Respecting, Regulating, or Rejecting the Right to Rebuild Post Sandy

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Sea Level Rise and The Legacy of Lucas: Planning For An Uncertain Future

By: John R. Nolon[1]

In our changing world one thing is certain: uncertainty will characterize predictions about the impact of new urban developments on the risks of floods, earthquakes, traffic congestion, or environmental harms."[2]

I. *Tempora Mutantur*[3]

These are challenging times. Scientists and objective observers are certain that the climate is changing and that human behavior is its cause.[4] The 2009 report of the U.S. Global Change Research Program details the many readily observable impacts of climate change.[5] Rampant and repeated flooding in the Northeast and fires of unprecedented intensity and frequency in the drought-plagued Southwest are only the most recent evidence of deteriorating environmental conditions.[6] This research report also forecasts likely future changes that include more intense hurricanes with related increases in wind, rain, and storm surges;[7] sea level rise in coastal areas;[8] and even drier conditions in some already drought-ridden regions.[9] These changes, it reports,

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[2] Dolan v. City of Tigard, 512 U.S. 374, 411 (1994) (Stevens, J., dissenting).

[3] *See* Livingston's dissent in Pierson v. Post: "If anything, therefore, in the digests or pandects shall appear to militate against the . . . foxhunter, we have only to say *tempora mutantur*; and if men themselves change with the times, why should not laws also undergo an alteration?" 3 Cai. 175 (N.Y. Sup. Ct. 1805).

[4] Justin Gillis, *U.N. Climate Panel Endorses Ceiling on Global Emissions*, N.Y. TIMES (Sept. 27, 2013), *available at* http://www.nytimes.com/2013/09/28/science/global-climate-change-report.html?_r=1&hp=&adxnnl=1&adxnnlx=1380283592-/TzgB1fQBNNLfdQf8D+++g&.

[5] U.S. GLOBAL CHANGE RESEARCH PROG., GLOBAL CLIMATE CHANGE IMPACTS IN THE U.S. 9 (2009) [hereinafter GLOBAL CLIMATE CHANGE IMPACTS]. The U.S. Global Change Research Program was charged with the responsibility of preparing this report by the Federal Advisory Committee Act.

[6] Hurricane Sandy caused 132 deaths in the U.S., damaged 377,000 buildings in New York and New Jersey, cost $71 billion in damages in the two states, and resulted in up to $22 billion in insurance payouts. Andy Newman, *Comparing Hurricanes: Katrina vs. Sandy*, N.Y. TIMES, Nov. 28, 2012, at A28.

[7] *See* Ning Lin et al., *Physically Based Assessment of Hurricane Surge Threat Under Climate Change*, 2 NATURE CLIMATE CHANGE, June 2012, at 462-67.

[8] Climate change-driven sea level rise occurs for two main reasons. First, water expands as it increases in temperature, and rising global air temperatures have been causing corresponding increases in ocean temperatures. Second, hotter atmospheric temperatures are also causing ice caps and glaciers all over the world to melt, providing influxes of fresh water to the oceans and increasing the total volume of water that they hold. Robin Kundis Craig, *A Public Health Perspective on Sea-Level Rise: Starting Points for Climate Change Adaptation*, 15 WIDENER L. REV. 521, 526 (2010).

[9] Melissa Gaskill, *Climate Change Threatens to Create a Second Dust Bowl*, SCI. AM. (Nov. 27, 2012), http://www.scientificamerican.com/article.cfm?id=climate-change-threatens- second-dust-bowl.

will affect human life and health as well as water supply, agriculture, coastal areas, and many other aspects of the natural environment.[10]

Our U.S. Supreme Court agrees. In *Massachusetts v. EPA,* the Court wrote:

> [t]he harms associated with climate change are serious and well recognized. Indeed, the [National Research Council] Report itself – which EPA regards as an 'objective and independent assessment of the relevant science,' identifies a number of environmental changes that have already inflicted significant harms, including 'the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of ice on rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years.[11]

Change in society causes adjustments to statutes as well as the common law. Reliance on the law of nuisance to control the use of private property proved inadequate to protect property investments and the quality of community life in post-Industrial America.[12] Threatened by the march of skyscrapers up Fifth Avenue and industrial development along rail lines paralleling Euclid Avenue, the City of New York and the Village of Euclid, Ohio, respectively adopted innovative and comprehensive zoning ordinances that drastically limited the ways in which private property could be used.[13]

In finding such regulations constitutional, the U.S. Supreme Court in *Euclid v. Ambler Realty Co*. noted that, "while the meaning of constitutional guaranties never varies, the scope of their application must expand or contract to meet the new and different conditions which are constantly coming within the field of their operation. In a changing world, it is impossible that it should be otherwise."[14] A half century following the *Euclid* decision, local governments were using their delegated police and zoning power in a novel way: to adopt a wide-range of innovative environmental laws, responding to perturbations in the

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[10] Craig, *supra* note 8, at 521.

[11] Massachusetts v. EPA, 549 U.S. 497, 521 (2007) (internal quotation marks omitted); *see generally* Coal. for Responsible Reg. v. EPA, 684 F.3d 102, 114 (D.C. Cir. 2012) (affirming EPA's endangerment finding that CO2 and other greenhouse gas emissions constitute a danger to public health and can be regulated under the Clean Air Act). The Court found that EPA's finding was based on good science and careful research. The decision upheld EPA's regulation of fuel efficiency standards and its timetable for controlling emissions from large stationery sources of CO2 such as electrical generation plants.

[12] *See* NEWMAN F. BAKER, LEGAL ASPECTS OF ZONING 33-39 (1927); SEYMOUR I. TOLL, ZONED AMERICAN (1969).

[13] *See generally* TOLL, *supra* note 12.

[14] Vill. of Euclid v. Ambler Realty Co., 272 U.S. 365, 387 (1926).

local environment and further restricting the use of private land.[15] Today, sea level rise requires a new paradigm for controlling the development of coastal lands that are in harm's way, calling for significant adjustments in the law and legal practice.

This article discusses the recent emergence of new legal strategies for mitigating and adapting to climate change, particularly sea level rise. It illustrates how the lack of certainty about sea level rise collides with the total takings doctrine of the *Lucas* case to frustrate the application of traditional land use and environmental regulations. It then demonstrates how this is causing lawyers and public officials to rise above regulations and adopt new approaches to limiting development at the ocean's edge where sea level rise and storm surges threaten lives, ecosystems, private property, and public sector investments.[16] The article advocates the use of negotiated problem-solving strategies for controlling coastal development in this post-regulatory moment.

II. Changing Climate, Institutions, and Strategies

In order for the law to adapt to climate change, it must measure and react to the extent and nature of that change. The less certain we are about the particulars, the more challenging it is to develop needed changes to legal regimes and practices. We know that climate change is occurring, but we do not know, for example, how fast sea levels will rise, precisely where along coastal lands inundation will occur, or where and how ferociously storm surges will strike. Additionally, the more quickly and efficiently society addresses the causes of climate change, the less impact it will have. This lack of certainty is particularly apparent if one focuses on the land use dimensions of climate change.

Climate change is caused in significant part by the generation of electricity needed to heat and cool buildings,[17] and by the combustion of fossil fuels in day-to-day travel in and around the built environment. Human activity that removes vegetation from the natural landscape, such as residential subdivision development, further exacerbates the problem, given that vegetation sequesters a significant percentage of annual carbon emissions.[18] In short, how buildings are built, where they are located, how many vehicle miles Americans travel from place to place, and how much vegetated land will be consumed by land

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[15] *See* John R. Nolon, *In Praise of Parochialism: The Advent of Local Environmental Law*, 26 HARV. L. REV. 365, 365-77 (2002).

[16] *See* John M. Wallace, *Weather- and Climate-Related Extreme Events: Teachable Moments*, 93 EOS (no. 11), 120 (Mar. 13, 2012), *available at* http://onlinelibrary.wiley.com/doi/10.1029/2012EO110004/abstract ("The real significance of extreme events is as harbingers, not just of a changing climate but also of a changing world in which human society and the infrastructure that supports it are becoming increasingly vulnerable to natural disasters.").

[17] *See* John R. Nolon, *Land Use for Energy Conservation and Sustainable Development: A New Path Toward Climate Change Mitigation*, 27 FLA. ST. J. LAND USE & ENVTL. L. 295 (2012).

[18] *See* John R. Nolon, *Managing Climate Change Through Biological Sequestration: Open Space Law Redux*, 31 STAN. ENVTL. L. J. 195 (2012).

development all matter a great deal.[19]

Sprawl development causes numerous environmental problems as a result of its emphasis on large-lot, single-family housing and the rigid separation of building uses among districts.[20] Local land use regulations have permitted and promoted sprawl over the past several decades, resulting in an unsustainable rate of energy consumption and CO2 emissions.[21] Emerging policies in some states promote an alternative human settlement pattern: compact, mixed-use development concentrated in and around existing urbanized areas.[22] States are entering into compacts to create new and promising institutions tasked with climate change mitigation, and innovative strategies include efforts to unite stakeholders in voluntary approaches to mitigate the effects of climate change.[23] We are nonetheless guided by estimates, not certainty, with respect to these matters, despite encouraging evidence that these more sustainable development policies and initiatives will succeed in reducing the consequences of climate change. Although the trends are clear, the pace of their development is not. In this section, we examine these important climate-change influences and the types of institutions and strategies that are evolving to better mitigate and adapt to climate change.

A. Uncertain Forces Affecting the Rate of Climate Change and Sea Level Rise

The generation of electricity to heat and cool buildings is responsible for over one-third of total CO2 emissions.[24] Nationally, EPA found that transportation activities accounted for thirty-three percent of national CO_2 emissions from fossil fuel combustion in 2011.[25] Nearly sixty-five percent of these emissions resulted from gasoline consumption for personal vehicle use.[26]

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[19] *See* John R. Nolon, *The Land Use Stabilization Wedge Strategy: Shifting Ground To Mitigate Climate Change*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 1 (2009).
[20] *See, e.g.,* Michael Lewyn, *Sprawl in Canada and the United States*, 44 URBAN LAWYER 85, 86-87 (2012).
[21] Nolon, *supra* note 17.
[22] *See* Smart Growth Public Infrastructure Policy Act, N.Y. ENVTL. CONSERV. LAW § 6- 0105 (McKinney 2010). It states: "It is the purpose of this article to augment the state's environmental policy by declaring a fiscally prudent state policy of maximizing the social, economic and environmental benefits from public infrastructure development through minimizing unnecessary costs of sprawl development including environmental degradation, disinvestment in urban and suburban communities and loss of open space induced by sprawl facilitated by the funding or development of new or expanded transportation, sewer and waste water treatment, water, education, housing and other publicly supported infrastructure inconsistent with smart growth public infrastructure criteria."
[23] *See* Nolon, *supra* note 1.
[24] Nolon, *supra* note 17.
[25] U.S. EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2011 ES-4 (2013), *available at* http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf.
[26] *Id*. at ES-11.

According to projections, the population of the United States will continue to grow, calling for more building and more electricity, causing more energy consumption and more driving.[27] These projections hold that, by the year 2039, the population of the United States will have increased by nearly a third, to over four hundred million people.[28] Between 2010 and 2030, it is projected that the nation will add 36.7 million new housing units and 24 billion square feet of nonresidential construction to accommodate this growth and to replace obsolete buildings.[29] The addition of one hundred million people translates into approximately forty million new households whose members will live, work, and shop in these buildings, traveling largely by car. To the extent that these population and settlement increases occur, the accumulation of CO_2 in the atmosphere will continue to escalate.

That these changes will cause additional sea level rise is clear. The greenhouse effect causes polar ice and glaciers to melt, reduces the reflection of the sun's rays, and warms seawater through intensified absorption of solar radiation.[30] Warmer seawater increases the wind speed of and moisture released by coastal storms. Increased water temperature melts sea ice, ultimately contributing to sea level rise.[31] The U.S. Climate Change Science Program (CCSP) found that "[e]xtrapolating the recent acceleration of ice discharges from the polar ice sheets would imply an additional contribution up to 0.20 m [to the IPCC estimates]. If melting of these ice caps increases, larger values of sea level

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[27] The estimated total population for the U.S. for 2012 is 313,914,040. U.S. CENSUS BUREAU, STATE & CNTY. QUICKFACTS (June 27, 2013), http://www.census.gov/popest/data/national/totals/2012/index.html (last visited Nov. 8, 2013). The official U.S. projection for the next 100 years conducted by the U.S. Census Bureau, using a medium scenario for growth, projects a doubling of the 2000 population by the year 2100, a total of 571 million people. *See* Robert E. Lang, Mariela Alfonzon & Casey Dawkins, *American Demographics—Circa 2109*, PLANNING 10 (2009).

[28] *Id.*

[29] ARTHUR C. NELSON, RESHAPING METRO. AMERICA: DEV. TRENDS AND OPPORTUNITIES TO 2030 (61, 79 (2013).

[30] Global warming results from the accumulation of man-made gases, released into the atmosphere from such activities as the burning of fossil fuels, deforestation, and the production of chlorofluorocarbons, which trap solar heat in the atmosphere and raise temperatures worldwide. Global warming could result in significant global sea level rise by 2050 resulting from ocean expansion, the melting of snow and ice, and the gradual melting of the polar ice cap. Sea level rise will result in the loss of natural resources such as beaches, dunes, estuaries, and wetlands and will contribute to the salinization of drinking water supplies. Sea level rise will also result in damage to properties, infrastructures, and public works. There is a growing need to plan for sea level rise. Coastal Zone Act Reauthorization Amendments of 1990, Pub. L. No. 101-508, 104 Stat. 1388-299, 6203(a)(3) & § 1451(l) (codified as amended at 16 U.S.C. §§ 1451-1455).

[31] GLOBAL CLIMATE CHANGE IMPACTS, *supra* note 5, at 18 ("ocean water expands as it warms, and therefore takes up more space"); *see also* Vincenzo Artale et al., *Observations: Oceanic Climate Change and Sea Level*, *in* CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS 408 (2007), *available at* http://www.ipcc.ch/pdf/ assessment-report/ar4/wg1/ar4-wg1-chapter5.pdf ("[G]lobal mean sea level change results from two major processes[:] . . . i) thermal expansion, and ii) the exchange of water between oceans and other reservoirs (glaciers and ice caps, ice sheets, other land water reservoirs . . .)."); *see generally Water—Thermal Properties*, ENGINEERING TOOLBOX, http://www.engineeringtoolbox.com/water-thermal-properties-d_162.html (last visited Nov. 8. 2013) (showing that water expands when heated).

rise cannot be excluded."[32] Therefore, "thoughtful precaution suggests that a global sea level rise of 1 [meter] to the year 2100 should be considered for future planning and policy discussions."[33] Indeed, studies more recent than the CCSP's report indicate that "[e]ven for the lowest emission scenario [generated by previous estimates], sea level rise is then likely to be ~1 m; for the highest, it may even come closer to 2 m [over 1990 levels]."[34]

"Thoughtful precaution" is an appropriate term. Despite the overwhelming consensus that sea levels will rise as carbon emissions and global temperature increase, experts do not know precisely when or where that rise will occur, or by how much.[35] This makes it difficult to control coastal development in the near-term, for example, through prescriptive regulation. Do we know for sure that buildings constructed today will be affected by inundation or storm surges during their useful lives? This lack of certainty has inhibited coastal regulation, but it has not checked the growth of new legal institutions and the emergence of new coping strategies.

The certainty of sea level rise itself, however, is precipitating changes in law, policy, and institutions during a crisis of unknown proportions. We are seeking new solutions. Path dependence theory explains these changes to an extent. The theory posits that "an outcome or decision is shaped in specific and systematic ways by the historical path leading to it."[36] It refers to the causal relationship between stages in a sequence.[37] In other words, path dependence

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[32] *See* U.S. CLIMATE CHANGE SCI. PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION 13, 15 (2009), http://www.climatescience.gov/ Library/sap/sap4-1/final-report/sap4-1-final-report-all.pdf [hereinafter CCSP COASTAL SENSITIVITY].

[33] *Id.* at 20; *see also* James G. Titus, *Greenhouse Effect, Sea Level Rise and Land Use*, 7 LAND USE POL'Y 138, 144 (1990). "In many states the total shoreline retreat from a [one meter] rise would be much greater than suggested by the amount of land below the [one meter] contour on a map because shores would also erode." *Id.* at 141.

[34] Martin Vermeer & Stefan Rahmstorf, *Global Sea Level Linked to Global Temperature*, 106 PROC. NAT'L ACAD. SCI. U.S. 21527, 21531 (2009), *available at* http://www.pnas.org/content/106/51/21527.full.pdf; *see also*, *generally*, Asbury H. Sallenger Jr. et al., *Hotspot of Accelerated Sea-Level Rise on the Atlantic Coast of North America*, NATURE CLIMATE CHANGE (June 24, 2012), *available at* http://www.cityofboston.gov/Images_Documents/Hotspot%20of%20accelerated%20sea-level%20rise%20-%20USGS%206-25-12_tcm3-33215.pdf.

[35] Sallenger et al., *supra* note 34, at 1 ("Climate warming does not force sea level rise (SLR) at the same rate everywhere. Rather, there are spatial variations of SLR superimposed on a global average rise.. . . Here, we present evidence of recently accelerated SLR in a unique 1,000- km-long hotspot on the highly populated North American Atlantic coast. . . .").

