⁰ Furthermore, the character of the government’s action supports finding a partial taking when the burden amounts to a physical invasion of private property rather than arising from a public program promoting the common good.⁸¹

Second, as articulated by the Supreme Court in *Lucas v. South Carolina Coastal Council*, a per se regulatory taking occurs when a government’s land use regulation deprives an individual of their property’s entire economic value.⁸² It is worth noting that a moratorium on land development falls short of this “total deprivation” taking because such a prohibition is only temporary and would be better suited for examination under *Penn Central*’s ad hoc framework.⁸³ In addition, the

75. *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922).

76. *See Penn Central v. City of New York*, 438 U.S. 104, 124 (1978).

77. *See Wolf*, *supra* note 19, at 167–68 (indicating that *Penn Central* provides “minimal solace for property owners who feel overburdened by government regulation, coastal and otherwise”).

78. *See Lingle*, 544 U.S. at 538–39 (explaining the *Penn Central* framework and its importance for deciding regulatory takings).

79. *Penn Central*, 438 U.S. at 124.

80. *Id.* at 127–28; *see also Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1019 (1992).

81. *Penn Central*, 438 U.S. at 124; *see also Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 426 (1982).

82. *Lucas*, 505 U.S. at 1019; *see also Palazzolo v. Rhode Island*, 533 U.S. 606, 631 (2001) (holding that a regulation that still permits a landowner to build on a small portion of their property is not a taking under *Lucas*).

83. *See Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg’l Plan. Agency*, 535 U.S. 302, 341–42 (2002).

majority in *Lucas* noted that a taking might be non-compensable if the regulation is consistent with the state's "background principles" of property law, which is explored further in Section II.C.⁸⁴ However, for now, it suffices to recognize that governments, in certain instances, can raise this as a complete defense to takings liability.⁸⁵

Although *Lucas* established a high bar for a plaintiff to prevail, the case is incidentally an example of when a SLR-related measure constitutes a regulatory taking. The plaintiff, Lucas, acquired two parcels of land in 1986 and sought to construct beachfront properties, which he was permitted to do at the time.⁸⁶ However, a few years later, to protect properties prone to coastal flooding and erosion, the state enacted a law that increased the distance requirement for how far development must be from the shoreline.⁸⁷ Lucas's undeveloped parcels fell within this newly restricted zone and he was therefore prohibited from completing construction.⁸⁸ As a result, the regulation deprived Lucas of all the economically beneficial use of his property, amounting to a compensable taking.⁸⁹

Furthermore, the third category of takings claims originated in *Loretto v. Teleprompter Manhattan CATV Corp.*, wherein the Court held that a regulation authorizing a permanent physical occupation of private property is a *per se* taking.⁹⁰ Specifically, in *Loretto*, state law required the owner of an apartment building to consent to a television company entering their property to install cables despite the owner's objection.⁹¹ The Court found such a physical appropriation of property to be, perhaps, the "most serious form of invasion" because the government usurps the owner's right to exclude and control their property.⁹²

Moreover, and related to SLR, the Supreme Court in *Arkansas Game & Fish Commission v. United States* held that government-induced flooding, even for a limited duration, might constitute a *per se* physical invasion.⁹³ In *Arkansas*, public officials controlled a dam and, for six years, deviated from the regular water-release schedule by extending the

84. *Lucas*, 505 U.S. at 1029; *see also* discussion *infra* Section II.C.

85. *Lucas*, 505 U.S. at 1027–28.

86. *Id.* at 1006–07.

87. *Id.* at 1007–09. The development regulation here is known as a setback. *See* GRANNIS, *supra* note 17, at 26–28 (explaining setbacks and buffer zones).

88. *Lucas*, 505 U.S. at 1008–09.

89. *Id.* at 1019, 1030–31.

90. *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 421 (1982).

91. *Id.* at 423.

92. *Id.* at 435–36.

93. *Arkansas Game & Fish Comm'n v. United States*, 568 U.S. 23, 34 (2012); *see also* *Pumpelly v. Green Bay Co.*, 80 U.S. 166, 180–81 (1871) (holding that a taking occurred when a government-operated dam released floodwater and inundated private property).

floodings into the spring and summer.⁹⁴ The cumulative impact of the prolonged inundations of water from the dam destroyed many acres of privately owned timber trees downstream, causing millions of dollars in damages.⁹⁵ Although the Court indicated that temporary government-induced floodings could be compensable, it remanded the case and articulated factors to consider, such as the flood's duration, the character of the land, the government's intent, and the foreseeability of the action.⁹⁶

The fourth and final regulatory taking is known as a land-use exaction. Namely, compensation may be necessary when a regulation compels coastal landowners to transfer part or all of their property interest to the government in exchange for the government's permission to develop on their land.⁹⁷ The Court formulated a test that requires an "essential nexus" between the imposed condition and the government's purpose.⁹⁸ Additionally, this relationship must be reasonable, which the Court termed a "rough proportionality."⁹⁹

In an example specific to SLR, the New Jersey Supreme Court case *Borough of Harvey Cedars v. Karan* involved an exacted conservation easement in which the government sought to build sand dunes on private beachfront properties to protect them against storm-triggered waves.¹⁰⁰ However, some homeowners declined to voluntarily grant the state an easement to construct the dunes on their land.¹⁰¹ Following the refusal, a regulation was enacted that authorized the government to forcefully exact a portion of the landowners' properties for the project, which triggered a compensable taking.¹⁰²

On the opposite end of takings jurisprudence, the paradigmatic and more straightforward taking is the government's direct appropriation of private property through eminent domain.¹⁰³ Although eminent domain grants the government power to condemn private property against a landowner's consent, it can only be exercised for "public use" and when

94. *Arkansas Game & Fish Comm'n*, 568 U.S. at 26, 28.

95. *Id.* at 30.

96. *Id.* at 34, 39.