[36] Oona A. Hathaway, *Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System*, 86 IOWA L. REV. 601, 604 (2001).

[37] Holmes said: "[I]f we want to know why a rule of law has taken its particular shape, and more or less if we want to know why it exists at all, we go to tradition. We follow it into the Year Books, and perhaps beyond them to the customs of the Salian Franks, and somewhere in the past, in the German forests, in the needs of Norman kings, in the assumptions of a dominant class, in the absence of generalized ideas, we find out the practical motive for what now best is justified by the mere fact of its acceptance and that men are accustomed to it. The rational study of law is still to a large extent the study of history. History must be a part of the study, because without it we cannot know the precise scope of rules which it is our business to know. It is a part of the rational study, because it is the first step toward an enlightened skepticism, that is,

suggests that "what happened at an earlier point in time will affect the possible outcomes of a sequence of events occurring at a later point in time."[38]

When path dependence theory is applied to the law, it suggests that early decisions—whether court cases, agency rules, or institutional policies—can lock in future judicial doctrine, regulatory policy, and administrative action.[39] Theorists who study path dependency believe that "the opportunities for significant legal change in a common law system are brief and intermittent, occurring during critical junctures when new legal issues arise or higher courts or legislatures intercede."[40] These junctures, or punctuations, offer opportunities to shape and reform decision-making and policies.[41]

Climate change and the growing evidence of its harmful consequences have, most certainly, brought us to such a juncture in American law. The question here is how has our recent understanding of, and adjustment to, climate change caused path-altering changes in the law and practices that have guided and constrained coastal development.

III. Sea Level Rise Confronts the Legacy of Lucas

A. Sea Level Rise

Sea level rise presents one of the most pressing challenges of the twenty-first century, expected to expose over four million properties worth an estimated $1.1 trillion to storm surges and flooding.[42] Policy-makers have done little to advance effective responses to sea level rise.[43] Generally speaking, there are three main policies toward sea level rise: retreat, accommodation, and protection.[44] Retreat policies aim to minimize the hazards of sea level rise by restricting, prohibiting, or removing development from vulnerable areas.[45] Examples of "[r]etreat strategies include rolling easements, [government] land purchases, and setback requirements."[46] Accommodation strategies attempt to minimize damage to

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toward a deliberate reconsideration of the worth of those rules." Oliver Wendell Holmes, Jr., *The Path of Law,* 10 HARV. L. REV. 457, 469-70 (1987).

[38] Hathaway, *supra* note 36 at 604.

[39] J.B. Ruhl & James Salzman, *Mozart and the Red Queen: The Problem of Regulatory Accretion in the Administrative State*, 91 GEO. L. J. 757, 818 (2003).

[40] Hathaway, *supra* note 36 at 605.

[41] *Id.*

[42] HOWARD BOTTS ET AL., 2013 CORELOGIC STORM SURGE REPORT 10 (2013), *available at* http://www.corelogic.com/research/storm-surge/corelogic-2013-storm-surge-report.pdf.

[43] *C.f.*, J. Dronkers et al., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, REPORT OF THE COASTAL MGMT. SUBGROUP, STRATEGIES FOR ADAPTATION TO SEA LEVEL RISE 6- 8 (1990), *available at* http://papers.risingsea.net/federal_reports/ IPCC-1990-adaptation-to-sea-level-rise.pdf [hereinafter IPCC SEA LEVEL RISE] (noting possible responses to sea-level rise); CITY OF NEW YORK, VISION 2020: N.Y. CITY COMPREHENSIVE WATERFRONT PLAN 109-10 (2011), *available at* http://www.nyc.gov/ html/dcp/pdf/cwp/vision2020_nyc_cwp.pdf [hereinafter NYC WATERFRONT PLAN] (same).

[44] *See* NYC WATERFRONT PLAN, *supra* note 43, at 109.

[45] *Id.*

[46] *Id.*

structures from flooding and storm surges. Options include "minimum floor elevations and . . . structural bracing" to protect against "surging water and high winds."[47] Protective measures essentially defend against the threats of sea level rise"- such as "flooding, . . . [damage to] infrastructure, shore erosion, salinity intrusion[,] and the loss of natural resources"[48]- and are typically on the scale of individual buildings or sites rather than entire neighborhoods. Defensive solutions may be split into "hard and soft structural [options]."[49] Hard options include dikes, levees, floodwalls, seawalls, revetments, bulkheads, groins, detached breakwaters, tidal barriers, and salt-water intrusion barriers.[50] Soft options include beach renourishment, dune building, and constructed wetlands, reefs, or barrier islands.[51]

Consider, for example, the erosive effect of sea level rise on the West Coast of the United States. Erosion along San Francisco's Ocean Beach coastline—a 3.5 mile stretch of beach—threatens significant Bay Area infrastructure, including "the Great Highway, a $220 million wastewater treatment plant, and a[n] . . . . underground pipe" that carries sewage-tainted storm water.[52] With California officials estimating that the sea level could rise by fourteen inches by 2050, local, state, and federal officials are considering whether "herculean efforts [should] be made to preserve the beach, the pipe and the plant, or [whether the community] should . . . simply bow to nature[.]"[53] One study said that sea level rise could impose more than $650 million in infrastructure repair costs by the end of the century, a large proportion of which stem from the wastewater treatment plant.[54]

Officials are struggling to determine the most effective option for their respective localities. Indeed, these decisions require difficult judgments. Shoreline armoring protects infrastructure, but it interferes with the public's beach access and is destructive to vegetation and bird habitats.[55] Beach renourishment replenishes lost sand and allows reconstruction of dunes and animal habitats, but sand infusions are often cost-prohibitive.[56] Moreover, just one fierce storm can undo all renourishment efforts.[57] Retreat allows the shoreline to move naturally inland, but it necessitates the removal of roads and loss of other infrastructure,

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[47] IPCC SEA LEVEL RISE, *supra* note 43, at 7.
[48] *Id.*
[49] *Id.* (internal quotation marks omitted).
[50] *Id.*
[51] *Id.;* NYC WATERFRONT PLAN, *supra* note 43, at 110.
[52] Felicity Barringer, *Both Coasts Watch Closely as San Francisco Faces Erosion*, N.Y. TIMES, Mar. 24, 2012, http://www.nytimes.com/2012/03/25/science/earth/san-francisco-fights-erosion-as-coastal-cities-watch-closely.html?_r=1.
[53] *Id.*
[54] *Id*.
[55] *Id.*
[56] NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE, TERRITORY, AND COMMONWEALTH BEACH RENOURISHMENT PROGRAMS: A NAT'L OVERVIEW 3 (2000), *available at* http://coastalmanagement.noaa.gov/resources/docs/finalbeach.pdf.
[57] *Id*.

putting homes and other structures at risk.[58] Notwithstanding these complexities, officials have begun making proposals in San Francisco, and a draft plan is currently under review. The plan recommends changing a part of the highway from four lanes to two, rerouting traffic, and entirely closing off a southern section of the highway at a cost of $30 million.[59]

South Carolina's legislature has moved toward a policy of retreat and accommodation. It declared that the dynamic beach–dune system along its coast remains "extremely important" because it "generates approximately two-thirds of [the state's] annual tourism industry revenue" and functions as "a storm barrier," a "habitat for numerous species," and a "natural healthy environment for the citizens" of the state.[60] Recognizing that "development . . . has been [unwisely] sited too close to the system," the legislature deemed it in "both the public and private interests to protect the system from this unwise development."[61] Because armoring provides a "false sense of security,"[62] South Carolina chose to "severely restrict the use of hard erosion control devices to armor the beach/dune system and to encourage the replacement of hard erosion control devices with soft technologies."[63] The state prohibits most erosion control structures seaward of a setback line based on the crest of the dune system.[64]

Other states have no strategy, and some, even worse, seem to deny that a strategy is needed. In the wake of Hurricane Irene, the debate over sea level rise in North Carolina reached a fever pitch as some coastal communities began adopting more aggressive regulations regarding the raised height requirements for residences.[65] An interest group emerged, NC-20, composed of "economic developers and political activists representing the state's 20 coastal counties," which took offense to what they consider the "unsound science" of sea level rise.[66] Originally, North Carolina's State Coastal Resources Commission had recommended to the legislature that sea level rise is projected to increase 39 inches by 2100. NC-20 insisted that sea level rise will only increase 8 inches by 2100.[67] The group's lobbying efforts were successful- the Coastal Management Policies Act passed in August 2012. The Act prohibits the State Coastal Resources Commission (the only state agency authorized to define rates of sea level change for regulatory purposes) from defining sea level rise for regulatory purposes until July 1, 2016.[68]

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[58] *Id*. at 11.
[59] Barringer, *supra* note 52.
[60] S.C. CODE ANN. § 48-39-250(1)(a)-(d) (2008).
[61] *Id.* at § 48-39-250(4).
[62] *Id.* at § 48-39-250(5).
[63] *Id.* at § 48-39-260(3).
[64] *Id.* at §§ 48-39-220(A)-(D), -290(B)(2)(a)-(b) (explaining the prohibition of erosion control structures based on the crest of the dune system).
[65] Evan Lehmann, *In N.C., A Political Storm Over Rising Seas*, CLIMATEWIRE (June 12, 2012), http://www.eenews.net/stories/1059965722.
[66] *Id*.
[67] *Id*.
[68] Coastal Management Policies Act, 2011 N.C. Sess. Laws 2012-202.

Just one day after North Carolina passed its Act, Virginia required the removal of all references to global warming and sea level rise from their state-funded project on rising sea level and flooding on the coast.[69] In order for the study to pass through the legislature, Republicans demanded the "left-wing terms" "sea level rise" and "climate change" be removed, replacing them with "recurrent flooding," "flooding risk," and "coastal resiliency."[70]

On the other hand, New York and New Jersey are spearheading aggressive local approaches to combating sea level rise. In New York, Mayor Michael Bloomberg commissioned a study under PlaNYC's Special Initiative for Rebuilding and Resiliency after Superstorm Sandy. The comprehensive document lays out strategies focusing on both the City's infrastructure networks, as well as community rebuilding and resiliency plans.[71] New Jersey has begun to acquire more than 1,000 beachfront easements as part of a resiliency plan.[72] The imposition of these conservation easements could ease takings issues in the future. Additionally, under the New Jersey Department of Environmental Protection's Green Acres plan, funding is being provided to acquire land and relocate citizens out of the floodplain. This will create open spaces and act as a barrier to the encroaching sea.[73]

State policies dealing with the issues of whether and how state programs should protect the coasts leave unexplored the issue of whether local governments, under their land use plans and regulations, should restrict development along the coasts. What happens, for instance, if a state like South Carolina adopts a policy of retreat and ceases all efforts to build protective structures but local governments continue to allow development in areas that will be inundated as the state-planned retreat happens? Conversely, what happens if the state government adopts a policy of armoring coastal communities and a local government wishes to prevent development in an area that it knows is particularly vulnerable to inundation and coastal storms? The authority to regulate land use has been delegated to local governments to protect the public

[69] Seth Cline, *Global Warming Text Was Removed From Virginia Bill On Rising Sea Levels*, U.S. NEWS, June 13, 2012, *available at* http://www.usnews.com/news/articles/2012/06/13/global-warming-text-was-removed-from-virginia-bill-on-rising-sea-levels-.

[70] *Id*.

[71] THE CITY OF N.Y., PLANYC: A STRONGER, MORE RESILIENT NEW YORK (2013), *available at* http://nytelecom.vo.llnwd.net/o15/agencies/sirr/SIRR_singles_Lo_res.pdf.

[72] MaryAnn Spoto, *Harvey Cedars couple receives $1 settlement for dune blocking ocean view*, THE STAR-LEDGER, Sept. 25, 2013, *available at* http://www.nj.com/ocean/index.ssf/2013/09/harvey_cedars_sand_dune_dispute_settled.html.

[73] Press Release, Christie Administration Announces Approval of Green Acres Projects, N.J. Dep't of Envtl. Prot. (Sept. 18, 2012), *available at* http://www.nj.gov/dep/newsrel/2012/12_0106.htm; N.J. DEP'T OF ENVTL. PROT., BLUE ACRES FLOODPLAIN ACQUISITIONS (Oct. 11, 2013), http://www.state.nj.us/dep/greenacres/blue_flood_ac.html#overview.

interest.[74] At a minimum, state and local coastal development policies must be coordinated, and local land use regulations that permit the construction of homes and other buildings in areas mapped for inundation should be reconsidered. Where zoning allows such construction, it permits development in high-risk coastal zones to the detriment of homebuyers, tenants, equity investors, mortgagees, and the taxpayers who finance supportive infrastructure in such areas.

Where local governments severely regulate coastal development, whether by their own initiative or in accordance with state policy, they face a formidable obstacle in the total-taking doctrine of the *Lucas* case, decided two decades ago when much less was known about sea level rise and the effect of higher global temperatures on coastal storms. This case must be understood and evaluated for interpretive paths that can align its holding with present realities.

B. The Legacy of *Lucas*

State and local regulations that prohibit building on coastal lands raise complicated Fifth Amendment issues. Do they not, on their face, destroy all economic value, thereby constituting a total taking under *Lucas v. South Carolina Coastal Council*?[75] *Lucas* involved a state regulation that prevented shoreline development on the Isle of Palms, South Carolina, a barrier island community. The South Carolina Coastal Council prevented David Lucas from building homes on two lots because of their proximity to ecologically sensitive dunes. The Court held that a regulation that destroys all "economically viable use"[76] of a claimant's property is a taking unless, under the "background principles of the [s]tate's law,"[77] the use that the regulation prohibits is "not part of his title to begin with."[78] For example, if the state's nuisance law would permit surrounding property owners to enjoin an owner's use of land for unhealthy enterprises like brick-making, a regulation prohibiting that use is not a taking.[79] On remand, the state court found that nuisance law constituted no bar to the development proposed by Lucas.[80] Accordingly, it awarded him compensation for the taking of his property by the state regulation.[81]

Notably, in an effort to emphasize the importance of state law in regulatory takings jurisprudence, the majority cited the Court's "traditional resort to 'existing rules or understandings that stem from an independent source such as state law'

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[74] John R. Nolon, *Historical Overview of the American Land Use Law System: A Diagnostic Approach to Evaluating Governmental Land Use Control*, *in* COMPARATIVE LAND USE LAW AND GLOBAL SUSTAINABLE DEV. 581, 587-8 (Cambridge University Press, 2006).
[75] Lucas v. S.C. Coastal Council, 505 U.S. 1003 (1992).
[76] *Id.* at 1016.
[77] *Id.* at 1029.
[78] *Id*. at 1027.
[79] Hadacheck v Sebastian, 239 U.S. 394 (1915) (holding that despite the preexisting use of the land as a brickyard, the changing character of the surrounding area rendered the use a hazard to public health).
[80] *Lucas*, 505 U.S. at 427.
[81] *Id*.

to define the range of interests that qualify for protection as 'property' under the Fifth and Fourteenth Amendments."[82] The Court further noted that although "[i]t seems unlikely that common-law principles would have prevented the erection of any habitable or productive improvements on [Lucas]'s land[,] . . . [t]he question . . . is one of state law to be dealt with on remand."[83] It has been over twenty years since the *Lucas* decision, and we have accumulated most of our knowledge about sea level rise during that time. Nevertheless, the language of the *Lucas* decision itself, in light of its enumerated exceptions, the seriousness of climate change, and the coastal damage it portends, may provide courts the leeway they need to support no-build zones and highly prescriptive regulations regarding coastal development.