97. See generally Beckett G. Cantley, *Environmental Preservation and the Fifth Amendment: The Use and Limits of Conservation Easements by Regulatory Taking and Eminent Domain*, 20 HASTINGS W. NW. J. ENV'T L. 215, 221 (2014) (describing various forms of conservation easements in relation to the Takings Clause).

98. *Nollan v. California Coastal Comm'n*, 483 U.S. 825, 837 (1987).

99. *Dolan v. City of Tigard*, 512 U.S. 374, 391 (1994).

100. *Borough of Harvey Cedars v. Karan*, 70 A.3d 524, 526 (N.J. 2013).

101. *Id.* at 527–28.

102. *Id.* at 528. The only issue in the case was how the court should calculate the compensation owed when only a portion of the property was taken for a public project. *Id.* at 526.

103. See, e.g., *Lingle v. Chevron U.S.A. Inc.*, 544 U.S. 528, 537 (2005).

just compensation is given to the landowner.¹⁰⁴ In effect, the “public use” and “just compensation” requirements can be viewed as an effort to preserve property rights against arbitrary government action.¹⁰⁵

Yet, historically, the Supreme Court’s interpretation of “public use,” since its decision in *Kelo v. City of New London*, has afforded property owners minimal protections.¹⁰⁶ In a five-to-four decision, the Court held that a city’s economic redevelopment plan to condemn multiple homes to build a pharmaceutical research facility qualified as “public use.”¹⁰⁷ That is to say, the government may take individuals’ properties for the economic benefit of society without needing to present evidence that suggests the alleged benefits will even accrue.¹⁰⁸ By strongly deferring to the legislature’s redevelopment plan, the Court freely defined “public use” to permit the government to appropriate private property so long as some broad assertion of a “public purpose” is served.¹⁰⁹

Even though an SLR-related action can amount to a regulatory taking or be accomplished through eminent domain, the distinction between these two forms is negligible because both emphasize “the severity of the burden that the government imposes upon private property rights.”¹¹⁰ In principle, the Takings Clause is intended to “bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.”¹¹¹ The Doctrine of Public Necessity, in contrast, undermines these values of fairness and justice.

B. *The Doctrine of Public Necessity*

As mentioned in passing, in *Lucas*, the Supreme Court carved out a notable exception to the Takings Clause. The Court articulated that a taking may be non-compensable if the government can prove the regulatory restriction is functionally equivalent to the state’s

104. *Id.* at 536–38.

105. Joseph L. Sax, *Takings and the Police Power*, 74 YALE L.J. 36, 60 (1964); *see also* Chicago, Burlington & Quincy R.R. v. City of Chicago, 166 U.S. 226, 235–38 (1897) (discussing the due process purposes of the compensation provision).

106. *See* 545 U.S. 469 (2005); *see also* Gideon Kanner, *Kelo v. New London: Bad Law, Bad Policy, and Bad Judgment*, 38 URB. LAW. 201, 202 (“*Kelo* worked a radical expansion of the right to take . . . by jettisoning a long-standing limiting condition.”).

107. *Kelo*, 545 U.S. at 483–84.

108. *Id.* at 487–88.

109. *Id.* at 483–85; *see also* Kanner, *supra* note 106, at 202–03 (reasoning that the Court’s interpretation of the public use requirement as “public purpose” mangled the law and tampered with the English language).

110. *Lingle v. Chevron U.S.A. Inc.*, 544 U.S. 528, 539–40 (2005).

111. *Armstrong v. United States*, 364 U.S. 40, 49 (1960).

“background principles” of property law.¹¹² In other words, the regulation explicitly prohibits what was always an implicit limitation on the landowner’s property use.¹¹³ For example, the Court reasoned that a regulation that prevents a landowner from exercising their property rights to the detriment of others imposes a similar constraint to the common-law nuisance.¹¹⁴

Likewise, the majority subtly mentioned in a footnote that the common law Doctrine of Public Necessity provides another basis for a state’s background principle of property law.¹¹⁵ Public necessity is the longstanding rule that one has the complete privilege to destroy or appropriate another’s property to avert an imminent public disaster.¹¹⁶ Although the defense is not commonly raised today, it will likely be a more prevalent source to absolve the government of takings liability when SLR intensifies in the future.¹¹⁷ However, many states that adopted statutes codifying the common law doctrine have varying definitions for what disasters cross the threshold of “necessity.”¹¹⁸

Furthermore, in the absence of the Supreme Court defining an exact framework for applying the doctrine, the Federal Circuit extrapolated from existing precedent the prerequisite that the circumstances must present an “imminent danger” and “an actual emergency.”¹¹⁹ In fact, these previous cases provide a relevant basis for deducing that SLR may be viewed as a public necessity in the future.

For example, federal and state courts have embraced the well-established rule that government officials are justified in destroying

112. *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1029 (1992). *See generally* Michael C. Blumm & Rachel G. Wolfard, *Revisiting Background Principles in Takings Litigation*, 71 FLA. L. REV. 1165, 1165–66 (2020) (examining the background principles of common law post-*Lucas*).

113. *Lucas*, 505 U.S. at 1029–30. The Court refers to this surmise as the “logically antecedent inquiry into the nature of the owner’s estate.” *Id.* at 1027.

114. *Id.* at 1029; *see also* RESTATEMENT (SECOND) OF TORTS § 202 (AM L. INST. 1965) (privileging a public official to enter private property to abate a public nuisance).

115. *Lucas*, 505 U.S. at 1029 n.16.

116. *See* RESTATEMENT (SECOND) OF TORTS § 196 (AM L. INST. 1965) (privileging one to enter another’s land to avert “an imminent public disaster”); *Id.* § 262 (privileging one to commit a conversion of another’s property “for the purpose of avoiding a public disaster”). Sections 196 and 262 may be read together. *See* W. PAGE KEETON ET AL., *POSSER AND KEETON ON THE LAW OF TORTS* 147 n.15 (W. Page Keeton ed., 5th Ed. 1984).