C. Reinterpreting the Legacy of *Lucas* in a Changing Environment

This quote from the *Lucas* decision underscores the ambivalence of the common law with respect to changing conditions: "The fact that a particular use has long been engaged in by similarly situated owners ordinarily imports a lack of any common-law prohibition (though changed circumstances or new knowledge may make what was previously permissible no longer so)."[84] Is sea level rise a "changed circumstance"? Are recent scientific reports and maps "new knowledge"? Further, how will South Carolina's adoption of a state policy against coastal armoring— threatening the disappearance of coastal land due to sea level rise—change the legal landscape?[85] Is it possible that new knowledge about the harm to the coastal environment and our newfound appreciation of ecosystem services[86] would now sustain a nuisance claim against coastal development in some locations?[87]

Several defenses are available to local governments when their no-build zones are attacked as total takings under *Lucas*. And courts may be receptive to these defenses, even where they are novel. In 1924, the Oregon Supreme Court

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[82] *Id.* at 1030 (quoting Bd. of Regents of State Colls. v. Roth, 408 U.S. 564, 577 (1972)).
[83] *Id.* at 1031.
[84] *Id*. at 1031 (citing RESTATEMENT (SECOND) OF TORTS § 827 (1965)).
[85] *See STAR Community Index*, INT'L COUNCIL FOR LOC. ENVTL. INITIATIVES, http://www.icleiusa.org/sustainability/star-community-index (last visited Nov. 15, 2013); *see also Adopt the Climate Smart Communities Pledge*, N.Y. STATE DEP'T ENVTL. CONSERVATION, http://www.dec.ny.gov/energy/53013.html (last visited Nov. 15, 2013).
[86] "'[E]cosystem services,' refers to 'a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfill human life.'" Keith H. Hirokawa, *Sustaining Ecosystem Services Through Local Environmental Law*, 28 PACE ENVTL. L. REV. 760, 760 (2011) (quoting Gretchen Daily et al., *Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems*, 2 ISSUES IN ECOLOGY 1, 2 (1997))."
[87] *See* J.B. Ruhl, *The "Background Principles" of Natural Capital and Ecosystem Services – Did Lucas Open Pandora's Box?*, 22 J. LAND USE & ENVTL. L. 525, 540 (2007). "[W]hen [damage to] the environment can be linked to utilitarian costs and benefits, which is precisely what the burgeoning research on natural capital and ecosystem services is revealing about ecological resources, the common law is more likely to pay attention. The cases are not numerous by any means, but there is evidence that this theme is being picked up in the law of public nuisance and of the public trust doctrine."

encouraged progressive interpretation of common law principles with this language:

> The very essence of the common law is flexibility and adaptability…. If the common law should become… crystallized…, it would cease to be the common law of history, and would be an inelastic and arbitrary code. It is one of the established principles of the common law, which has been carried along with its growth, that precedents must yield to the reason of different or modified conditions.[88]

For instance, the law of nuisance is one of the oldest and most contextual doctrines of common law, and courts may expand it to support regulations that prevent coastal development. Nuisance is but one of many "background principles of state law"[89] that can be relied upon to show that beach front development is not part of the landowner's title.[90]

1. Public Trust and the Doctrine of Waste

A classic formulation of the public trust doctrine was articulated by the U.S. Supreme Court is in *Shively v. Bowlby*:

> By the common law, both the title and the dominion of the sea, and of rivers and arms of the sea, where the tide ebbs and flows, and of all the lands below high water mark, within the jurisdiction of the Crown of England, are in the King. Such water, and the lands which they cover, either at all times, or at least when the tide is in, are incapable of ordinary and private occupation, cultivation, and improvement; and their natural and primary uses are public in their nature…."[91]

Is it possible, in South Carolina for example, where the state has adopted a policy against armoring the beach and interrupting the rise of the sea, that the public enjoys a future interest in coastal properties and that current owners, by analogy to the law of life estates, have an obligation not to waste the inheritance of the remaindermen? Perhaps more consistent with the ownership of a fee simple, is the present interest of littoral owners subject to a condition subsequent,

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[88] *In re* Hood River, 227 P. 1065, 1086-87 (Or. 1924).

[89] Michael C. Blumm & Lucus Ritchie, *Lucas's Unlikely Legacy: The Rise of Background Principles as Categorical Takings Defenses*, 29 HARV. ENVTL. L. REV. 321, 333 (2005) ("[T]he *Lucas* defense is not limited to harm-preventing nuisance restrictions. Instead, the background principles defense potentially applies to any use-limiting regulation.").

[90] *See* Glenn P. Sugamelli, *Lucas v. South Carolina Coastal Council: The Categorical and Other "Exceptions" to Liability for Fifth Amendment Takings of Private Property Far Outweigh the "Rule*, 29 ENVTL. L. 939, 359 (1999). "In the years since Lucas was decided, the Supreme Court has consistently allowed state (and federal) courts leeway to define general or state-specific background principles, rejecting every petition for certiorari that has attempted to challenge decisions that denied takings claims based on background principles."

[91] Shively v. Bowlby, 152 U.S. 1, 11 (1894).

with the public owning a future interest similar to the reversionary interest known as either a possibility of reverter or a right of entry? Perhaps more consistent with the ownership of a fee simple, is the present interest of littoral owners subject to a condition subsequent, with the public owning a future interest similar to the reversionary interest known as either a possibility of reverter or a right of entry?[92] In either case, the current right to use the land might be properly regulated to prevent waste of the public's future interest.[93] Does this mean that a regulation requiring removal of buildings after they are inundated by sea level rise would be sustained by this background principle?[94] If so, could a locality require a developer to impose a deed restriction requiring the building to be removed in the future if inundation occurs?

2. Natural Use Doctrine

A rough analogy to a local no-build zone can be found in a 1963 New Jersey opinion that invalidated as a regulatory taking the creation of a Meadow Development Zone that prevented residential development in a 1500 acre swamp to preserve open space and prevent flooding.[95] The land use regulation limited development to a variety of agricultural, outdoor recreational, conservation, and public uses, which the court found left no economically viable use of the land.[96] Nearly 30 years later, the New Jersey courts, based on their more evolved understanding of swamps as valuable wetlands, disregarded the holding in the earlier case.[97] In *Gardner v. New Jersey Pinelands Commission,* the court upheld a development restriction that prohibited the residential development of farmland because the restriction permitted only agricultural uses with limited possibilities for other economic development of the land.[98]

The *Gardner* court rejected the landowner's takings claim, finding a lack of investment-backed expectations, and in the course of its opinion, the court disapproved of much of the language in the 1963 case.[99] The court relied on *American Dredging Co. v. State*,[100] which noted that:

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[92] "If the transfer of title at the dynamic property boundary of the shore is a contingent future interest, then the littoral owner could be seen as holding a fee simple defeasible subject to the future condition of sea level rise. A fee simple defeasible is a type of property interest in which the fee holder's title is subject to the performance (or non-performance) of a condition specified by the grantor. Once that condition occurs, however, the fee owner immediately loses title to the property and it passes to the third party who held the contingent future interest." Margaret E. Peloso & Margaret R. Caldwell, *Dynamic Property Rights: The Public Trust Doctrine and Takings in a Changing Climate*, 30 STAN. ENVTL. L.J. 51, 87 (2011).

[93] Because the state will take title to coastal lands submerged by sea level rise, "…it appears the state could maintain an action in waste, and the logical extension is that the state may also use the prevention of waste as a justification to deny development. Waste is a common law property doctrine and as such qualifies as a Lucas background principle. *Id*. at 85.

[94] *See* discussion *infra* Part IV.

[95] Morris Cnty. Land Imp. Co. v. Parsippany-Troy Hills Twp., 193 A.2d 232, 234, 241- 42 (N.J. 1963).

[96] *Id.*

[97] Gardner v. N.J. Pinelands Comm'n, 593 A.2d 251, 257 (N. J. 1991).

[98] *Id.*

[99] *Id.* at 261-62.

[100] *See generally* Am. Dredging Co. v. State Dep't of Envtl. Prot., 391 A.2d 1265 (N.J.

> Where the effect of the governmental prohibition against use is not in furtherance of a governmental activity, such as flood control or preservation of land for a park or recreational area, but rather to preserve the land for ecological reasons in its natural environment without change, the consideration of the reasonableness of the exercise of the police power must be redetermined.[101]

It was during the thirty-year period between *Gardner* and *Morris County* that land use patterns rapidly sprawled beyond urban boundaries, and the resulting ecological damage became manifest. By the date of *Gardner*, a discernible environmental ethic had entered land use legislation and jurisprudence.

3. Permitting Minimal Use of a Parcel

Case law suggests that allowing some economic use of the land will save a regulation from a total-takings claim. In *Lucas*, the state regulation prevented all development of Lucas's two residential lots. In *Gardner*, however, the regulation allowed some but, in the eyes of the owner, minimal economic use of the land. Where developers propose significant projects near the beach, is it a total taking if a small portion of the land is allowed to be developed, such as the portion of the parcel least likely to be inundated? Where some development value remains, a takings claim will be decided using the multi-factor balancing test of *Penn Central Transportation Co. v. City of New York*.[102] One of the factors includes "the extent to which the regulation has interfered with distinct investment backed expectations."[103] If it is now known that sea level rise endangers development, does a landowner have legitimate expectations to fully develop the parcel?[104]

Super. Ct. Ch. Div. 1978), *aff'd*, 404 A.2d 42 (N.J. Super. App. Div.1979).

[101] *Id.* at 1268. A number of other cases in New Jersey failed to follow or distinguished the *Morris County* case. *See, e.g.*, Matter of Loveladies Harbor Inc., 422 A.2d 107, 111 (N.J. App. Div. 1980); Usdin v. State Dep't of Envtl. Prot. of Water Res., 414 A.2d 280, 285-86 (N.J. Super. Ct. Law. Div. 1980); N.J. Bldg. Ass'n v. Dep't of Envtl. Prot., 404 A.2d 320, 330 (N.J. App. Div. 1979); Toms River Affiliates v. Dep't of Envtl. Prot., 355 A.2d 679 (N.J. App. Div. 1976); Sands Point Harbor, Inc. v. Sullivan, 346 A.2d 612, 614 (N.J. App. Div. 1975).

[102] Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978). In *Palazzolo v. Rhode Island*, 533 U.S. 606, 632 (2001), almost all of the plaintiff's land was designated as coastal wetlands, leaving only a fraction of the land eligible for development. The Court, in referring to the state court's holding regarding the plaintiff's regulatory taking claim, stated, "The court did not err in finding that petitioner failed to establish a deprivation of all economic value, for it is undisputed that the parcel retains significant worth for the construction of a residence. The claims under the *Penn Central* analysis were not examined, and for this purpose the case should be remanded."

[103] *Id.*

[104] *See* S.D. DEP'T OF LEGIS. AUDIT, ACCOUNTING MANUAL, SEC. IV- ACCOUNTING RECORDS, ILLUS. 23: USEFUL LIFE TABLE (Apr. 2002), *available at* http://legislativeaudit.sd.gov/Counties/Accounting_Manual/County_Section_4/County_Section%204_Useful_Life_Table.pdf [hereinafter S.D. USEFUL LIFE TABLE]; *see also, e.g.*, *Palazzolo*, 533 U.S. at 617 (explaining the holding of *Penn Central*) ("Where a regulation places limitations on land that fall short of eliminating all economically beneficial use, a taking nonetheless may have occurred, depending on a

4. Changes in the Regulatory Environment

In *Colorado Dept. of Health v. The Mill,* mill owners brought a takings action challenging the Department of Health's regulations imposing use restrictions on the uranium mill operation.[105] The Colorado Supreme Court held that The Mill should have known that "the right to make any use of the property that would create a hazard to public health by spreading radioactive contamination was excluded from The Mill's title at the onset."[106] The court, in referring to the "regulatory environment" governing radioactive materials, held that the restrictions fell under the "background principles" exception to the *Lucas* total taking doctrine.[107] This included Colorado common law nuisance, state nuisance statutes, the department's regulations, and federal standards contained in the Uranium Mill Tailings Radiation Control Act.[108]

Is the danger to life and property inherent in building on coastal properties vulnerable to inundation and storm surges analogous to the dangers of radioactive contamination? Are recent international, national, and state scientific studies and maps sufficiently well understood to qualify as changed circumstances under the language of *Lucas* and the Restatement of Torts?[109] Do these create an environment in which severe regulations are to be expected, following the logic of *The Mill* case?

IV. Easing the Transition: Above Regulations

The prospect of enacting regulations to control coastal development is frustrated not only by the *Lucas* doctrine but also by the uncertainty of how much the sea level will rise in any given location,[110] the relatively long-term nature of the dangers involved, and the practical considerations of imposing severe limitations on property owners. Local officials understand that local property owners acquired their properties knowing that they were zoned for housing development or other economically viable uses. They also understand that these owners have been paying local property taxes on their parcels, assessed at their market value as zoned. They further understand that property owners vote, have local political influence, and belong to industry groups that lobby state officials.

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complex of factors including the regulation's economic effect on the landowner, the extent to which the regulation interferes with *reasonable investment-backed expectations*, and the character of the government action." (emphasis added)).

[105] State Dep't of Health v. The Mill, 887 P.2d 993, 997 (Colo. 1995).

[106] *Id.*, at 1002.

[107] *Id.*, at 1001-02.

[108] *Id.* at 1002-03.

[109] *See Lucas*, 505 U.S. at 1031.

[110] "[S]ea-level rise poses two challenges for leaders trying to formulate adaptation plans. First, sea level rise is slow, measured in millimeters per year, and the full extent of climate change-driven sea level rise is expected to take centuries to manifest. This is a planning horizon outside the political ken of most governmental bodies; indeed, planning horizons longer than a few decades are extremely rare. Second, scientists are still uncertain as to the extent of the problem. Specifically, how high will the oceans rise?" Craig, *supra* note 8, at 521.

For all of these reasons, officials may be reluctant to legislate a no-build zone based on the uncertainty of sea level rise and its potential impact on their coast during the short- and mid-term future. As a result, they might ask their municipal attorneys if there are any non-regulatory options available to limit development in vulnerable coastal areas. Although fraught with consequences of their own, there are readily available alternatives to onerous coastal regulation.

A. Comprehensive Planning

A reasonable starting point toward a non-regulatory approach would be to adopt a component of the local comprehensive plan that both embodies the most recent scientific findings and projections regarding sea level rise and cautions prospective purchasers regarding development on vulnerable coastal properties.[111] A chapter on sea level rise in the comprehensive plan of the City of Bainbridge Island, Washington, entitled the *Environmental Element,*[112] is directly on point. Flooding and erosion are principal concerns for the city, and its objectives are to minimize, reduce, or eliminate their impact.[113] This plan component mandates no net loss of the city's aquatic resources, maintenance of its vegetated buffers between proposed development and aquatic resources, and preservation of stream courses and riparian habitat.[114] It also calls for the transfer and purchase of development rights.[115] To mitigate damage due to frequent floods, the plan limits future development and alteration of natural floodplains, mandates the preservation of stream channels and natural protective barriers, revises the Flood Insurance Rate Map to reflect the natural migration of frequently flooded areas, and requires the implementation of nonstructural protective methods such as setbacks and natural vegetation.[116] These requirements conform to the National Flood Insurance Program, which limits the availability of flood insurance to property owners who build in accordance with local zoning prescriptions that regulate development in Special Flood Hazard Areas designated by FEMA Flood Insurance Rate Maps.[117] When applied to areas subject to coastal flooding due to storm surges, this program provides an effective method of putting property purchasers on notice of worsening conditions along the coasts since the FEMA maps are to be updated regularly to reflect current conditions.

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[111] In some states, this may problematic given pronouncements by the state legislature, governor, or state agencies the flatly prevent public action to be taken based on climate change. *See* discussion *supra* Part III.A; s*ee also* Rob Young, *Shoot the Messenger: Carolina's Costly Mistake on Sea Level Rise*, YALE ENVT. 360 (2013), *available at* http://e360.yale.edu/content/print.msp?id=2543.

[112] CITY OF BAINBRIDGE ISLAND, COMPREHENSIVE PLAN: ENVTL. ELEMENT (2004), *available at* http://www.ci.bainbridge-isl.wa.us/comprehensive_plan.aspx.

[113] *Id*. at 8.

[114] *Id.* at 5-6.

[115] *Id*. at 4.

[116] *Id.* at 9.

[117] *See* Flood Disaster Protection Act of 1973, 42 U.S.C. §§ 4001-4130 (documenting how NFIP works).

Several components of the comprehensive plan in Collier County, Florida create a planning framework for coastal development.[118] One of its objectives calls for "mechanisms or projects which limit the effects of development and which help in the restoration of the natural functions of coastal barriers and affected beaches and dunes."[119] Another declares that "[d]evelopment and redevelopment proposals shall consider the implications of potential rise in sea level."[120] More specifically, the plan states that where an "[Environmental Impact Statement] is required, an analysis shall demonstrate that the project will remain fully functional for its intended use after a six-inch rise in sea level."[121] Given current sea- level rise projections, this six-inch metric dovetails roughly with the useful life of newly constructed buildings, ensuring that investors and occupants of such buildings will not be deprived of the benefit of the new building over time.[122]

Comprehensive plans are not regulatory documents.[123] They establish a vision for future development, and they contain goals, objectives, and recommended strategies, such as those contained in the Collier County and Bainbridge examples.[124] Future zoning, in most states, must be in conformance with the comprehensive plan, and the plan can guide local boards that approve development projects in discharging their duties.[125] The development-review and approval process may adopt informal protocols that further the objectives of the comprehensive plan.[126] Where a comprehensive plan refers to and incorporates by reference future sea level rise projection data (including maps and documents indicating the probable effect of sea level rise on coastal development), it can provide a predicate for a non-regulatory approach to project review and approval.