117. Craig, *supra* note 21, at 434 (suggesting that the public necessity defense will be invoked more as sea levels keep rising).

118. *See, e.g.*, ALASKA STAT. 11.81.320 (2022); ARIZ. REV. STAT. ANN. § 13-417 (2022); DEL. CODE ANN. tit. 11, § 463 (2021); ME. STAT. tit. 17-A, § 103(1) (2007); N.J. STAT. ANN. § 2C:3-2 (2022). *See generally* Craig, *supra* note 21 (surveying Gulf Coast states’ use of the public necessity doctrine).

119. *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378 (Fed. Cir. 2013).

private properties to prevent a severe fire from spreading to others.¹²⁰ In the prominent Supreme Court case *Bowditch v. City of Boston*, a devastating fire raged through the city and threatened to spread uncontrollably.¹²¹ As a result, government officials ordered a building in the fire's path to be demolished, which stopped the spread and spared the town.¹²² Although the building owner claimed that the destruction of their property was a compensable taking, the Court held that the government's measures were justified in light of the severe emergency.¹²³ Notably, the Court asserted that common law allowed the destruction of property in times of actual necessity, providing "no responsibility on the part of such destroyer, and no remedy for the owner."¹²⁴

Similarly, the Doctrine of Public Necessity has been applied to prevent the transmission of diseases. In *Miller v. Schoene*, the Supreme Court upheld a state's determination that destroying peoples' diseased cedar trees was a necessary measure to save apple orchards.¹²⁵ The case involved a plaintiff who owned cedar trees infected with a disease that, while not harmful to the trees themselves, posed a threat to an apple orchard a few miles away.¹²⁶ Consequently, the plaintiff challenged the state's law that ordered them to cut down their infected cedar trees to prevent transmitting the disease to the orchard.¹²⁷ Finding against the plaintiff, the Court articulated that a state forced to choose between two classes of property does not exceed its constitutional powers by deciding to destroy one to protect another of greater public interest.¹²⁸

Moreover, directly related to SLR, the Federal Circuit in *Milton v. United States* left open the possibility that the public necessity defense could extend to government-induced flooding during a hurricane.¹²⁹ The case concerned the Army Corps of Engineers' flood-control plan in which a dam automatically released floodwater when the reservoir reached a specific height.¹³⁰ This threshold was reached shortly after Hurricane

120. See, e.g., *Bowditch v. City of Boston*, 101 U.S. 16, 18 (1879); *Surocco v. Geary*, 3 Cal. 69, 73 (Cal. 1853); *Conwell v. Emrie*, 2 Ind. 35, 36 (1850); *Keller v. City of Corpus Christi*, 50 Tex. 614, 615 (1879).

121. *Bowditch*, 101 U.S. at 16.

122. *Id.*

123. *Id.* at 18–19.

124. *Id.* at 18.

125. *Miller v. Schoene*, 276 U.S. 272, 279 (1928); see also *Seavey v. Preble*, 64 Me. 120, 121 (1874) (holding that the decision to remove wallpaper was a necessary measure to prevent the spread of smallpox).

126. *Miller*, 276 U.S. at 277–278.

127. *Id.* at 277.

128. *Id.* at 279–80.

129. 36 F.4th 1154, 1163 (Fed. Cir. 2022).

130. *Id.* at 1158.

Harvey made landfall, forcing the government to open the dam's floodgates.¹³¹ These released waters submerged downstream private properties in nearly eight feet of water for eleven days.¹³²

As a result, hundreds of property owners claimed the flood constituted an uncompensated physical taking; in defense, the government invoked the Doctrine of Public Necessity.¹³³ Reversing the lower court's decision not to hold the government liable for events outside its control, the Federal Circuit held there is no blanket immunity from flood-related takings claims.¹³⁴ While the lower court on remand was to address whether a taking occurred under the *Arkansas* factors,¹³⁵ it was also instructed to determine whether the government could invoke public necessity as a defense.¹³⁶ The implication here is that a severe hurricane, which exacerbates the effects of SLR, could constitute a public necessity and absolve the government's liability, even if a court finds a compensable taking on remand.

III. THE FORK IN THE ROAD

Much of this Note has laid the groundwork for understanding the tension that SLR produces between the Takings Clause and Doctrine of Public Necessity. However, now it is time to conceptualize this doctrinal pressure by outlining the "fork in the road" scenario.

It may be helpful to use the year 2050 as a theoretical benchmark for when the public necessity defense could be more successful against the Takings Clause. Even though such an exact date does not exist, the idea is that SLR will likely inflict severe harm to coastlines by that time and meet the threshold of an imminent emergency.¹³⁷ With that in mind, this Part accepts the Sweet report's 2050 predictions that sea levels will rise ten-to-fourteen inches on the East Coast and fourteen-to-eighteen inches on the Gulf Coast.¹³⁸ It also assumes sea levels will rise as predicted, without unexpected increases or decreases. After all, states should not gamble on the slim chance that the overwhelming scientific evidence of future SLR is wrong.

Thus, the first path of the fork outlines a government's decision to implement an adaptive strategy before SLR worsens, running the risk of

131. *Id.*

132. *Id.* at 1158–59.

133. *Id.* at 1159, 1162.

134. *Id.* at 1160.

135. *See supra* text accompanying note 96.

136. *Id.* at 1163.

137. *See supra* notes 45–55 and accompanying text.

138. SWEET ET AL., *supra* note 25, at 60.

takings liability. Alternatively, the second path examines the consequences resulting from the decision to forgo adaptation until SLR worsens in the future—at which point the Doctrine of Public Necessity may develop as a complete defense.