B. The Project Application Process

Planners who advise local land use boards can use the information contained in a sea level rise component of the comprehensive plan to revise the application requirements governing local administrative review of project submissions. They can require, for example, that the developer submit site

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[118] COLLIER CNTY. PLANNING SERVS. DEP'T, CNTY. GROWTH MGMT. PLAN: CONSERVATION AND COASTAL MGMT. ELEMENT 46-50 (2011), *available at* http://www.colliergov.net/Modules/ShowDocument.aspx?documentid=41172.
[119] *Id*, at 46.
[120] *Id*. at 48.
[121] *Id*. at 50.
[122] GA. DEP'T OF CMTY. AFFAIRS, OFFICE OF AFFORDABLE HOUS., ARCHITECTURAL MANUAL: EXPECTED USEFUL LIFE TABLE 2 (2011), *available at* http://www.dca.ga.gov/housing/HousingDevelopment/programs/downloads/2011QAPDocs/Manual/2011%20OAH%20Manual/Application%20Process%20to%20Construction%20Completion/B.%20Architectural/Forms/PNA%20Forms/9ExpectedUsefulLife.pdf.
[123] *See* BARRY CULLINGWORTH & ROGER W. CAVES, PLANNING IN THE USA: POLICIES, ISSUES, AND PROCESSES 126 (3d ed. 2009).
[124] *Id.*
[125] *Id.*, at 131- 132.
[126] *Id.*, at 134-135.

drawings that identify any portion of the parcel likely to be inundated by sea level rise during the useful life of the building.[127] They can further require—through conditions imposed on subdivision and site plan approvals—that the developer place any buildings and infrastructure in a location that guarantees the safety of occupants and the stability of the building during its useful life. Applicants can be provided with sea level rise maps issued from a variety of sources, including state agencies,[128] legislative committees, governor's task forces,[129] university institutes,[130] or other respected and objective non-profit organizations. Depending on the source, these maps may be given judicial recognition, support a court's finding of rationality for actions taken to condition or deny the application, and be used to defend substantive due process attacks on such decisions.

In addition, the developer can be required to document the sources of financing secured for the project, including equity investors and construction and permanent lenders. Where sea level rise projection maps are contained in an official document like the comprehensive plan or issued by responsible agencies or organizations, investors and lenders will likely be on notice of them and will only be willing to invest if they believe the project is economically viable. If investors conclude that the project is not economically feasible, then it will sink under its own weight and fail to proceed any further in the local review and approval process. Any claim that the local process resulted in the taking of value of the proposed project can be countered by showing that investors and lenders made their decision based on knowledge they gained about the long-term viability of the proposed investment through the exercise of due diligence. Under the *Lucas* doctrine, it is not the regulation that prevents the development in this instance but rather the private market risks.[131] To substantiate any *Lucas* claim, the owner would also have to show that all economic value of the property was taken.[132] Proposals that envision less construction on the land in order to avoid development on potential inundation areas would likely be approved under this process, precluding availability of the total taking argument.

C. Environmental Impact Review

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[127] *See* S.D. USEFUL LIFE TABLE, *supra* note 103.

[128] *See, e.g.,* S.W. FLA. REG'L PLANNING COUNCIL, CHARLOTTE CNTY. FLORIDA 5' SEA LEVEL RISE (2007), *available at* http://www.swfrpc.org/content/GIS/images/chsearise.pdf.

[129] *See, e.g.*, ADAPTION SUBCOMM., GOVERNOR'S STEERING COMM. ON CLIMATE CHANGE, THE IMPACTS OF CLIMATE CHANGE ON CONN. AGRIC., INFRASTRUCTURE, NATURAL RES. AND PUB. HEALTH 105 (2010), *available at* http://ctclimatechange.com/wp-content/uploads/2010/05/Impacts-of-Climate-Change-on-CT-Ag- Infra-Nat-Res-and-Pub-Health-April-2010.pdf.

[130] *See, e.g.,* KLAUS H. JACOB ET AL., LAMONT-DOHERTY EARTH OBSERVATORY OF COLUMBIA UNIV., RISK INCREASE TO INFRASTRUCTURE DUE TO SEA LEVEL RISE 16 (2000), *available at* http://metroeast_climate.ciesin.columbia.edu/reports/infrastructure.pdf; *Model of Sea Level Rise, Coastal Erosion, and Wave Overtopping in Waimanalo*, UNIV. OF HAWAII: SEA LEVEL RISE WEBSITE (2008), http://www.soest.hawaii.edu/coasts/ sealevel/Runup_animation.html.

[131] *See Lucas*, 505 U.S. at 1034-35 (1992) (Kennedy, J., concurring in judgment).

[132] *Id.* at 1015.

Development projects in some states are subject to review under "little NEPAs," which require an assessment of the project's impact on the environment.[133] Environmental impact reviews routinely consider the effect of conditions and circumstances around a proposed development site. Federal and state environmental review statutes mandate review of the potential impact of sea level rise during the lifetime of a proposed building on public health and safety, on the structural integrity of proposed buildings and infrastructure, and on the environment.[134]

The Council on Environmental Quality issued a draft NEPA guidance document suggesting that an environmental impact statement should consider "[t]he relationship of climate change effects to a proposed action…, including the relationship to proposal design, environmental impacts, mitigation, and adaptation measures."[135] In New York, the State Department of Environmental Conservation (DEC) has been directed "to incorporate climate change adaptation strategies into DEC programs, actions and activities, as appropriate…," including in Environmental Impact Statements prepared under the State Environmental Quality Impact Review Act (SEQRA).[136] Such analyses should "[i]dentify potential adverse impacts from climate change," and

> "[i]n analyses and decision-making, use best available scientific information of environmental conditions resulting from the impacts of climate change (e.g., sea level rise and increased coastal flooding); incorporate adaptive management into program planning and actions, which uses scientifically based and measurable evaluation, testing of alternative management approaches, and readjustment as new information becomes available."[137]

Even where state law does not require a discrete environmental impact review, state and local site plan review requirements may require a review of certain environmental impacts where they have a close nexus with the proposed project.[138] Local governments have the expressed or implied power in most states to adopt reasonable site-plan and subdivision regulations and, where

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[133] *See, e.g.*, *Environmental Impact Assessment in New York State*, N.Y. DEP'T OF ENVTL. CONSERVATION, http://www.dec.ny.gov/permits/357.html (last visited Nov. 8, 2013).

[134] *See* Patrick Woolsey, *Sea Level Rise Addressed in Environmental Impact Statements*, CLIMATE L. BLOG (Dec. 12, 2011), http://blogs.law.columbia.edu/climatechange/2011/12/12/sea-level-rise-addressed-in-environmental-impact-statements/.

[135] Memorandum from Nancy H. Sutley, Chair, Council on Envtl. Quality, to Heads of Fed. Dep'ts & Agencies (Feb. 18, 2010); 40 C.F.R. § 1502.15 (1978).

[136] *Commissioner's Policy- Climate Change and DEC Action*, N.Y. DEP'T OF ENVTL. CONSERVATION, http://www.dec.ny.gov/regulations/65034.html (last visited Nov. 8, 2013).

[137] *Id*.

[138] *See, e.g.*, TOWN OF WAWAYANDA, N.Y. ZONING CODE, art. VII, § 195-68(N) (2013) (requiring applicants for site-plan approval to demonstrate conformance with stormwater pollution prevention plan), *available at* http://ecode360.com/12930522; N.Y. VILL. LAW § 7-725-a (McKinney 2011); N.Y. GEN. CITY LAW § 27-a(4) (McKinney 2003); N.Y. TOWN LAW § 274-a(4) (McKinney 2004) (all stating that "the authorized board shall have the authority to impose such reasonable conditions and restrictions as are directly related to the proposed site plan").

supported by expert reports and reliable maps, such regulations can be amended to include standards that protect property and people from dangers and "menaces" such as storm surges or inundation.[139]

D. Project Approval Conditions

Once a project is submitted for the review of a local planning board to approve the subdivision or site plan, the reviewing agency can place reasonable conditions on the approval of the proposed development for the protection of the public health, safety, or welfare. These conditions can be negotiated with the applicant. For example, a board could decide to approve the project only on the condition that the developer agrees to remove any buildings that are destroyed by storms or that are inundated by sea level rise.[140] Under the public trust doctrine in most states, littoral property that is gradually inundated by sea level rise belongs to the state and is no longer private property.[141]

This condition can be strengthened in a variety of ways. The developer could be required to indemnify the municipality should it have to bear any future costs resulting from the damage to or destruction of infrastructure or the property itself. The developer could agree to insure against its own future liabilities by posting a bond, providing a letter of credit, or purchasing liability insurance. If the developer cannot secure these guarantees at an affordable price and the planning board does not approve the project, the locality is insulated from a total-takings claim because the private market's risk assessment—rather than local regulation—has prevented the development.[142] In property-law terms, *caveat emptor*. A prospective purchaser of property is charged with due diligence, including knowledge of sea level rise projections, maps that support them, and the risks and costs of developing in areas vulnerable to inundation and storm surges.

Alternatively, or additionally, the developer could be required to impose deed restrictions, such as conservation easements, that require the developer to remove or relocate buildings and restore ecosystem services where the property is inundated or suffers severe damage. Normally such restrictions protect the environment from the adverse impacts of proposed development in the present,

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[139] *See, e.g.*, TOWN OF CARLISLE, N.Y., SITE PLAN REGS. 56 (2013) ("The purpose of these regulations is to protect the health, welfare, and safety of the inhabitants of the Town of Carlisle by enforcement of the Carlisle Site Plan Review Regulations so that land to be subdivided may be free from the peril of flood, fire, health endangerment, or other *menace* prior to the erection of buildings." (emphasis added)), *available at* http://www.schohariecounty- ny.gov/CountyWebSite/towncar/CarlisleSitePlan.pdf; *see also* JOHN R. NOLON, OPEN GROUND: EFFECTIVE LOCAL STRATEGIES FOR PROTECTING NATURAL RES. 12-13 (2003).

[140] *See* N.Y. STATE SEA LEVEL RISE TASK FORCE, DRAFT REPORT TO THE LEGIS. 45, 46 (Nov. 2010), *available at* http://www.dec.ny.gov/docs/ administration_pdf/slrtdrpt.pdf (suggesting policies to make coastal retreat more possible "by requiring development projects to internalize the risks of sea level rise and storms in coastal development planning and decisionmaking").

[141] *See* discussion *supra* Part III.B.

[142] *See Lucas*, 505 U.S. at 1034-35 (Kennedy, J. concurring in judgment).

but there is no reason that they could not be used to protect the environment, including the public, in the future.

E. Contingency Bargaining

This type of negotiated project review may prove essential for the future development of coastal properties vulnerable to near-term sea level rise. Developers normally have short-term financial objectives, measured by the time it takes them to secure approvals, build, obtain a certificate of occupancy, and sell the buildings. Even where they retain title, their objectives are almost always shorter-term than the useful lives of their buildings or the time it will take for sea level rise to inundate their projects. To be sure, they will argue that their properties will not be damaged by sea level rise, and they may be able to back up their assertions with data produced by scientists who doubt mainstream projections, have different maps of their own, or believe that climate change is a passing phenomenon.[143] These possibilities demonstrate the problem with regulating at a time when the scientific understanding of risks continues to evolve and estimates of the dates when risks will materialize remain uncertain.

Contingency bargaining can prove useful in these situations. In business dealings, contingency contracts allow parties to accommodate disagreements about future events, such as sea level rise (in our context) or the number of likely viewers of a proposed television series (in a more familiar context).[144] In the television example, a deal may be based on an estimate of viewers, but the network may receive a rebate or draw from an escrow fund if the viewers are fewer than projected. Alternatively, the parties could stipulate to a surcharge to the benefit of the script writer if the viewers exceed the projected number. In a similar fashion, a developer and a local land use board could agree that if a project becomes inundated or damaged by storm surges within an agreed-upon period, the local board may draw funds from an escrow account to cover its remediation costs, or it could secure developer's contingent liabilities with a bond, insurance policy, or underlying indemnity agreement.[145]

Practical difficulties limit the ability to achieve this type of accommodation in a zoning regulation, particularly a no-build zone, which has an all-or-nothing consequence. The regulator says, "Because the sea level is expected to inundate your property within *X* period, we are prohibiting all development and

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[143] *See* Young, *supra* note 111.

[144] "[G]enuinely held disagreements about the future present an important opportunity for negotiators to discover an attractive exchange. The vehicle for capturing this potential is the contingent agreement." Michael L. Moffitt, *Contingency Agreements*, THE NEGOTIATOR'S FIELDBOOK 455 (2006).

[145] Moffitt counsels that "[o]ne challenge in crafting a contingent agreement is identifying the boundaries of future possible conditions with sufficient clarity to know what obligations attach." *Id.* at 457; *see also* DAVID A. LAX & JAMES K. SEBENIUS, THE MANAGER AS NEGOTIATOR: BARGAINING FOR COOPERATION AND COMPETITIVE GAIN 97 (1986) ("Even when negotiators have discovered a difference in forecasts, however, considerable ingenuity may be required to find an appropriate uncertain event that all sides can observe and that no one can manipulate.").

your property now has no value." The developer says, "But those projections are contested, and there is doubt that sea level rise will affect this particular area of the coastline very much." If the regulator proceeds, the developer can bring a *Lucas*-style total-takings case or a substantive due process action alleging that the regulation is arbitrary and capricious, leaving the matter in the hands of judges. Striking a bargain that allows some development on the condition that the developer carries the costs of any future damage or destruction blunts the *Lucas* challenge. Imposing requirements of this kind may avoid the many vexing issues raised by the Supreme Court's recent *Koontz* decision, which expands the heightened title exaction requirements of *Nollan* and *Dolan* to permit denials and monetary exactions. If by some strange extension of Alito's decision in *Koontz*, the imposition of such future costs is considered a monetary exaction, it will survive *Nollan/Dolan* scrutiny since the cost is calibrated to cover the damage inflicted, satisfying both nexus and proportionality requirements.[146]

Not only is the negotiated, non-regulatory approach less likely to be litigated—or won by the developer if it is taken to court—but it is consistent with evolving norms in the land use review and approval process in a growing number of states. Developers are accustomed to providing indemnities, bonds, insurance, lines of credit, and escrow accounts. They are familiar with local governments that impose protective deed restrictions on their land for environmental purposes. Their current experience with these mechanisms resides in a much lower-risk context, to be sure, but the extreme risks that threaten coastal development call for appropriate responses. If regulation cannot, as a practical matter, serve as one of these responses, negotiated settlements of disputes over coastal construction can. The situation necessitates scaling up the use of familiar processes and techniques such as those described above.

V. Conclusion

As states move toward a posture of accommodation and retreat from sea level rise, how can the legacy of the total takings doctrine of the *Lucas* case be reinterpreted?[147] Common law doctrines of nuisance, waste, and public trust[148] can be seen in new light as hard-headed practices of due diligence, real property estates, and judicial precedents combine to shape our understanding of the background principles of state law[149] and legitimate investment-backed expectations.[150] Traditional processes used by administrative boards can be tweaked and supplemented to employ and memorialize the deals that can be struck by contingency bargaining: deals that accommodate uncertainty in ways

[146] Koontz v. St. Johns River Water Mgmt. Dist., 133 S. Ct. 2586 (2013) (referencing the essential nexus test of *Nollan v. Cal. Coastal Comm'n*, 83 U.S.825 (1987), and rough proportionality test of *Dolan v. City of Tigard*, 512 U.S. 374, 411 (1994)).
[147] *See Lucas,* 505 U.S. 1003.
[148] *See* discussion *supra* Part III.B & C.
[149] *See Id.*
[150] *See Id.*

that regulation cannot.[151] The progress described in this article has created a new "regulatory environment:"[152] one in which lawyers are learning to operate above regulations and beyond the confines of current practices, using new tools and techniques appropriate to a rapidly changing world.

[151] *See* discussion *supra* Part IV & note 141.
[152] *See The Mill*, 887 P.2d at 997.

STRATEGIES FOR MAKING SEA-LEVEL RISE ADAPTATION TOOLS "TAKINGS-PROOF"

MICHAEL ALLAN WOLF*

I. INTRODUCTION

> Sea level rise in this century is a scientifically documented fact. Our shoreline is suffering from its effects today. Moreover, a recent study conducted by the U.S. Environmental Protection Agency (EPA, 1983) predicts a possible one foot rise in sea level over the next thirty to forty years and approximately three feet over the next hundred years. It must be accepted that regardless of attempts to forestall the process, the Atlantic Ocean, as a result of sea level rise and periodic storms, is ultimately going to force those who have built too near the beach front to retreat.
>
> *South Carolina Blue Ribbon Commission on Beachfront Management* (1987) [1]

> **§ 113A-107.1. Sea-level policy.**
> (a) The General Assembly does not intend to mandate the development of sea-level policy or the definition of rates of sea-level change for regulatory purposes.

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1. S.C. BLUE RIBBON COMM. ON BEACHFRONT MGMT. ii (1987), *available at* http://www.scdhec.gov/environment/ocrm/docs/SCAC/Blue%20Ribbon%20Report_Beachfront%20Management.pdf.

> (b) No rule, policy, or planning guideline that defines a rate of sea-level change for regulatory purposes shall be adopted except as provided by this section.
> (c) Nothing in this section shall be construed to prohibit a county, municipality, or other local government entity from defining rates of sea-level change for regulatory purposes.
> . . . .
> (e) The [North Carolina Coastal Resources] Commission shall be the only State agency authorized to define rates of sea-level change for regulatory purposes. If the Commission defines rates of sea-level change for regulatory purposes, it shall do so in conjunction with the Division of Coastal Management of the Department. The Commission and Division may collaborate with other State agencies, boards, and commissions; other public entities; and other institutions when defining rates of sea-level change.
>
> North Carolina General Statutes § 113A-107.1 (2012) [2]

Sea-level rise (SLR) resulting from climate change is a reality, notwithstanding the protestations emanating from certain politicians who would like to ban references to SLR altogether or to fiddle with overwhelming scientific evidence and nearly universally approved methodology.[3] Rather than waiting for Rome to burn, or rather to sink, it makes much more sense for policy- and law-makers to join the ranks of experts in science, engineering,

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2. N.C. GEN. STAT. § 113A-107.1 (2012). *See also* Patrick Gannon, *Sea-level Rise Bill Becomes Law*, STARNEWS, Aug. 1, 2012, at 1B:

> Gov. Beverly Perdue on Wednesday declined to sign or veto a controversial bill on sea-level rise, allowing it to become law.
>
> Instead, the Democratic governor urged the Republican-dominated legislature to reconsider its stand on the issue.
>
> "North Carolina should not ignore science when making public policy decisions," Perdue said in a statement. "House Bill 819 will become law because it allows local governments to use their own scientific studies to define rates of sea level change. I urge the General Assembly to revisit this issue and develop an approach that gives state agencies the flexibility to take appropriate action in response to sea-level change within the next four years."
>
> . . . .
>
> An early version of the proposal would have prohibited the state from using projections of accelerated sea rise—which many scientists believe is coming because of global warming and the melting of polar ice caps—when forming coastal development policies and rules. Instead, under the earlier proposal, the state could have determined sea-level rise rates using historical data alone, which would have allowed the state only to plan for about 8 inches of rise this century.

3. *See, e.g.*, Fred Grimm, *Banned Words in Some States: Rising Sea Levels*, THE MIAMI HERALD (June 11, 2012), http://www.miamiherald.com/2012/06/11/2844468/banned-words-in-some-states-rising.html; Leigh Phillips, *Sea Versus Senators: North Carolina Sea-Level Rise Accelerates While State Legislators Put the Brakes on Research*, 486 NATURE 450 (2012).

construction, real estate, law, and many other fields who are seriously considering a range of strategies for adapting to the historic, ongoing, and anticipated rise in sea levels.

While the costs of some of these adaptation strategies are undeniably daunting, the American legal system poses an additional, potentially budget-busting impediment—the Takings Clause of the Fifth Amendment to the United States Constitution. The Clause, which somewhat innocuously reads, "nor shall private property be taken for public use, without just compensation,"[4] has since the late twentieth century been interpreted by zealous protectors of private property rights to reach not only the affirmative power of eminent domain (or condemnation) but also, and most problematically, statutes, ordinance, and other regulations by federal, state, and local governments that arguably effect the functional equivalence of an eminent domain taking. Moreover, just over the decisional horizon looms a novel variation that departs even farther from the language and original understanding of the Fifth Amendment—judicial takings.

Officials at all governmental strata—federal, state, and local—and from all three branches should keep the demands made by the Takings Clause, as interpreted by the judiciary, in mind as they choose tools from the diverse SLR-adaptation toolbox, as they justify their choices to the electorate and other constituencies, as they put those tools to use, and as they defend that use from litigants claiming abuse. This article sets out to achieve four tasks, and the remainder of the text is divided accordingly. First, the article locates the heart of the Takings Clause in a single sentence from a 1960 decision—*Armstrong v. United States*.[5] Second, the article reviews six taking varieties, ranging from the most concrete common—the affirmative exercise of eminent domain—to the most fanciful (at least to date)—judicial takings. Each variety in turn is matched with one representative Supreme Court decision and with operative language drawn from that opinion. Third, with *Armstrong* as a guiding principle, the article identifies which of the most common SLR tools already being deployed pose "no," "minimal," "moderate," and "serious" takings implications. Fourth, the article suggests methods that government officials can use to address the takings risk posed by tools with the highest takings risk.

4. U.S. CONST. amend. V.
5. 364 U.S. 40 (1960).

II. *ARMSTRONG* AND THE HEART OF THE TAKINGS CLAUSE

The regrettable morass known as regulatory takings has puzzled courts, litigators, and commentators for decades; controversies still rage over the extent and even legitimacy of this method for invalidating statutes, ordinances, and other regulations governing the use of land and other forms of private property. Nevertheless, after a quarter century of intermittent Supreme Court jurisprudence on the subject, dating from the decision in *Penn Central Transportation Company v. City of New York*,[6] it is possible to locate the heart—the quintessence—of the dozen words that bring the multifarious Fifth Amendment to a close.

The heart of Takings Clause jurisprudence does not reside in the Holmesian conundrum of *Pennsylvania Coal Co. v. Mahon*,[7] the seminal Supreme Court case in which the Yankee from Olympus offered up this memorable, though eminently unhelpful, sentence: "The general rule at least is that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."[8] At this late date we can only mourn the forests of trees that have been sacrificed by the many writers (too many, present company not excepted[9]) who have done their damndest to discern just what exactly the Swami of the Hub meant by "too far."

To boil the dozen words down to their essence we should turn instead to the pen of Justice Hugo Black in 1960's *Armstrong v. United States*.[10] Near the close of the Court's opinion holding that the federal government's "total destruction" of the value of material liens "has every possible element of a Fifth Amendment 'taking' and is not a mere 'consequential incidence' of a valid regulatory measure,"[11] Justice Black offered the following sentence, which constitutes an apt lodestar for the judiciary to follow in all takings cases: "The Fifth Amendment's guarantee that private property shall not be taken for a public use without just compensation was designed 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."[12]

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6. 438 U.S. 104 (1978).
7. 260 U.S. 393 (1922).
8. *Id.* at 415.
9. *See, e.g.*, Michael Allan Wolf, *Pondering* Palazzolo*: Why Do We Continue to Ask the Wrong Questions?*, 32 ENVTL. L. REP. 10367 (2002).
10. 364 U.S. 40 (1960).
11. *Id.* at 48.
12. *Id.* at 49. For more recent Court takings cases quoting this language, see Ark. Game & Fish Comm'n v. United States, 133 S. Ct. 511, 518 (2012); Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 336 (2002); Palazzolo v. R.I.,

In this simple, but by no means simplistic manner, Justice Black anticipated the notion of functional equivalence that the Court employed most recently in *Lingle v. Chevron U.S.A. Inc.*[13] Writing for a unanimous Court in that 2005 decision, Justice Sandra Day O'Connor explained that which the various tests employed in key regulatory takings have in common: "Each aims to identify regulatory actions that are functionally equivalent to the classic taking in which government directly appropriates private property or ousts the owner from his domain."[14] So, as we proceed to the remaining sections of this article, we should keep in mind two critical ideas: (1) that government, as Justice Black so eloquently explained, has an obligation to act justly and fairly by not imposing *public* burdens on one or a few private owners; and (2) that the Takings Clause (and the Due Process and Equal Protection Clauses, too, for that matter) are protections against the privations to property owners caused by *government* actors, not by the forces of nature. The italics in the previous sentence are intentional, for it is crucial to remember that the public coffers should be subject to a takings claim only when the burden carried by the private property owner is public in nature and the harm suffered by the private property owner was caused by the state (intentionally or otherwise).

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533 U.S. 606, 633 (2001) (O'Connor, J., concurring); Pennell v. San Jose, 485 U.S. 1, 9 (1988); First English Evangelical Lutheran Church of Glendale v. County of L.A., 482 U.S. 304, 318-19 (1987); Webb's Fabulous Pharmacies, Inc. v. Beckwith, 449 U.S. 155, 163 (1980); and Penn Cent. Transp. Co., 438 U.S. at 123. *See also* William Michael Treanor, *The* Armstrong *Principle, The Narratives of Takings, and Compensation Statutes*, 38 WM. & MARY L. REV. 1151 (1997). The Bert J. Harris, Jr., Private Property Rights Protection Act includes the following as one of the meanings of the terms "inordinate burden" and "inordinately burdened" found in the statute: "that the property owner is left with existing or vested uses that are unreasonable such that the property owner bears permanently a disproportionate share of a burden imposed for the good of the public, which in fairness should be borne by the public at large." FLA. STAT. ANN § 70.001(3)(e)(1) (West 2012).

13. 544 U.S. 528 (2005).

14. *Id.* at 539. The fact that Justice Antonin Scalia participated in the *Lingle* majority does not necessarily mean that he endorsed the notion of functional equivalence. *See, e.g.*, Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1014 (1992) (citations omitted):

> Prior to Justice Holmes's exposition in *Pennsylvania Coal Co. v. Mahon*, it was generally thought that the Takings Clause reached only a "direct appropriation" of property, or the functional equivalent of a "practical ouster of [the owner's] possession," Justice Holmes recognized in *Mahon*, however, that if the protection against physical appropriations of private property was to be meaningfully enforced, the government's power to redefine the range of interests included in the ownership of property was necessarily constrained by constitutional limits. If, instead, the uses of private property were subject to unbridled, uncompensated qualification under the police power, "the natural tendency of human nature [would be] to extend the qualification more and more until at last private property disappear[ed]." These considerations gave birth in that case to the oft-cited maxim that, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."

III. TAKING: ONE WORD, SIX VARIETIES

Justice O'Connor, in her opinion for a unanimous Supreme Court in *Lingle*, did a commendable job of reviewing the justices' tangled takings web. The context for the Court's exploration of the takings taxonomy was the application by lower federal courts of the " 'substantially advances' formula [from *Agins v. City of Tiburon*[15]] to strike down a Hawaii statute that limits the rent that oil companies may charge to dealers who lease service stations owned by the companies."[16] The high court reversed, concluding "that the 'substantially advances' formula announced in *Agins* is not a valid method of identifying regulatory takings for which the Fifth Amendment requires just compensation."[17] Because the formula had appeared in several takings cases decided by the Court since its first appearance in 1980, Justice O'Connor and her colleagues took the opportunity to examine the Court's takings jurisprudence and to explain how dropping the "substantially advances" dictum would have no real impact on existing law. *Table 1* presents a taxonomy of takings cases that, with the exception of the final category, roughly tracks with the *Lingle* opinion's review, identifying operative language from a representative case that illustrates how each "variety" of taking differs from the others.

TABLE 1
WHAT EXACTLY IS A FIFTH AMENDMENT TAKING?

TYPE OF TAKING	**REPRESENTATIVE DECISION**	**OPERATIVE LANGUAGE**
Affirmative exercise of the sovereign power of eminent domain (**ED**)	*Kelo v. City of New London*[18]	"[I]t is equally clear that a State may transfer property from one private party to another if future 'use by the public' is the purpose of the taking."[19]

15. 447 U.S. 255, 260 (1980) (holding that "[t]he application of a general zoning law to particular property effects a taking if the ordinance does not substantially advance legitimate state interests . . .").
16. *Lingle*, 544 U.S. at 532.
17. *Id.* at 545.
18. 545 U.S. 469 (2005).
19. *Id.* at 477.

Government-required, permanent, physical occupation (**PO**)	*Loretto v. Teleprompter Manhattan CATV Corp.*[20]	"We conclude that a permanent physical occupation authorized by government is a taking without regard to the public interests that it may serve."[21]
Total deprivation of use and/or value (**TD**)	*Lucas v. S.C. Coastal Council*[22]	"[W]hen the owner of real property has been called upon to sacrifice *all* economically beneficial uses in the name of the common good, that is, to leave his property economically idle, he has suffered a taking."[23]
Partial taking that falls short of a total deprivation (**PT**)	*Penn Cent. Transp. Co. v. City of New York* [24]	"The economic impact of the regulation on the claimant and, particularly, the extent to which the regulation has interfered with distinct investment-backed expectations are, of course, relevant considerations. So, too, is the character of the governmental action. A 'taking' may more readily be found when the interference with property can be characterized as a physical invasion by government, than when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good."[25]

20. 458 U.S. 419 (1982).
21. *Id.* at 426.
22. 505 U.S. 1003 (1992).
23. *Id.* at 1019.
24. 438 U.S. 104 (1978).
25. *Id.* at 124 (citations omitted).

Exaction of a property interest even if the value of the subject property would be enhanced by grant of the conditional permit **(EX)**	*Dolan v. City of Tigard*[26]	"Under the well-settled doctrine of 'unconstitutional conditions,' the government may not require a person to give up a constitutional right—here the right to receive just compensation when property is taken for a public use—in exchange for a discretionary benefit conferred by the government where the benefit sought has little or no relationship to the property."[27]
Judicial taking (**JT**)	*Stop the Beach Renourishment, Inc. v. Fla. Dep't of Envtl. Prot.*[28]	"If a legislature *or a court* declares that what was once an established right of private property no longer exists, it has taken that property, no less than if the State had physically appropriated it or destroyed its value by regulation."[29]

The first takings category—the affirmative exercise of the sovereign power of eminent domain (delineated in this article by the abbreviation **ED**)—while very straightforward, is not without controversy, as illustrated by the uber controversy that followed the Court's announcement of its 2005 decision in *Kelo v. City of New London*[30] over the meaning of "public use."[31] In the last several years, state legislatures and voters have narrowed the definition of public use and provided additional procedural protections for landowners whose property is targeted for eminent domain.[32]

26. 512 U.S. 374 (1994).
27. *Id.* at 385.
28. 130 S. Ct. 2592 (2010) (plurality opinion) [hereinafter *STBR*].
29. *Id.* at 2602.
30. 545 U.S. 469 (2005).
31. *See, e.g.*, Michael Allan Wolf, *Hysteria Versus History: Public Use in the Public Eye*, *in* PRIVATE PROPERTY, COMMUNITY DEVELOPMENT, AND EMINENT DOMAIN 15 (Robin Paul Malloy ed., 2008).
32. *See, e.g.*, POWELL ON REAL PROPERTY § 79F.03[3][b][iv] (Michael Allan Wolf ed. 2013) [hereinafter POWELL] (detailing state legislative and constitutional changes in response to *Kelo*).

Nevertheless, local, state, and federal officials continue to possess broad powers to take title to a wide variety of private property interests, as long as just compensation—typically equated with fair market value—is rendered.

The second taking type—a permanent physical occupation required by the government (**PO**)—is the first of what Justice O'Connor called the "two categories of regulatory action that generally will be deemed *per se* takings for Fifth Amendment purposes."[33] The representative decision, *Loretto v. Teleprompter Manhattan CATV Corp.*,[34] involved the owner of an apartment building who objected to a state law requiring her to permit the company to install cable television equipment on her property, and the *Lingle* Court acknowledged that this and the second *per se* category were "relatively narrow" in scope.[35]

The third type of taking (and second *per se* variety) involves government regulations that, in the words of Justice Scalia in *Lucas v. South Carolina Coastal Council*,[36] deprive the owner of "*all* economically beneficial uses" of his or her property.[37] Coincidentally, and not without importance to our current concerns, the state legislation that resulted in the landowner losing all value in his coastal parcels—the South Carolina Beachfront Management Act—grew out of the efforts of the Blue Ribbon Committee on Beachfront Management whose report contained the first epigraph to this article (concerning the reality of SLR), language that today would attract the negative attention of skeptical politicians and ideologues.[38]

The term *per se* is a bit misleading, as even a total deprivation (**TD**) would be legal if the government restriction responsible for the deprivation

> inhere[s] in the title itself, in the restrictions that background principles of the State's law of property and nuisance already place upon land ownership. A law or decree with such an effect must, in other words, do no more than duplicate the result that could have been achieved in the courts—by adjacent landowners (or other uniquely affected persons) under the State's law of private nuisance, or by the

33. Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 538 (2005).

34. 458 U.S. 419 (1982).

35. *Lingle*, 544 U.S. at 538. For failed efforts to expand the reach of *Loretto*, see Yee v. City of Escondido, 503 U.S. 519, 539 (1992) (holding that "[b]ecause the Escondido rent control ordinance does not compel a landowner to suffer the physical occupation of his property, it does not effect a *per se* taking under *Loretto*").

36. 505 U.S. 1003 (1992).

37 *Id.* at 1019.

38. *See supra* note 2 and accompanying text; *see also* sources cited *supra* note 4.

> State under its complementary power to abate nuisances that affect the public generally, or otherwise.[39]

While, as we will see, the prevention of private and public nuisances is very compatible with the goals of several SLR adaptation strategies, the most intriguing possibility for making such strategies takings-proof lies in the example that Justice Scalia provides as an illustration of the last word in the paragraph quoted above:

> The principal "otherwise" that we have in mind is litigation absolving the State (or private parties) of liability for the destruction of "real and personal property, in cases of actual necessity, to prevent the spreading of a fire" or to forestall other grave threats to the lives and property of others.[40]

The first case cited for this proposition by the *Lucas* majority—*Bowditch v. Boston*[41]—involved the demolition of a building to stop the spread of a fire and thus involved the Court's consideration of the so-called "conflagration rule." As Professors David Dana and Thomas Merrill have explained, one possible explanation for this rule "is based on causation. If the claimant's property would have been engulfed by fire in any event, then the government's intervention should not be regarded as the cause of its demise."[42] Or, as Professor Ernst Freund conceded more than a century ago in his classic exploration of the police power, "Of course there can be no constitutional or moral duty of compensation, where the property destroyed could not have been saved in any event."[43] This is yet another example of the *Armstrong* principle in operation, as the burden was placed on the landowner most immediately by the flames and only secondarily by public officials. Similarly,

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39. *Lucas*, 505 U.S. at 1029.

40. *Id*. at 1029 n.16 (citing Bowditch v. Boston 101 U.S. 16, 18-19 (1880).

41. 101 U.S. 16.