A. Path One: Sea Level Rise Implicates the Takings Clause

The purpose of this Section is not to provide an exhaustive list of adaptive measures but to demonstrate how such actions implicate the Takings Clause. Accordingly, state and local governments under this first path would decisively adopt adaptive strategies to protect their communities. Although timelines for implementing these plans would vary due to regional water levels rising at different rates, states would nevertheless monitor SLR and respond within a sufficient timeframe.¹³⁹ Specifically, an adaptive plan should be implemented long before SLR worsens; otherwise, states will have missed the window to act effectively.¹⁴⁰ For this reason, a few vulnerable states along the U.S. coast have already begun planning for the looming threat.¹⁴¹

A government's adaptive strategy can consist of various regulatory measures, some of which may result in *per se* or partial takings. For example, like in *Lucas*, setback zones could be enlarged to increase the distance required between construction and the shoreline, providing a more extensive buffer zone for protecting coastal properties against rising waters.¹⁴² Yet, a *per se* regulatory taking will occur if the new setback zone prohibits landowners from developing their beachfront property and deprives them of the land's total economic benefit.¹⁴³

Another measure at the states' disposal is building physical barriers, such as seawalls or dams, to guard against the regular destructive flooding produced by coastal storms.¹⁴⁴ However, as evident in *Arkansas*, governments should be cautious about releasing floodwaters that could inundate private properties nearby;¹⁴⁵ otherwise, the water may

139. *See id.* at 45 (discussing how engineers and planners addressing adaptation adopt a scenario-based approach).

140. *See id.* at 60.

141. *See, e.g.*, N.J. ADMIN. CODE EXEC. ORDER NO. 89 (2019) (Statewide Climate Change Resilience Strategy); FLA. STAT. ANN. § 380.093(5) (2022) (Statewide Flooding and Sea Level Rise Resilience Plan); DEL. DEP'T NAT. RES. & ENV'T CONTROL, DELAWARE'S CLIMATE ACTION PLAN (2021).

142. *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1038 (1992).

143. *See supra* notes 87–89 and accompanying text.

144. *Flood Solutions*, RISK FACTOR, <https://riskfactor.com/solutions/flood> (last visited Feb. 23, 2024).

145. *See Arkansas Game & Fish Comm'n v. United States*, 568 U.S. 23, 26 (2012).

constitute a physical appropriation under *Loretto* and require compensating the landowner.¹⁴⁶

Moreover, states can exercise the power of eminent domain to condemn coastal properties, which is relevant for a managed retreat strategy.¹⁴⁷ To illustrate, governments could condemn beachfront properties to build seawalls along the coastline as a proactive measure to defend the community further inland.¹⁴⁸ Nonetheless, if future SLR eventually overwhelms the coasts, eminent domain could be used as a last resort to buy out parts of the community that are in constant danger and relocate them to a safer area.¹⁴⁹ Given the Court's broad interpretation of "public use" and deference to legislatures, both measures would meet this constitutional threshold because the public purpose served is protecting coastal communities.¹⁵⁰ In return, however, governments must compensate the landowners for the direct appropriation of their property.

Irrespective of whether the measure is a regulation or exercise of eminent domain, the fundamental point is that adaptive strategies can implicate the Takings Clause through various avenues. While coastal communities will likely be afforded some level of protection in either case, the reality is that SLR might still force people to retreat.

B. Path Two: Public Necessity as a Complete Defense

Under the second path, state and local governments would not adequately employ adaptive measures before the effects of SLR worsen. Such states may have either underestimated the risks, failed to take sufficient action, adopted a "wait and see" approach, or ignored the warnings.¹⁵¹ Perhaps some states might lack the funding to adopt an extensive plan. If this is the case, it could suffice for the state to operate

146. See *supra* text accompanying note 92. But see *supra* text accompanying note 129.

147. See GRANNIS, *supra* note 17, at 47–49 (explaining acquisitions and buyout programs).

148. E.g., TEX. LOC. GOV'T CODE ANN. § 571.004(a) ("The county or municipality may acquire property that is necessary for the establishment, construction, and maintenance of a seawall, breakwater, levee, floodway, or drainway.").

149. See Jon Hurdle, *Should NJ Use Eminent Domain to Take Coastal Properties Threatened by Sea-Level Rise?*, NJ SPOTLIGHT NEWS (Mar. 16, 2020), <https://www.njspotlightnews.org/2020/03/should-nj-use-eminent-domain-to-take-coastal-properties-threatened-by-sea-level-rise/> ("You don't use eminent domain lightly but I also wouldn't remove it as a tool[.] . . . [I]t may be useful after a storm damages property.").

150. See *supra* text accompanying notes 106–09.

151. See GOODELL, *supra* note 1, at 256 ("[T]here is hope that if sea levels rise slowly enough, it will erode the politics of denial . . . and the whole crises will be manageable.").

within budget and enact a law similar to Hawaii's, which requires real estate disclosure for properties at risk to SLR.¹⁵²

Nonetheless, over the next few decades, SLR will continue to magnify the damage that coastal states are already witnessing from erosion, storms, and flooding.¹⁵³ Particularly, underprepared states lacking a strategy, and possibly even prepared states, may need to react to the ongoing deterioration that SLR inflicts on their communities. For instance, governments may attempt to implement adaptive measures hastily or, like in *Milton*, officials may divert floodwater toward a few individuals' properties during a disastrous storm.¹⁵⁴ Regardless of which scenario it is, both actions would amount to a taking of private property.

However, by that time in the future, SLR will likely have evolved into a public necessity, potentially absolving the government's liability for such actions.¹⁵⁵ Even so, one may contend that SLR is not the normative disaster that past public necessity cases have recognized because the projections and probability of future harm are uncertain.¹⁵⁶ The argument attempts to distinguish SLR from the ravaging fire in *Bowditch*, which was visibly apparent to the community and practically guaranteed to spread more damage in the immediate future.¹⁵⁷

While SLR is indeed a less cognizable threat today, the expected one-foot increase within a few decades would be catastrophic.¹⁵⁸ In addition, *Milton* alludes to the possibility that particularly disastrous storms, in which higher water levels amplify the damage, may amount to a public necessity.¹⁵⁹ Moreover, one scholar has proposed different ways to reframe the emergency by focusing on the impact on water supplies and public health.¹⁶⁰ These are plausible approaches to highlight the inherent risks associated with higher sea levels.