42. DAVID A. DANA & THOMAS W. MERRILL, PROPERTY: TAKINGS 119 (2002). In the sentence following Justice Holmes's articulation of his perplexing "general rule," he noted: "It may be doubted how far exceptional cases, like the blowing up of a house to stop a conflagration, go—and if they go beyond the general rule, whether they do not stand as much upon tradition as upon principle." Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 415-16 (1922) (citing *Bowditch*, 101 U.S. 16).

43. ERNST FREUND, THE POLICE POWER: PUBLIC POLICY AND CONSTITUTIONAL RIGHTS § 535, at 565 (1904). *See also* 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 & ENVTL. L. 395 (2011); Michael Kamprath, *Addressing the Shaky Legal Foundations of Florida's Fight Against Citrus Canker*, 20 J. LAND USE & ENVTL. L. 453, 465-77 (2005); Dale A. Whitman, *Deconstructing* Lingle*: Implications for Takings Doctrine*, 40 J. MARSHALL L. REV. 573, 588-90 (2007); 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 (2006).

those landowners who lose their land and their structures to rising seas should not be able to recover compensation for a taking occasioned primarily by the forces of nature and not by public officials who craft programs designed to prevent more widespread harm. After all, houses, condominium, and apartment buildings, as well as offices and businesses that lie on ecologically fragile barrier islands, can be envisioned as mere flotsam waiting to happen, not to mention the originating point for harmful fecal coliforms and other pollutants.

The fourth type of taking is a deprivation occasioned by the government that falls short of the total loss envisioned in *Lucas*. The first version of the multi-factor test that the Court applies to so-called "partial takings" (**PT**) appeared in 1978's *Penn Central Transportation Co. v. City of New York*,[44] an unsuccessful challenge to the city's landmark preservation ordinance. The "economic impact" of the challenged regulation is one of "several factors" that "the Court's decisions have identified" as having "particular significance" in the justices' attempts to "determin[e] when 'justice and fairness' require that economic injuries caused by public action be compensated by the government, rather than remain disproportionately concentrated on a few persons."[45] Analogizing the preservation ordinance to other regulatory schemes such as zoning, the *Penn Central* majority observed that, "in instances in which a state tribunal reasonably concluded that 'the health, safety, morals, or general welfare' would be promoted by prohibiting particular contemplated uses of land, this Court has upheld land-use regulations that destroyed or adversely affected recognized real property interests."[46]

The *Penn Central* test has become the default in regulatory takings challenges that do not fit comfortably into the other categories, and, while it is not impossible to find a case in which property owners have prevailed,[47] government counsel and their clients typically have reason to celebrate when a court opts for ad hoc balancing over the other takings alternatives.[48] There are two

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44. 438 U.S. 104 (1978).

45. *Id.* at 124.

46. *Id.* at 125.

47. *See, e.g.*, City of Monterey v. Del Monte Dunes at Monterey, Ltd., 526 U.S. 687, 694 (1999):

> After protracted litigation, the case was submitted to the jury on Del Monte Dunes' theory that the city effected a regulatory taking or otherwise injured the property by unlawful acts, without paying compensation or providing an adequate postdeprivation remedy for the loss. The jury found for Del Monte Dunes, and the Court of Appeals affirmed.

48. *See, e.g.*, Tahoe-Sierra Pres. Council, Inc, v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 342 (2002) ("We conclude, therefore, that the interest in 'fairness and justice' will be best served by relying on the familiar *Penn Central* approach when deciding cases like

important reasons why *Penn Central* provides minimal solace for property owners who feel overburdened by government regulation, coastal and otherwise. First, the Court pointed out that the government's chances for victory were enhanced "when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good."[49] Second, the Court identified "the extent to which the regulation has interfered with distinct investment-backed expectations" as a "relevant consideration[],"[50] seriously hindering cases brought by landowners who acquired their property with knowledge of preexisting government regulations or even of reasonably foreseeable extensions of existing law. As the United States Court of Appeals for the Federal Circuit explained in a 2001 decision: "The reasonable expectations test does not require that the law existing at the time . . . would impose liability, or that liability would be imposed only with minor changes in then-existing law. The critical question is whether extension of existing law could be foreseen as reasonably possible."[51] Once government regimes have begun the process of sharply curtailing development in coastal regions, all existing and potential landowners should be on notice that further refinements are quite likely in the offing.

The fifth taking category involves government exactions (**EX**) of property interests in exchange for the grant of development permission to the landowner. Most private landowners are happy to offer this quid pro quo voluntarily, knowing that the enhanced value of their real property will more than make up for the value of the fee or easement granted to the public. Indeed, it seems silly even to refer to this exercise as a "taking," at least when considering the financial aspects of the entire transaction. However, the justices comprising the majorities in the Court's first two exaction

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this, rather than by attempting to craft a new categorical rule."); Palazzolo v. R.I., 533 U.S. 606, 632 (2001) ("The court did not err in finding that petitioner failed to establish a deprivation of all economic value, for it is undisputed that the parcel retains significant worth for construction of a residence. The claims under the *Penn Central* analysis were not examined, and for this purpose the case should be remanded."). *See also* Palazzolo v. R.I., 2005 WL 1645974, at *15 (July 5, 2005) (footnote omitted) ("In sum, Plaintiff has failed to prove by a preponderance of the evidence that there has been a regulatory taking of his property. Moreover, because the development proposed by Plaintiff would constitute a public nuisance, his title did not include a property right to develop the parcel as he proposed.").

49. *Penn Cent.*, 438 U.S. at 124.

50. *Id.*

51. Commonwealth Edison Co. v. United States, 271 F.3d 1327, 1357 (Fed. Cir. 2001). *See also* Thomas Ruppert, *Reasonable Investment-Backed Expectations: Should Notice of Rising Seas Lead to Falling Expectations for Coastal Property Purchasers?*, 26 J. LAND USE & ENVTL. L. 239, 275 (2011) ("While no one part of the *Penn Central* analysis necessarily trumps, ensuring that coastal property owners have full understanding of the nature of the hazards, the dynamic coastal environment, and existing and potential regulatory limitations should demonstrate that owners' expectations which are drastically out of line with these realities and information are not reasonable.").

cases—*Nollan v. California Coastal Commission*[52] and *Dolan v. City of Tigard*[53]—focused their attention solely on what the landowner lost, not on what he or she gained from the entire development permission process.

The majority opinions in *Nollan* and *Dolan* contributed a two-step inquiry to the already terribly confusing takings canon. First, Justice Scalia in *Nollan* explained that when government regulators opt for conditional approval rather than outright denial of development permission, an "essential nexus" would be missing "if the condition substituted for the prohibition utterly fails to further the end advanced as the justification for the prohibition."[54] Second, Chief Justice William Rehnquist in *Dolan* clarified that if the essential nexus between "the 'legitimate state interest' and the permit condition exacted"[55] by government is present, the government would prevail only if "the degree of the exactions demanded by the city's permit conditions bears the required relationship to the projected impact of petitioner's proposed development."[56] The *Dolan* Court labeled that relationship "rough proportionality," noting that, while "[n]o precise mathematical calculation is required,'" government officials "must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development."[57]

There are three possible explanations for the Court's characterization of an exaction as a taking. The first is that a poorly crafted exaction—one that asks a landowner to concede a property interest totally unrelated to the protection of the public interest or grossly out of proportion to any negative impact of the proposed development—would appear to violate the following takings test from a 1980 Supreme Court decision, *Agins v. City of Tiburon*[58]: "The application of a general zoning law to particular property effects a taking if the ordinance does not substantially advance legitimate state interests."[59] That was a possible rationale, at least until the unanimous Court decided a quarter-century later in *Lingle* "that the 'substantially advances' formula announced in

52. 483 U.S. 825 (1987).
53. 512 U.S. 374 (1994).
54. 483 U.S. at 837.
55. 512 U.S. at 386.
56. *Id.* at 388.
57. *Id.* at 391.
58. 447 U.S. 255 (1980).
59. *Id.* at 260. The key language from *Agins* makes an appearance in both *Nollan*, 483 U.S. at 834 n.3 (1987), and *Dolan*, 512 U.S. at 385 (1994).

Agins is not a valid method of identifying regulatory takings for which the Fifth Amendment requires just compensation."[60]

A second possible explanation for equating exactions of real property interests with takings is that what the government often obtains is a right for the *public* to use the easement or fee simple interest acquired from the *private* landowner. In her *Lingle* opinion, Justice O'Connor explained that "[a]lthough *Nollan* and *Dolan* quoted *Agins*' language, the rule those decisions established is entirely distinct from the 'substantially advances' test we address today,"[61] noting instead that the two earlier cases "involved dedications of property so onerous that, outside the exactions context, they would be deemed *per se* physical takings."[62] However, because those property dedications *did* occur in the exactions context, they lacked the element of government compulsion that characterizes unconstitutional, *Loretto*-like, physical occupation takings.

The third and, to the high court in *Lingle*, ultimately satisfactory explanation lies in what is known as the "unconstitutional conditions" doctrine. According to Chief Justice Rehnquist in *Dolan*, this controversial doctrine[63] provides that "the government may not require a person to give up a constitutional right—here the right to receive just compensation when property is taken for a public use—in exchange for a discretionary benefit conferred by the government where the benefit sought has little or no rela-

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60. Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 545 (2005).

61. *Id.* at 547 (citations omitted).

62. *Id.*

63. *See, e.g.*, Vicki Been, *"Exit" as a Constraint on Land Use Exactions: Rethinking the Unconstitutional Conditions Doctrine*, 91 COLUM. L. REV. 473, 543 (1991) ("Indeed, the unconstitutional conditions doctrine, in the form of the *Nollan* nexus test or the similar forms of heightened judicial scrutiny that Professors Epstein, Sullivan, and others propose, is quite costly."); Mitchell N. Berman, *Coercion Without Baselines: Unconstitutional Conditions in Three Dimensions*, 90 GEO. L.J. 1, 3 (2001) ("The persistent challenge, consequently, has been to articulate some coherent or at least intelligible principles or tests by which to determine which offers fall into which category—to explicate, in other words, a theory to support the doctrine. Regrettably, more than a century of judicial and scholarly attention to the problem has produced few settled understandings."); Richard A. Epstein, *Foreword: Unconstitutional Conditions, State Power, and the Limits of Consent*, 102 HARV. L. REV. 4, 11 (1988) (footnote omitted) ("The importance of the unconstitutional conditions doctrine has brought forth an extensive array of academic literature to explain and justify it. The received writing sensibly recognizes the essential place that the doctrine occupies in modern constitutional law, but it makes far less sense when it attempts to explain how the doctrine arises or what it does."); Kathleen M. Sullivan, *Unconstitutional Conditions*, 102 HARV. L. REV. 1413, 1415-16 (1989) ("[R]ecent Supreme Court decisions on challenges to unconstitutional conditions seem a minefield to be traversed gingerly. Just when the doctrine appears secure, new decisions arise to explode it."); Cass R. Sunstein, *Why the Unconstitutional Conditions Doctrine is an Anachronism (with Particular Reference to Religion, Speech, and Abortion)*, 70 B.U. L. REV. 593, 594 (1990) ("The various puzzles produced by the doctrine have created considerable doctrinal confusion and provoked a wide range of commentary.").

tionship to the property."[64] In such cases, Justice O'Connor explained in *Lingle*, "the issue was whether the exactions substantially advanced the *same* interests that land-use authorities asserted would allow them to deny the permit altogether."[65] Technically, the exaction itself does not really effect a taking, as a case such as *Dolan* in reality involves an action that in other contexts would be an uncompensated taking that is "wrapped inside" an illegal condition.

The sixth variety—judicial takings (**JT**)—is at this point one vote shy of realizing Justice William Brennan's "rule of five."[66] That is, only four current justices have gone on record in support of the notion that members of the judiciary, like their counterparts in the legislative and executive branches, can effect a taking of private property without compensation. In a 2010 decision inextricably tied to the realities of climate change in the coastal zone—*Stop the Beach Renourishment, Inc. v. Florida Department of Environmental Protection*[67]—four justices (Justice Scalia writing, joined by Justices Samuel Alito and Clarence Thomas and Chief Justice John Roberts) held out the possibility that judges on a state high

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64. *Dolan*, 512 U.S. at 385.

65. *Lingle*, 544 U.S. at 547. Justice O'Connor then seeks to distinguish this kind of substantial advancement from the first prong of *Agins* that the Court has just deemed to be a due process test:

> That is worlds apart from a rule that says a regulation affecting property constitutes a taking on its face solely because it does not substantially advance a legitimate government interest. In short, *Nollan* and *Dolan* cannot be characterized as applying the "substantially advances" test we address today, and our decision should not be read to disturb these precedents.

Id. at 547-48. In this way, *Nollan* and *Dolan* maintained their jurisprudential vigor, as demonstrated by the Court's decision to hear an exactions takings challenge during the October 2012 Term. *See* Koontz v. St. Johns River Water Mgmt. Dist., No. 11-1447 (June 25, 2013). In *Koontz*, a five-member majority reiterated Justice O'Connor's point in *Lingle*:

> So long as the building permit is more valuable than any just compensation the owner could hope to receive for the right-of-way, the owner is likely to accede to the government's demand, no matter how unreasonable. Extortionate demands of this sort frustrate the Fifth Amendment right to just compensation, and the unconstitutional conditions doctrine prohibits them.

Id. at 7.

66. *See, e.g.*, Mark Tushnet, *Themes in Warren Court Biographies*, 70 N.Y.U. L. REV. 748, 763 (1995):

> [Brennan's] law clerks report an annual event: At some point early in their clerkships, Brennan asked his clerks to name the most important rule in constitutional law. Typically they fumbled, offering *Marbury v. Madison* or *Brown v. Board of Education* as their answers. Brennan would reject each answer, in the end providing his own by holding up his hand with the fingers wide apart. This, he would say, is the most important rule in constitutional law. Some clerks understood Brennan to mean that it takes five votes to do anything, others that with five votes you could do anything. In either version, though, Brennan's "rule of five"—or, as the narrative of activism and restraint would have it, rule *by* five—was about the meaning of five votes on the Court. It was not a substantive rule of constitutional law.

67. 130 S.Ct. 2592 (2010).

court could take property simply by "declar[ing] that what was once an established right of private property no longer exists, . . . no less than if the State had physically appropriated it or destroyed its value by regulation."[68] While the four remaining justices participating in the case expressed their doubts,[69] some Court observers have been intrigued by this embryonic takings theory, a theory that, if it reaches maturity, could well have a chilling effect on the adaptation of ancient common-law concepts such as accretion, reliction, and avulsion[70] to twenty-first century climatic and hydrologic realities.

IV. THE RICH AND DIVERSE ADAPTATION TOOLKIT

Having set the jurisprudential table, it is now time to review some of the major strategies that government at all strata are and will be taking to adapt to dramatic and potentially devastating sea level rise. Several helpful compendia of SLR adaptation tools are available in hard copy and on the Internet, obviating the need to reinvent the wheel in this increasingly important field.[71] Table 2 includes more than twenty such tools, and Tables 2A through 2D groups these tools together by the degree of risk that takings law, as applied by judges who have a competent understanding of the current state of this evolving jurisprudence,[72] poses to their use.

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68. *Id.* at 2602 (plurality).

69. *See id.* at 2617 (Kennedy, J., concurring in part and concurring in the judgment) ("These difficult issues are some of the reasons why the Court should not reach beyond the necessities of the case to recognize a judicial takings doctrine."); *id.* at 2618 (Breyer, J., concurring in part and concurring in the judgment) ("I agree that no unconstitutional taking of property occurred in this case, and I therefore join Parts I, IV, and V of today's opinion. I cannot join Parts II and III, however, for in those Parts the plurality unnecessarily addresses questions of constitutional law that are better left for another day.").

70. *See id.* at 2598; POWELL, *supra* note 32, at § 66.01.

71. *See, e.g.*, JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., ADAPTATION TOOL KIT: SEA-LEVEL RISE AND COASTAL LAND USE: HOW GOVERNMENTS CAN USE LAND-USE PRACTICES TO ADAPT TO SEA-LEVEL RISE (2011) [hereinafter ADAPTATION TOOL KIT], *available at* http://www.georgetownclimate.org/sites/default/files/Adaptation_Tool_Kit_SLR.pdf; BARBARA J. LAUSCHE, MOTE MARINE LAB., TECH. REPORT NO. 1419, SYNOPSIS OF AN ASSESSMENT: POLICY TOOLS FOR LOCAL ADAPTATION TO SEA LEVEL RISE (2009) [hereinafter MOTE], *available at* http://www.mote.org/clientuploads/MPI/Synopsis-Policy%20Tools%20for%20Local%20Adaptation%20to%20Sea%20Level%20Rise(fin).pdf; NAT'L RESEARCH COUNCIL, ADAPTING TO THE IMPACTS OF CLIMATE CHANGE (2010) (especially ch. 3 "What Are America's Options for Adaptation?"), *available at* http://www.nap.edu/catalog.php?record_id=12783#toc. There are resources on specific tools as well. *See, e.g.*, JAMES G. TITUS, CLIMATE READY ESTUARIES EPA, ROLLING EASEMENTS (2011), *available at* http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf.