152. HAW. REV. STAT. § 508D-15 (2022). Disclosing the potential threat of SLR puts prospective buyers on notice of the inherent risks in purchasing the property. Yet, this disclosure alone would be insufficient if a state has the means to offer more protection.

153. See *supra* text accompanying notes 45–57.

154. *Milton v. United States*, 36 F.4th 1154, 1158–59 (Fed. Cir. 2022).

155. See Craig, *supra* note 21, at 434 (arguing that Gulf States may expand the public necessity defense as SLR becomes a pressing concern).

156. See *United States v. Caltex, Inc.*, 344 U.S. 149, 154 (1952) (stating that the common law recognizes immunity from the destruction of property “in times of imminent peril”).

157. *Bowditch v. City of Boston*, 101 U.S. 16 (1879); see also *supra* text accompanying notes 120–24.

158. See *supra* text accompanying notes 43–55.

159. See *supra* text accompanying notes 129–36.

160. See generally Robin Kundis Craig, *Adapting Water Law to Public Necessity: Reframing Climate Change Adaptation as Emergency Response and Preparedness*, 11 VT. J. ENV'T L. 710, 714–15 (2010); Robin Kundis Craig, *Using a Public Health Perspective to Insulate Land Use-Related Coastal Climate Change Adaptation Measures from Constitutional Takings Challenges*, PLANNING & ENV'T L., May 2014, at 4, 5.

Furthermore, adapting to SLR warrants future-oriented measures analogous to the one justified in *Miller* because both preemptively aim to avoid forthcoming harm.¹⁶¹ For instance, destroying a diseased cedar tree was necessary to prevent infecting an apple orchard of greater public interest.¹⁶² Likewise, within a couple of decades, courts may expand the public necessity defense to justify governmental actions that protect communities against the peril of SLR at the cost of a few coastal landowners' properties.

As the rate of SLR accelerates and threatens millions of people,¹⁶³ there are many possible avenues for applying the doctrine. Therefore, whether the public necessity is cloaked as a disastrous flood or hurricane causing devastation to infrastructure, properties, and the general public, SLR will be the underlying emergency.¹⁶⁴ At that point, coastal states that have failed to adapt will be obligated to intervene to mitigate the damage. And if such an emergency necessitates individual rights to yield to the greater public's benefit, then the government may be justified in doing so.

IV. ENCOURAGING GOVERNMENT ACTION WITH THE TAKINGS CLAUSE

After delineating both pathways, it is clear SLR forces property rights to a crossroads of competing legal doctrine. On the one hand, if a government acts now, adaptive measures would be subject to the Takings Clause. On the other hand, if SLR gradually develops into a crisis, courts may extend the public necessity defense to immunize the government's liability in the future.

Although revisiting the Doctrine of Public Necessity in a world with SLR may be tempting, its applicability should remain limited. Instead, the Takings Clause is a more just and fair alternative for protecting landowners' interests. Accordingly, this argument proceeds by examining the moral implications of both doctrines in a SLR context. These underlying moral concerns lead to the proposal that SLR should be governed solely through the Takings Clause to incentivize states to act, thereby avoiding the Doctrine of Public Necessity.

161. See *Miller v. Schoene*, 276 U.S. 272, 277–78 (1928).

162. See *supra* text accompanying notes 125–28.

163. See Mathew E. Hauer et al., *Millions Project to Be at Risk from Sea-Level Rise in the Continental United States*, NATURE: CLIMATE CHANGE, Mar. 14, 2016, at 691, 691 (estimating between 4.2 million and 13.1 million people in the U.S. will be at risk of inundation by 2100).

164. Craig, *supra* note 21, at 430–31.

A. *Moral Concerns of Extending the Public Necessity Defense to Sea Level Rise*

Like any exception, the Doctrine of Public Necessity is opposed to the text of the Takings Clause.¹⁶⁵ Yet, both will dislocate property rights to some extent, regardless of which path the government takes. Nonetheless, from the coastal landowner's perspective, the inflicted burden is less severe if the government acts on SLR now and accepts the takings liability that follows. Even though a state's regulation or direct appropriation would call upon an individual to sacrifice part or all of their property interest, this imposition is essential for long-term protection against the dangers of SLR.¹⁶⁶

Indeed, it is difficult to dispute that governments would be wrong to take coastal property before SLR becomes a worst-case scenario, irrespective of the adaptive measure implemented. In effect, the state would accept SLR as a future threat and mitigate what would otherwise have been more dangerous harm to the landowner; the benefit from this taking would then be reciprocated to the coastal community living further inland by providing them with protection.¹⁶⁷ While the short-term hardship may be substantial for the party whose land was taken, compensation at least attempts to reduce the burden.¹⁶⁸ After all, if future SLR were to destroy the acquired property anyway, the payment would put the landowner in a better position than had the government not taken their property.

On the other hand, it would be unjustifiable for governments to raise the public necessity defense to excuse their inaction or incompetence in handling SLR. By only reacting when future SLR is an emergency, states may force some individuals to bear significant losses for the benefit of society.¹⁶⁹ In other words, whether the government appropriates or

165. See Derek T. Muller, "As Much upon Tradition as upon Principle": A Critique of the Privilege of Necessity Destruction Under the Fifth Amendment, 82 NOTRE DAME L. REV. 481, 526 (2006).

166. See *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 2895 (1992) ("[W]hen the owner of real property has been called upon to sacrifice *all* economically beneficial uses in the name of the common good . . . he has suffered a taking."); *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 435 (1982) ("[A] permanent physical occupation of another's property is . . . perhaps the most serious form of invasion of an owner's property interests.").