72. The Supreme Court heard two takings cases during the October 2012 Term. *See* Ark. Game & Fish Comm'n v. United States, 133 S. Ct. 511, 515 (2012) ("[R]ecurrent floodings, even if of finite duration, are not categorically exempt from Takings Clause liability."); St. Johns River Water Mgmt. Dist. v. Koontz, No. 11-1447, slip op. at 22 (June 25, 2013) ("We hold that the government's demand for property from a land-use permit applicant must satisfy the requirements of *Nollan* and *Dolan* even when the government denies the

The risks run from nonexistent and minimal (Tables 2A and 2B) to moderate (Table 2C), and up to serious (Table 2D).

TABLE 2 ***SLR ADAPTATION TOOLS*** ***A REPRESENTATIVE LIST***
• Notice to landowners of impending SLR • Comprehensive plan SLR element • Building code changes to accommodate SLR • Government purchase of fee in properties vulnerable to SLR • Government purchase of (or truly voluntary donation of) conservation easements on properties vulnerable to SLR • SLR overlay zoning and downzoning (affecting height, area, and use of undeveloped or underdeveloped parcels) • Restrictions on existing, nonconforming buildings/uses in SLR overlay zone • Enhanced floodplain restrictions in SLR areas • Permits for soft-armoring in SLR areas (e.g., beach nourishment) • Requiring living shorelines in place of hard-armoring structures • Transferable development rights exchange with owners in SLR zone • Special assessments for beach nourishment and other soft-armoring in SLR zones • Increased buffers and setbacks for landowners directly affected by SLR • Prohibition of hard-engineered structures (armoring) in designated SLR zones • Massive public land acquisition in SLR areas and areas nearby financed by new taxes and bond issues followed by resale with restrictions to private owners • Land banking in upland areas for future private use • Exaction of coastal impact fees on all permitted development in the SLR • Development exactions of conservation easements or of fee title interests, and imposition of coastal impact fees on all permitted development in the SLR • Prohibition of new, permanent structures in designated SLR zones, declaring them to be public nuisances • Ban on hard- and soft-armoring financed by owners of developed parcels • New judicial decisions that impose rolling easement ambulatory boundaries and expand public property interests in the coastal zone

permit and even when its demand is for money."). The tables in this article identify the takings claims that plaintiffs are most likely to make in litigation. Of course, litigants on all sides and the courts may choose to resolve these issues outside the takings context.

Identifying the takings risk of SLR adaptation strategies serves two distinct but related purposes. First, government officials can use this information to anticipate when serious legal challenges may be mounted in anticipation, or in response to the implementation, of specific tools. Armed with this information, these officials can then seek legal counsel regarding the best ways of mitigating the takings risks, such as modulating the intensity of a regulation or mitigating the impact of a regulation on specific private property owners who carry the heaviest burden.

Second, by measuring SLR adaption tools by their takings risks, we can keep in the forefront of our policymaking the heart and spirit of the takings clause as embodied in the *Armstrong* principle: avoiding those regulations and other *governmental* activities that place a special burden on the few that, in the name of justice and fairness, should be borne by the many. In other words, adhering to the demands of takings jurisprudence should not be an exercise in legal brinkmanship, but rather an attempt to achieve an effective, forward-looking strategy without causing needless harm.

TABLE 2A ***SLR ADAPTATION TOOLS*** ***LEVEL 1, NO TAKINGS RISK***
• Notice to landowners of impending SLR • Comprehensive plan SLR element • Building code changes to accommodate SLR • Government purchase of fee in properties vulnerable to SLR • Government purchase of (or truly voluntary donation of) conservation easements on properties vulnerable to SLR

The tools that pose no takings risks (Table 2A) are those that have no current financial impact on current owners (such as informing coastal owners of impending SLR,[73] modifying comprehensive plan elements to reflect SLR concerns,[74] and using public funds to purchase conservation easements[75] and fee title) or that involve the exercise of the state's traditional police power

73. *See* Ruppert, *supra* note 51, at 262-66 (discussing a few state disclosure requirements referring specifically to coastal property).

74. *See, e.g.*. ADAPTATION TOOL KIT, *supra* note 71, at 16-18; MOTE, *supra* note 71, at 8-9.

75. *See, e.g.*, J. Peter Byrne, *The Cathedral Engulfed: Sea-Level Rise, Property Rights, and Time*, 73 LA. L. REV. 69, 83 (2012); John D. Echeverria, *Regulating Versus Paying Land Owners to Protect the Environment*, 26 J. LAND RESOURCES & ENVTL. L. 1 (2005); John R. Nolon, *Regulatory Takings and Property Rights Confront Sea Level Rise: How Do They Roll?*, 21 WIDENER L.J. 735 ,764-66 (2012); Jessica Owley, *Conservation Easements at the Climate Change Crossroads*, 74 LAW & CONTEMP. PROBS. 199 (2011).

(such as modifications of building codes[76]). Unfortunately, but not surprisingly, the most effective of these tools—public acquisition of title to private lands on barrier islands and in other highly vulnerable locations—is cost-prohibitive given current and anticipated budget restraints at all levels of government.[77] Because of this hard economic reality, governments have resorted to alternative regulatory tools in hopes of accomplishing the same goals, much the same way that some early experimentation with eminent domain to impose land use restrictions gave way to the nearly ubiquitous reality of zoning without compensation.[78]

TABLE 2B ***SLR ADAPTATION TOOLS*** ***LEVEL 2, MINIMAL TAKINGS RISK***
• SLR overlay zoning and traditional downzoning (affecting height, area, and use of undeveloped or underdeveloped parcels) (**PT**) • Restrictions on existing, nonconforming buildings/uses in SLR overlay zone (**PT**) • Enhanced floodplain restrictions in SLR areas (**PT**) • Permits for soft-armoring in SLR areas (e.g., beach nourishment) (**PT**) • Requiring living shorelines in place of hard-armoring structures (**PT**, **EX**) • Transferable development rights exchange with owners in SLR zone (**ED**)
KEY: **ED**=Eminent Domain (*Kelo*), **PT**=Partial Taking (*Penn Central*), **EX**=Exaction (*Dolan*)

76. *See, e.g.*, Sean Reilly, *Finding Silver Linings*, 68 LA. L. REV. 331, 334 (2008) (footnote omitted) ("The LRA [Louisiana Recovery Authority] was active in the first Special Session of the Legislature called by Governor Blanco in the fall of 2005. One early victory was the enactment of the first uniform statewide residential building code in our state's history. Modeled after the code enacted by Florida after its series of hurricanes, this code will serve the state well when future disasters visit Louisiana's shores and its structures survive."); Thomas Kaplan, *Experts Advise Cuomo on Disaster Measures*, N.Y. TIMES, Jan. 3, 2013, at 18 ("Two panels of experts charged with studying how New York can better prepare for disasters like Hurricane Sandy said Thursday that the state should create a strategic fuel reserve, require some gas stations to install generators and update its building codes.").

77. Patricia E. Salkin & Charles Gottlieb, *Engaging Deliberative Democracy at the Grassroots: Prioritizing the Effects of the Fiscal Crisis in New York at the Local Government Level*, 39 FORDHAM URB. L.J. 727, 728-29 (2012) ("Local governments are facing unprecedented fiscal challenges across the country. These challenges have forced many municipalities to examine insolvency and have subjected others to state-initiated fiscal control boards. In March 2011, The New York Times reported that states across the nation were planning severe budget cuts in aid to cities and other local governments. These cuts were expected to lead to more lay-offs, cuts in services, and increases in local taxes").

78. *See* CHARLES M. HAAR & MICHAEL ALLAN WOLF, LAND USE PLANNING AND THE ENVIRONMENT: A CASEBOOK 262-64 (2012) [hereinafter LAND USE PLANNING] (discussing "early attempts to zone entirely by eminent domain").

As Table 2B indicates, several regulatory tools involve only minimal takings risks, largely because of a long, relatively uncontroversial record of the use of these same or highly analogous strategies for the past several decades. The use of overlay zoning[79] to impose greater restrictions on environmentally sensitive properties (floodplains, wetlands, critical habitat for protected species, and the like) has become routine in American cities and counties, and the Takings Clause has not posed a significant barrier for governments who pursue this strategy. Neither does the typical downzoning of a group of undeveloped parcels—that is, the imposition of more intense use (and perhaps height and area) restrictions by changing the zoning classification—warrant serious consideration by courts in which landowners cry "taking."[80] Ever since the United States Supreme Court established in its 1926 decision in *Village of Euclid v. Ambler Realty Co.*[81] "that there is no fundamental constitutional right to the speculative value of a piece of property,"[82] landowners seeking to maximize their investment in real estate have for the most part been frustrated in their attempts to use the Due Process, Equal Protection, and Takings Clauses to reverse zoning and other comprehensive, expert-based, state and local land use restrictions.[83]

Landowners challenging new restrictions imposed on their nonconforming uses and buildings—occasioned by the imposition of zoning controls for the first time or by zoning changes—have also been frustrated when they turn to the courts. Local zoning ordinances commonly feature provisions that prescribe the expan-

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79. *See, e.g.*, Robert J. Blackwell, Comment, *Overlay Zoning, Performance Standards, and Environmental Protection after* Nollan, 16 B.C. ENVTL. AFF. L. REV. 615, 616 (1989) (footnotes omitted):

> Overlay zones are those that are specifically tailored to protect the environmental area at issue, whether it be a reservoir, aquifer, forest, or beach area. An outgrowth of Euclidean zoning, overlay zones in effect circumscribe an environmental area that is already subject to Euclidean regulation, and impose additional requirements thereon. Overlay zones are more effective than other land use controls in environmental protection because of their flexibility, their concentrated focus on specific environmental areas, and their use of performance standards.

80. *See, e.g.*, Intermountain W., Inc. v. Boise City, 728 P.2d 767, 769 (Idaho 1986) ("A zoning ordinance which downgrades the economic value of property does not constitute a taking of property without compensation at least where some residual value remains in the property.").

81. 272 U.S. 365 (1926).

82. Charles M. Haar & Michael Allan Wolf, Commentary, Euclid *Lives: The Survival of Progressive Jurisprudence*, 115 HARV. L. REV. 2158, 2158 (2002).

83. *See, e.g.*, STEVEN J. EAGLE, REGULATORY TAKINGS § 1-6 (5th ed. 2012) ("Since the late 1930s the Supreme Court has viewed property interests as economic rather than personal. With the exception of cases in which 'property' has been closely linked to protected rights, such as free speech and preservation of the family, regulations arguably depriving landowners of their property rights have been reviewed under the relaxed scrutiny of the rational basis test").

sion, enlargement, or alteration of nonconformities,[84] with the courts' blessings.[85] There is no reason to believe that judges would be any less accommodating of new restrictions placed on existing structures and uses in an SLR overlay zone. Similarly, requiring permits for landowner-funded, soft-armoring projects such as beach nourishment and enhancing floodplain protections would basically involve intensifying what are already widely accepted forms of land use control,[86] thus minimizing the chances that a court would find a violation of the Takings Clause. Standing in the way of success for landowners making regulatory takings arguments in opposition to any of the Table 2B tools discussed to this point is the *Penn Central* ad hoc balancing test that courts employ in partial, as opposed to total, deprivation situations. While it is theoretically possible for government officials to flunk the *Penn Central* balancing test,[87] the goal of the lawyers in the front lines of private property rights movement has been to avoid or even eliminate what they perceive to be a losing legal paradigm.[88] Despite their best efforts, justice and judges seem comfortable with the dual framework of *Penn Central*, which seeks to balance the Holmesian concern over severe diminution in value attributable to government action[89] with the Brandeisian caveat that the state has the power, indeed the obligation, to act in order to protect overall health, safety, and general welfare.[90] Or, stated in Armstrongian terms, courts are comfortable with saddling private owners with some burdens that should not fairly and justly be carried by the public.

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84. *See, e.g.*, DANIEL R. MANDELKER, LAND USE LAW §§ 5.79-5.80 (5th ed. 2003); LAND USE PLANNING, *supra* note 78, at 252.

85. *See, e.g.*, Baxter v. City of Preston, 768 P.2d 1340 (Idaho 1989) (reviewing caselaw from other jurisdictions).

86. *See, e.g.*, POWELL, *supra* note 32, at §§ 79C.16[2] (on building permits), 79A.02 (on floodplain regulation).

87. *See, e.g.*, Ruckelshaus v. Monsanto Co., 467 U.S. 986 (1984); Hodel v. Irving, 481 U.S. 704 (1987).

88. *See, e.g.*, Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 333 n.28 (2002) (noting that the "primary argument" of the Institute for Justice in its *amicus* brief is that *Penn Central* should be overruled: "All partial takings by way of land use restriction should be subject to the same prima facie rules for compensation as a physical occupation for a limited period of time").

89. *See* Pa. Coal Co. v. Mahon, 260 U.S. 393, 413 (1922) ("One fact for consideration in determining such limits is the extent of the diminution. When it reaches a certain magnitude, in most if not in all cases there must be an exercise of eminent domain and compensation to sustain the act.").

90. *See id.* at 417 (Brandeis, J., dissenting) ("Every restriction upon the use of property imposed in the exercise of the police power deprives the owner of some right theretofore enjoyed, and is, in that sense, an abridgment by the state of rights in property without making compensation. But restriction imposed to protect the public health, safety or morals from dangers threatened is not a taking.").

While almost certainly safe under *Penn Central*, the strategy of requiring coastal landowners to install a living shoreline—"utiliz[ing] a variety of structural and organic materials, such as wetland plants, submerged aquatic vegetation, oyster reefs, coir fiber logs, sand fill, and stone" as a "more natural bank stabilization technique" than "hardened structures, such as bulkheads, revetment[s], and concrete seawalls"[91]—could pose an additional, though still minimal, takings risk. If government officials establish such a requirement as a condition for securing permission by a property owner to initiate or intensify development, *Nollan/Dolan* analysis would be triggered. There is a strong likelihood that the government would prevail, however, (1) given the many legitimate state interests in protecting the fragile coast, interests that would be furthered either by an outright development ban or by the installation of a living shoreline as a development condition, and (2) so long as the requirement to employ the living shoreline technique bears a roughly proportional relationship to the impact the development would have on the coastal environment.

The final tool listed in Table 2B—transferable development rights (TDR)—has a track record dating back several decades, as a way of protecting not only environmentally sensitive properties but also historically and architecturally significant structures and diminishing farm acreage.[92] Because the essence of TDR is to make the landowner, who is informed that the right to develop Greenacre (the protected parcel) may be shifted to Blueacre (the developable parcel), financially whole, the key takings concern is the "justness" of the compensation, as would be true of any affirmative use of the power of eminent domain. So long as the government restores the fair market value of the development rights lost, the demands of the Takings Clause will be met.

91. *Living Shorelines*, NOAA HABITAT CONSERVATION RESTORATION CTR., http://www.habitat.noaa.gov/restoration/techniques/livingshorelines.html (last visited Mar. 28, 2013). *See also Living Shoreline Planning and Implementation*, NOAA HABITAT CONSERVATION RESTORATION CTR., http://www.habitat.noaa.gov/restoration/techniques/lsimplementation.html (last visited Mar. 28, 2013).

92. *See, e.g.*, MANDELKER, *supra* note 84, at §§ 11.38, 12.16.

TABLE 2C ***SLR ADAPTATION TOOLS*** ***LEVEL 3, MODERATE TAKINGS RISK***
• Special assessments for beach nourishment and other soft-armoring in SLR zones (**PT**, **EX**) • Increased buffers and setbacks for landowners directly affected by SLR (**PT**, **PO**) • Prohibition of government-financed hard-engineered structures (armoring) in designated SLR zones (**PT**) • Massive public land acquisition in SLR areas and areas nearby financed by new taxes and bond issues followed by resale with restrictions to private owners (**ED**) • Land banking in upland areas for future private use (**ED**)
KEY: **PO**=Physical Occupation (*Loretto*), **ED**=Eminent Domain (*Kelo*), **PT**=Partial Taking (*Penn Central*), **EX**=Exaction (*Dolan*)

Some SLR-adaptation strategies pose a more significant, though still moderate, risk, as shown in Table 2C. No fewer than four out of the six varieties of takings (all but a *Lucas*-type total deprivation and a still-theoretical judicial taking) are applicable to one or more of the tools listed in this table. Nevertheless, if government regulators take special care to adhere to the letter and spirit of takings law, they should ultimately avoid negative court rulings.

The first three strategies—special assessments, increased buffers and setbacks, and prohibition of potentially harmful structures—all have regulatory pedigrees stretching back several decades. Judges have consistently rejected landowner claims that the out-of-pocket expenditures involved in special assessments are unfair or unduly burdensome under the Due Process and Equal Protection Clauses.[93] Indeed, near the close of the 2011-2012 Term, the Supreme Court majority in *Armour v. City of Indianapolis*[94] found a rational basis for the city's adoption of a new assessment and payment plan, despite the fact that landowners who had already made a lump sum payment under the prior plan did not receive a refund, while the city forgave any unpaid installments by other landowners who had opted to make partial payments.[95]

93. *See, e.g.*, Fire Dist. No. 1 v. Jenkins, 221 So. 2d 740, 742 (Fla. 1969) ("The basis of apportionment upon the property subject to special assessment in this case is without unjust discrimination among those specially assessed, nor are the assessments burdensome and oppressive in their operation upon the lands affected."); POWELL, *supra* note 32, at § 39.03.