167. See Eric R. Claeys, *Takings, Regulations, and Natural Property Rights*, 88 CORNELL L. REV. 1549, 1572 (2003) (arguing that laws should promote equality and reciprocity to enlarge the advantage of everyone).

168. See Frederic Bloom & Christopher Serkin, *Suing Courts*, 79 U. CHI. L. REV. 553, 576 (2012).

169. But see *supra* text accompanying note 111.

intentionally floods properties to avert a public disaster, a landowner may face the harsh reality that the law offers no remedy.¹⁷⁰ Although some states provide statutory compensation for instances of public necessity, many provisions exclude payment when public officials destroy or damage property in flood-related emergencies.¹⁷¹ Thus, without compensation, the aggrieved party is left to internalize the consequences of being unfortunate enough to have had their property taken by the government.¹⁷²

Nonetheless, as some attempt to argue, the utilitarian principles underlying the doctrine could provide a sufficient basis to couch the government's liability. The logic would follow that a state is justified in expensing one's property only to prevent more significant harm to others.¹⁷³ That is to say, governmental invasion of one's property rights is permissible only if the potential benefit produced is greater or equal to the damage that SLR would have otherwise caused.¹⁷⁴

However, consider a situation where the government destroys a few coastal landowners' properties to protect the greater public against SLR. In such a scenario, society may indeed be the net beneficiary. Yet, this would be no consolation to the landowners who were allocated the burden unfairly, especially when the government is excused of liability under the public necessity defense.¹⁷⁵ Moreover, the hardship would be compounded in light of the state's inability to prepare for future SLR, despite ample warnings. Hence, at the very least, governments still have a moral obligation to compensate for such losses.¹⁷⁶

Furthermore, governments availing themselves of the public necessity defense to immunize decades of inaction would be an unjust application of the doctrine. The necessity privilege is justified in a manner akin to self-defense laws requiring an individual to retreat

170. Cf. Muller, *supra* note 165, at 525–26 (arguing that fairness and justice require compensating landowners in instances of public necessity).

171. E.g., FLA. STAT. § 252.43(6) (2023); ARK. CODE ANN. § 12-75-124(f) (2023); NEB. REV. STAT. § 81-829.57(6) (2014).

172. Brian Angelo Lee, *Emergency Takings*, 114 MICH. L. REV. 391, 437 (2015). Frank Michelman termed such losses as “demoralization costs.” Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of “Just Compensation” Law*, 80 HARV. L. REV. 1165, 1214 (1967).

173. See *City of Durham v. Eno Cotton Mills*, 54 S.E. 453, 464 (1906) (“The welfare of the public is considered in law superior to the interests of individuals, and, when there is a conflict between them, the latter must give way.”).

174. John Alan Cohan, *Private and Public Necessity and the Violation of Property Rights*, 83 N.D. L. REV. 651, 654–55 (2007).

175. See Lee, *supra* note 172, at 437.

176. See *id.* at 453 (suggesting that the government has a general obligation to pay partial compensation for destruction).

first.¹⁷⁷ The *Restatement (Second) of Torts* provides, in pertinent part, that an actor has the privilege to use self-defense unless they can, with complete safety, avoid the necessity of defending themselves by retreating.¹⁷⁸

To illustrate, person *A* is standing on a street corner, while person *B*, some distance away, threatens to hurt *A*.¹⁷⁹ However, *A* knows there is time to avoid *B*'s attack by running away.¹⁸⁰ As a result, *A* is not privileged to stay on the corner, await *B*'s attack, and then defend themselves.¹⁸¹ The implication is that, when possible, a person must actively take steps to prevent themselves from encountering an immediate threat. Then, and only if there are no other alternatives, will the actor be privileged to defend themselves out of complete necessity as a last resort.

With this in mind, *Bowditch*'s use of public necessity can be considered analogous to a justifiable case of "self-defense."¹⁸² In *Bowditch*, the public officials were presumably unaware that a large-scale fire would occur that day. From the conception of the first spark until the fire's peak destruction, the officials were left without any time or options to salvage the city other than destroying the apartment building to halt the fire's spread. Therefore, having no time to retreat from the fire, the officials acted out of necessity as a last resort to save the town.

Accordingly, unlike the fire in *Bowditch*, but similar to the distance between *A* and *B*, state and local officials have decades to "retreat" before SLR necessitates immediate action. However, this interim period may not be used wisely to mitigate the severe risks. In effect, the government would await the threat of SLR and claim it took coastal properties out of necessity. This is analogous to *A* allowing *B* to approach and then *A* relying on the privilege of self-defense to justify its conduct. In both scenarios, the danger is welcomed since the government and *A* had sufficient time to avoid the threat; thus, neither can claim their action was necessary.

Indeed, with decades to plan, it would be immoral for governments to do nothing and escape liability for destroying or appropriating private property when SLR turns into a worst-case scenario. Although the government has no legal duty to act, it certainly has a moral obligation

177. KEETON ET AL., *supra* note 116, at 145.

178. RESTATEMENT (SECOND) OF TORTS § 65 (1965).

179. *Id.* § 65 cmt. g, illus. 5.

180. *Id.*

181. *Id.*

182. *Bowditch v. City of Boston*, 101 U.S. 16, 18 (1879).

to prepare for the future.¹⁸³ Therefore, rather than allowing the public necessity defense in the context of SLR, the Takings Clause is the better alternative for encouraging action and protecting property rights.

B. Using the Takings Clause to Garner Early Action and Preserve Property Rights

To clarify, the argument is not to dismiss the Doctrine of Public Necessity as a whole but to adopt a narrow rule that it should not apply to SLR. The concern is that if SLR qualifies as a public necessity in the coming years, it may go unnoticed that decades of hesitant governmental decision-making exacerbated the disastrous effects. That is to say, SLR has the potential to be so catastrophic that the probability of harm outweighs the risk of ignoring it.¹⁸⁴

Moreover, affording governments the option to raise the public necessity defense discourages decisiveness and rewards inaction via potentially absolving future liability.¹⁸⁵ This has the effect of promoting risky behavior. In essence, states can “wait and see” how SLR transpires with the expectation that liability may be excused once coastal damage materializes and intervention becomes necessary.¹⁸⁶

Hence, if the goal is to induce states to implement adaptive measures to protect coastal property before SLR worsens, then the Takings Clause should apply regardless of whether governments act now or when the public necessity defense would otherwise be available in the future.¹⁸⁷ Simply put, the first path remains unchanged because the Takings Clause always applies whenever states interfere with property rights today. However, governments forgoing action under the second path would be subject to the Takings Clause rather than the Doctrine of Public Necessity, even though SLR would constitute a valid use of the defense.

183. See Alejandro De La Garza, *Climate Change is a Moral Crisis. But Our Political System Doesn't Treat It That Way*, TIME (July 28, 2022, 12:56 PM), <https://time.com/6201311/climate-change-moral-crisis-politics/> (discussing global governmental inaction as a moral dilemma).

184. See Brady Dennis, *Rising Seas Could Swallow Millions of U.S. Acres Within Decades*, WASH. POST (Sept. 8, 2022, 2:59 PM), <https://www.washingtonpost.com/climate-environment/2022/09/08/sea-level-rise-climate-central/> (analyzing the effects sea level rise has on property lines and tax bases).

185. See Christopher Serkin, *Passive Takings: The State's Affirmative Duty to Protect Property*, 113 MICH. L. REV. 345, 348 (2014).

186. See A. Dan Tarlock, *Takings, Water Rights, and Climate Change*, 36 VT. L. REV. 731, 756 (2012) (defining moral hazards as an undesirable or inefficient behavior encouraged by the expectation that it will go unpunished or rewarded).

187. See Susan S. Kuo, *Disaster Tradeoffs: The Doubtful Case for Public Necessity*, 54 B.C. L. REV. 127, 128 (2013) (arguing that the Doctrine of Public Necessity should not apply to disaster response because the harm can reflect prior government choices).

Nonetheless, absent governmental action, SLR causing damage by itself does not trigger a taking. Instead, a government's affirmative action must interfere with private property to amount to a compensable taking.¹⁸⁸ Specifically, liability would attach to any governmental conduct that could have been excused under the Doctrine of Public Necessity.¹⁸⁹ For instance, a government's decision to destroy or appropriate private property during an imminent emergency would now require paying compensation under the Takings Clause.

To be more precise, the governmental action must be plausibly related to a public disaster associated with SLR, such as coastal flooding or storm surge from a hurricane. To demonstrate, suppose an extreme rainfall event is a public necessity and the primary cause of a coastal flood. Since ocean waters did not impact the inundation, officials could use a dam to divert the rainwater toward private properties and raise the necessity defense.¹⁹⁰ In contrast, consider the hypothetical where it was not discernable whether the coastal sea or volume of rain contributed most to the flood. The mere fact that this is contentious would be enough to impose takings liability if the government redirects the floodwaters onto private property, even though the necessity defense would be available.

The notion of enforcing liability in such a scenario is not to extend the Takings Clause's function but to broaden its application.¹⁹¹ As a result, states would be encouraged to act decisively and take private property before SLR is deemed an emergency because there would be no option for escaping liability in the future. Effectively, the government would be given broader discretion to take coastal properties now, which protects coastal communities against SLR in the long term.

Moreover, attempting to prevent future SLR from blighting these areas furthers the public's interest. This is particularly true if the government exercises eminent domain, one of the most controversial adaptive tools.¹⁹² The outcome here would be tangential to *Kelo*, where the Court broadened the understanding of "public use" by affirming a state's plan to take properties for economic revitalization even though the

188. See *St. Bernard Par. Gov't v. United States*, 887 F.3d 1354, 1368 (2018) ("[A]llegations of government inaction do not state a takings claim.").

189. See discussion *supra* Section III.B.

190. See *supra* text accompanying notes 130–32.

191. But see Serkin, *supra* note 185 (proposing the idea of "passive takings" where the government can be liable for regulatory inactions); Daniel D. Barnhizer, *Givings Recapture: Funding Public Acquisition of Private Property Interests on the Coasts*, 27 HARV. ENV'T L. REV. 295, 298 (2003) (arguing that past government subsidies should be used as credit to offset coastal condemnation costs).

192. Wolf, *supra* note 19, at 164.

city was not considered blighted.¹⁹³ Similar logic extends to coastal communities that SLR has not yet blighted. If states strategically take properties to adapt now, they avoid needing to do so in the future after SLR devastates an area. In addition, the public purpose here would be more justifiable than the unsubstantiated economic benefit in *Kelo*.¹⁹⁴

However, broad deference to governmental interferences with private property is generally met with harsh reactions from the public, as was evident post-*Kelo*.¹⁹⁵ A common concern is that the Takings Clause affords weak protections for property rights compared to the government's ability to deprive them.¹⁹⁶ But this perspective is misplaced given the potentially bleak reality of SLR because neither the encroaching ocean waters nor the Doctrine of Public Necessity provides solace to coastal landowners' properties. Thus, the Takings Clause is the least restrictive alternative for property rights since individuals would be compensated regardless of when their rights are burdened.

Even so, some might object that backing governments into a corner of either taking property now or in the future does not induce them to take property at all. The reasoning may follow that the threat of paying compensation could have the adverse effect of promoting inaction to avoid the substantial costs altogether. In other words, those states that would have raised the public necessity defense are better off not interfering with properties and leaving landowners alone.

However, complete inaction is an unrealistic governmental response when future SLR begins to harm coastal communities. Governmental decision-making is influenced by various pressures, including individuals, special interest groups, and budgetary costs.¹⁹⁷ As coasts start experiencing more damage, officials will be compelled to act. In fact, frequent flooding and the perceived risk of potential storms are often attributed to increased support for action from advocates, the public, and even elected officials.¹⁹⁸

193. *Kelo v. City of New London*, 545 U.S. 469, 483–84 (2005).

194. See *supra* text accompanying notes 106–09.

195. See generally Ilya Somin, *The Limits of Backlash: Assessing the Political Response to Kelo*, 93 MINN. L. REV. 2100, 2109–10 (2009) (analyzing how various states reformed the “public use” requirement).

196. See generally Andrew Yaphe, *Assessments of Backlash: Evaluating the Response of the Property Rights Movement to Kelo v. City of New London*, 2 ELON L. REV. 223, 223–24 (2011), and Dana Berliner, *Looking Back Ten Years After Kelo*, 125 YALE L.J.F. 82, 89–90 (2015), for an assessment of the public's reactions post-*Kelo*.

197. Lawrence Blume & Daniel L. Rubinfeld, *Compensation for Takings: An Economic Analysis*, 72 CALIF. L. REV. 569, 620–22 (1984).

198. D.J. Rasmussen et al., *The Political Complexity of Coastal Flood Risk Reduction: Lessons for Climate Adaptation Public Works in the U.S.*, EARTH'S FUTURE, Feb. 2021, at 1, 5–6.

Indeed, almost three-quarters of Americans living within twenty-five miles of coastlines view SLR as already having a significant impact on their community.¹⁹⁹ This is partly due to SLR-related floods deterring tourists from visiting these coastal towns, costing local businesses millions in lost annual revenue.²⁰⁰ Hence, not only is it improbable for governments to do nothing, but it is also not in their interest.²⁰¹

Another possible concern is that if takings liability always attaches to adaptive measures, and there is little incentive to delay in implementing them, would governments be obligated to take too much property or overregulate? While the objection appears problematic, it is unlikely to materialize. In particular, expanding takings liability would offset the government's presupposed overzealous tendency to take property through eminent domain or regulations. A common interpretation of the compensation requirement is that it "create[s] a budgetary effect that forces governments to internalize the costs" of their actions.²⁰² As a result, public officials cannot simply ignore the true social costs their conduct imposes on citizens.²⁰³ This, then, drives states to exercise their powers more efficiently and corrects ineffective decision-making.²⁰⁴ Additionally, adapting to SLR is inherently capital-intensive and demands a careful allocation of resources.²⁰⁵ Thus, considering the high costs of compensating landowners and implementing adaptive measures, it is doubtful that governments will use their finite resources unproductively to indulge in acquiring too much property.

Moreover, the fact that exhausting financial resources is not feasible only emphasizes the need for states to adopt a long-term SLR strategy and the importance of inducing early action. One notable case study for being ahead of the curve is New Jersey's *Climate Change Resilience*

199. Brian Kennedy, *Most Americans Say Climate Change Affects Their Local Community, Including 70% Living Near Coast*, PEW RSCH. CTR. (June 29, 2020), <https://www.pewresearch.org/fact-tank/2020/06/29/most-americans-say-climate-change-impacts-their-community-but-effects-vary-by-region-2/>.

200. See generally Hino et al., *supra* note 47 (estimating that Annapolis, Maryland is losing over \$12 million in annual revenue because of increased flooding).

201. See Bloom & Serkin, *supra* note 168, at 577 (stating that governments are "motivated by political capital and the chance to maximize electoral prestige").

202. Hanoch Dagan, *Just Compensation, Incentives, and Social Meanings*, 99 MICH. L. REV. 134, 138 (2000).

203. *Id.*

204. Ronit Levine-Schnur & Gideon Parchomovsky, *Is the Government Fiscally Blind? An Empirical Examination of the Effect of the Compensation Requirement on Eminent-Domain Exercises*, 45 J. LEGAL STUD. 437, 438 (2016).

205. See Hummel, *supra* note 61, at 1–2 (estimating that hard armoring alone will cost the United States \$300 billion by 2100).

Strategy (“the Plan”).²⁰⁶ Given the potential existential threat SLR imposes on New Jersey’s coastal communities, the Plan provides an adaptation framework for its local governments to follow.²⁰⁷ While the Plan acknowledges that many policies and regulations confronting SLR will face increasing legal challenges, it still encourages decisive action to protect vulnerable buildings and infrastructure.²⁰⁸

Additionally, part of the Plan focuses on incentivizing nature-based protection rather than hard stabilization like bulkheads and other barriers.²⁰⁹ Considering the expensive bill for adaptation, it stresses the need for capital to be deployed efficiently, which New Jersey secures through public and private funding.²¹⁰ Finally, in preparing for the future, the Plan includes, among other things, the option to relocate vulnerable residents as a potential last resort and recognizes the legal implications and costs associated with moving people to safer areas.²¹¹ Thus, calculating these potential expenses and others in advance demonstrates the importance of planning for the future.

CONCLUSION

As SLR accelerates and encroaches further up the coastlines, the unfortunate prospect of a multi-state crisis along the Gulf and East Coasts follows. These circumstances impose a crossroads for property rights by placing tension between the Takings Clause and the Doctrine of Public Necessity.

However, governments availing themselves of the public necessity defense is a moral hazard that should be avoided. States have decades to plan for SLR, and immunizing the government’s liability for destroying or appropriating private property is unfair and unjust. As an alternative, broadening the current understanding of the Takings Clause would incentivize states to act more decisively while also requiring them to pay careful attention to individuals’ property rights. Therefore, if SLR projections transpire, coastal landowners would rather have been burdened by the government than by the seas.

206. NICHOLAS ANGARONE ET AL., STATE OF NEW JERSEY CLIMATE CHANGE RESILIENCE STRATEGY (2021), <https://dep.nj.gov/wp-content/uploads/climatechange/docs/nj-climate-resilience-strategy-2021.pdf>.

207. *Id.* at 81.

208. *Id.* at 87.

209. *Id.* at 92–94.

210. *Id.* at 67.

211. *Id.* at 106–07.