94. 132 S. Ct. 2073 (2012).

95. *Id.* at 2078-90.

Property owners faced with initial or expanded setback and buffer requirements under zoning and other traditional land use regulations have also been frustrated in mounting legal challenges.[96] While it is undisputed that the inability to utilize the entire developable area of a parcel quite often reduces the speculative value of that parcel, in the spirit of *Euclid* and other early zoning cases, state and federal courts have consistently upheld reasonable bulk, area, and height restrictions as well within the state's police power.[97] Given the severe risks posed to coastal regions by SLR, there is every reason to believe that the police power justification will shield new and additional coastal buffers and setbacks as well. One caveat is in order at this point, however. Should government officials seek to couple these setbacks with permission to the public to use the land unavailable for private development, this could trigger a physical occupation takings challenge. There is Supreme Court precedent for the notion that depriving a private property owner of the "essential" right to exclude others (particularly the public) could trigger a successful takings challenge.[98]

Government regulators may opt to prohibit hard-engineered structures on- or offshore such as bulkheads, sea walls, groins, and dikes,[99] as a way of eliminating potential harms to the coastal environment and to neighboring properties and residents: "Armoring can increase flooding and erosion on neighboring property and destroy beaches and wetlands that provide natural flood protections and other ecological services. They also encourage development in vulnerable areas and can increase risks to people and property in the event of catastrophic failure."[100]

Modern building, fire, and electrical codes—creatures of the police power—contain ample examples of devices and improvements favored by landowners that are prohibited owing to serious

96. *See generally* MANDELKER, *supra* note 84, at § 5.71; POWELL, *supra* note 32, at § 79C.05[4][a].

97. *See generally* MANDELKER, *supra* note 84, at § 5.74; POWELL, *supra* note 32, at § 79C.05[2].

98. *See* Ruckelshaus v. Monsanto Co., 467 U.S. 986, 1011 (1984) ("With respect to a trade secret, the right to exclude others is central to the very definition of the property interest. Once the data that constitute a trade secret are disclosed to others, or others are allowed to use those data, the holder of the trade secret has lost his property interest in the data."); Kaiser Aetna v. United States, 444 U.S. 164, 179-80 (1979) (footnote omitted) ("In this case, we hold that the 'right to exclude,' so universally held to be a fundamental element of the property right, falls within this category of interests that the Government cannot take without compensation."). *But see* Andrus v. Allard, 444 U.S. 51, 65-66 (1979) ("But the denial of one traditional property right does not always amount to a taking. At least where an owner possesses a full 'bundle' of property rights, the destruction of one 'strand' of the bundle is not a taking, because the aggregate must be viewed in its entirety.").

99. ADAPTATION TOOL KIT, *supra* note 71, at 36.

100. *Id.* at 37 (footnote omitted).

negative externalities. Government-mandated, often-costly, drainage and stormwater improvements are ubiquitous in American cities and suburbs. Landowners who are prohibited from using one form of protection from SLR would almost certainly be unable to prove a total deprivation taking, which would mean their counsel would be consigned to the government-friendly partial taking framework in which judges could easily deem this SLR tool, like so many others, a "public program adjusting the benefits and burdens of economic life to promote the common good."[101]

The next two tools possibly, though not necessarily, involve moderate takings risks of the eminent domain variety. First, government agencies could orchestrate the purchase of undeveloped coastal properties that are currently in private hands and then resell those parcels to other private owners subject to severe restrictions (setbacks, use and development controls, agreements not to rebuild after coastal storms, and the like). If these potentially massive purchases are funded by new taxes, bond issues, or other traditional forms of public revenue-raising, they should be free from takings problems. Should government officials instead choose to employ the power of eminent domain to achieve the same goal, changes in some states' constitutional and statutory takings rules adopted after the Supreme Court's controversial decision in *Kelo v. City of New London*[102] may pose a problem. After the furor over *Kelo*,[103] many states clarified that it would be inappropriate and illegal to use eminent domain solely for economic development or revenue-enhancing purposes.[104] Therefore, officials in those states who plan to use eminent domain to effect this strategy must clarify that the properties are being taken and resold to further environmental protection purposes, not as a money-making scheme. Some states have added additional procedural and substantive hurdles to the taking of land from one private owner

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101. Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978).

102. 545 U.S. 469 (2005).

103. *See, e.g.*, Wolf, *supra* note 31.

104. *See, e.g.*, KY. REV. STAT. ANN. § 416.675(3) (West 2012):

> No provision in the law of the Commonwealth shall be construed to authorize the condemnation of private property for transfer to a private owner for the purpose of economic development that benefits the general public only indirectly, such as by increasing the tax base, tax revenues, or employment, or by promoting the general economic health of the community.

See also NEB. REV. STAT. § 76-710.04(1)-(2) (2012):

> A condemner may not take property through the use of eminent domain under sections 76-704 to 76-724 if the taking is primarily for an economic development purpose. . . . For purposes of this section, economic development purpose means taking property for subsequent use by a commercial for-profit enterprise or to increase tax revenue, tax base, employment, or general economic conditions.

For a chronological review of post-*Kelo* changes, with details from each state, see POWELL, *supra* note 32, at § 79F.03[3][b][iv].

followed by the transfer to another. In Florida, for example, voters in 2006 approved a constitutional amendment specifying that "[p]rivate property taken by eminent domain . . . may not be conveyed to a natural person or private entity except as provided by general law passed by a three-fifths vote of the membership of each house of the Legislature."[105] This would not be the first nor the last time that politicians, eager to please constituents who were stirred up by alarmist accounts of judicial developments, implemented short-sighted changes that will result in long-range problems.

As with the purchase and resale of undeveloped coastal properties, the next strategy—creating a land bank[106] in upland areas for future use by private owners displaced by SLR—would require very large expenditures during a period of fiscal austerity on the state and local levels. Unfortunately, the depressed real estate market, greatly influenced by extremely high foreclosure rates, makes it an opportune time for governments to buy low today in order to sell high later. If state and local officials can overcome the admittedly significant financial obstacles, the post-*Kelo* eminent domain law changes discussed in the previous paragraph would again pose a moderate threat to this scheme. Indeed, should those officials choose to take rather than purchase title to the upland tracts, another feature of the new breed of eminent domain law would come into effect: a "use it or lose it" requirement that government use the condemned lands for a public purpose, and if not offer the properties to the previous owners at the condemnation price.[107] Even if government officials can find ways to comply with the letter of these new takings statutes and constitutional provisions, the message lawmakers and voters conveyed after *Kelo* was strong displeasure with the notion of the state's taking from Peter and selling to Paul (or Mary). This is reason enough for public officials to think purchase first and eminent domain only as a last resort.

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105. FLA. CONST. art. X, § 6(c).

106. For a good working definition suitable for today's economic realities, see FRANK S. ALEXANDER, CTR. FOR CMTY PROGRESS, LAND BANKS AND LAND BANKING 10 (2011), *available at* http://www.communityprogress.net/filebin/pdf/new_resrcs/LB_Book_2011_F.pdf:

> Land banks are governmental entities that specialize in the conversion of vacant, abandoned and foreclosed properties into productive use. The primary thrust of all land banks and land banking initiatives is to acquire and maintain properties that have been rejected by the open market and left as growing liabilities for neighborhoods and communities. The first task is the acquisition of title to such properties; the second task is the elimination of the liabilities; the third task is the transfer of the properties to new owners in a manner most supportive of local needs and priorities.

107. *See, e.g.*, TEX. CONST. art. III, § 52j; CONN. GEN. STAT. § 8-193(c) (2012).

TABLE 2D ***SLR ADAPTATION TOOLS*** ***LEVEL 4, SERIOUS TAKINGS RISK***
• Development exactions of conservation easements or of fee title interests, and imposition of coastal impact fees on all permitted development in the SLR (**EX**) • Prohibition of new, permanent structures in designated SLR zones, declaring them to be public nuisances (**PT**, **TD**) • Ban on hard- and soft-armoring financed by owners of developed parcels (**PT**, **TD**) • New judicial decisions that impose rolling easement ambulatory boundaries and expand public property interests in the coastal zone (**PT**, **PO**, **JT**) *KEY*: **PO**=Physical Occupation (*Loretto*), **TD**=Total Deprivation (*Lucas*), **PT**=Partial Taking (*Penn Central*), **EX**=Exaction (*Dolan*), **JT**=Judicial Taking (STBR)

The four tools listed in Table 2D pose serious takings risks of one variety or another; therefore, government officials opting for these strategies should proceed with caution and with the understanding that they run the risk of violating both the letter and spirit of the Takings Clause. We can be certain that if government officials make the acquisition of fee title or other property interests a condition for permitting development, the *Nollan-Dolan* requirements will be applicable to this textbook exactions takings case, while the status of non-real-property exactions (including impact fees) is in a state of flux in the wake of the Supreme Court's June, 2013, decision in *Koontz v. St. Johns River Water Mgmt. Dist.*[108] Similarly, should public officials opt for the second tool in Table 2D—banning any new, permanent structures in protected coastal zones—we can be pretty sure that affected landowners will cry "*Lucas*!," especially since this was the very tool that the Supreme Court deemed a *per se* taking.[109]

There is not the same kind of crystal clear, all-fours precedent for the third and fourth tools listed in Table 2D: government prohibitions on the use of private funds by landowners to provide hard- and soft-armoring and new judicial decisions that redefine and impose new ambulatory boundaries or that expand public ownership in the coastal zone at the expense of private land-

108. No. 11-1447 (June 25, 2013).

109. *See* Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1007 (1992) ("In 1988, however, the South Carolina Legislature enacted the Beachfront Management Act, which had the direct effect of barring petitioner from erecting any permanent habitable structures on his [Lucas's] two parcels.").

owners. Nevertheless, it is not difficult to anticipate that judges sympathetic to the plights of affected private owners would be tempted to invoke one or more takings theories to redress this perceived public wrong.

V. A ROADMAP FOR DEFENDING THE DEPLOYMENT OF HIGH-RISK ADAPTATION TOOLS

Before throwing in the towel on the effort to defend the four tools with takings implications that reach the serious level, we need to recall that, contrary to the wishes of Richard Epstein and the private property rights movement he inspired,[110] not all public regulations negatively affecting property values and rights amount to takings. With apologies to William Thackeray and others,[111] there is many a slip between the onerous regulation cup and the unconstitutional takings lip. Table 3 provides a roadmap that governments can follow in their efforts to avoid negative takings rulings for those tools most at risk. Once again, it is important to emphasize that the measures recommended here are offered not as legal technicalities that will provide a safe haven for bad regulatory behavior, but rather as guideposts designed to achieve the delicate balance between private rights and public protection that is embodied in the *Armstrong* principle.

110. *See, e.g.*, RICHARD A. EPSTEIN, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN (1985). *See also* Douglas T. Kendall & Charles P. Lord, *The Takings Project: A Critical Analysis and Assessment of the Progress So Far*, 25 B.C. ENVTL. AFF. L. REV. 509, 526 (1998) ("Epstein's call has also inspired the constitutional litigation strategy of the current property rights movement, which increasingly has turned its attention to the federal judiciary as the means by which it will accomplish its agenda."). For challenges to the historical underpinnings of Professor Epstein's more recent scholarship, see William Michael Treanor, *Supreme Neglect of Text and History*, 107 MICH. L. REV. 1059 (2009) (reviewing RICHARD A. EPSTEIN, SUPREME NEGLECT: HOW TO REVIVE CONSTITUTIONAL PROTECTION FOR PRIVATE PROPERTY (2008)); Michael Allan Wolf, *Looking Backward: Richard Epstein Ponders the "Progressive" Peril*, 105 MICH. L. REV. 1233 (2007) (reviewing RICHARD A. EPSTEIN, HOW PROGESSIVES REWROTE THE CONSTITUTION (2006)).

111. *See, e.g.*, WILLIAM MAKEPEACE THACKERAY, II THE HISTORY OF PENDENNIS 745 (1858) (" 'There's many a slip between the cup and the lip! Who knows what may happen.' ").

TABLE 3
SLR ADAPTATION TOOLS
ADDRESSING SERIOUS TAKINGS RISKS

- Development exactions of conservation easements or of fee title interests, and imposition of coastal impact fees on all permitted development in the SLR (**EX**)
  Articulating essential nexus + rough proportionality
- Prohibition of new, permanent structures in designated SLR zones, declaring them to be public nuisances (**PT**, **TD**)
  Identifying allowable uses or identifying background principles attributes of new regulation
- Ban on hard- and soft-armoring financed by owners of developed parcels (**PT**, **TD**)
  Clarifying that the Fifth Amendment applies to government takings not to takings by the forces of nature; identifying allowable uses or establishing background principles attributes of new regulation
- New judicial decisions that impose rolling easement ambulatory boundaries or that expand public property interests in the coastal zone (**PT**,**PO**, **JT**)
  Marshaling relevant precedent(s)

KEY:
PO=Physical Occupation (*Loretto*), **TD**=Total Deprivation (*Lucas*),
PT=Partial Taking (*Penn Central*), **EX**=Exaction (*Dolan*),
JT=Judicial Taking (STBR)

States and local governments have long possessed the power to place limits on development, in the coastal zone or any other location. When property owners seek to avoid those limits by, for example, securing a zoning amendment or variance, public officials can respond with a "yes," a "no," or a "yes, but" (otherwise known as conditional permitting). Government officials who exact from private landowners seeking development permission the donation of conservation easements either to the public or to a land trust need to be prepared to pass the *Nollan* (essential nexus) and *Dolan* (rough proportionality) tests. To satisfy the first, they will merely have to demonstrate that the purpose of the exaction condition (such as the protection of the fragile and shifting coastal environment) matches what would be the justification for an outright prohibition of the proposed development. To meet the second, slightly more demanding, test, they will have to show that the nature and extent of the real property interest being exacted is roughly proportional to the impact that the proposed development would have on the coastal environment. Conservation easements that place limits on developable area, height, nature and intensity of use, non-permeable surfaces created, proximity to

the mean high water mark or shoreline vegetation, and the like are much less problematic than the public access easements that troubled the Court in *Dolan*. Still, government regulators must be careful to calibrate each individual exaction so that a skeptical judge does not conclude that the public would reap an undeserved windfall at the landowner's expense.

Before the *Koontz* decision, the imposition of coastal impact fees for all permitted development located in the SLR would have been situated comfortably at the moderate risk level. However, if state and lower federal courts ambitiously apply the Supreme Court's ruling such fees could prove problematic for coastal regulators.

States and localities throughout the nation have for decades imposed impact fees on developers of residential and commercial property in order to offset the costs of additional and enhanced public amenities such as roads, schools, water and sewer systems, and recreational facilities attributable to new development.[112] Several courts have refused to wield the Takings Clause in order to invalidate these programs, despite what can be significant impacts on property owners and developers.[113]

Although the Supreme Court had indicated in repeated dicta that the *Nollan-Dolan* tests would apply only to exactions of real property interests such as fees or easements rather than money or other forms of personal property,[114] and while several (though not all) state and lower federal courts ruled in a similar fashion when considering the question directly,[115] the *Koontz* Court shifted

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112. *See, e.g.*, MANDELKER, *supra* note 84, at §§ 9.20-9.22; POWELL, *supra* note 32, at § 79D.04[4].

113. *See, e.g.*, St. Clair Cnty. Home Builders Ass'n v. City of Pell City, 61 So. 3d 992 (Ala. 2010); Home Builders Ass'n of Dayton v. City of Beavercreek, 729 N.E.2d 349 (Ohio 2000); McCarthy v. City of Leawood, 894 P.2d 836, 845 (Kan. 1995).

114. *See* Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 547 (2005) ("*Nollan* and *Dolan* both involved dedications of property so onerous that, outside the exactions context, they would be deemed *per se* physical takings."); City of Monterey v. Del Monte Dunes at Monterey, Ltd., 526 U.S. 687, 702 (1999) ("[W]e have not extended the rough-proportionality test of Dolan beyond the special context of exactions—land-use decisions conditioning approval of development on the dedication of property to public use.").

115. *See, e.g.*, St. Johns River Water Mgmt. Dist. v. Koontz, 77 So. 3d 1220, 1229-30 (Fla. 2011), *rev'd*, 2013 U.S. LEXIS 4918):

> One line of cases holds that the *Nollan/Dolan* standard applies solely to exactions cases involving land-use dedications. *See, e.g., McClung v. City of Sumner*, 548 F.3d 1219, 1228 (9th Cir. 2008) (distinguishing monetary conditions from conditions on the land); *Clajon Prod. Corp. v. Petera*, 70 F.3d 1566, 1578 (10th Cir. 1995); *Sea Cabins on the Ocean IV Homeowners Ass'n v. City of N. Myrtle Beach*, 345 S.C. 418, 548 S.E.2d 595, 603 n.5 (2001) (holding that *Del Monte Dunes* clarified that *Nollan* and *Dolan* only apply to physical conditions imposed upon land).
>
> The other line of cases holds that the *Nollan/Dolan* test extends beyond the context of the imposition of real property conditions on real property. For example, the California Supreme Court has held that non-real property conditions can constitute a taking where the condition is imposed on a discretionary, individualized

course. Writing for a five-member majority, Justice Anthony Kennedy explained that "so-called 'monetary exactions' must satisfy the nexus and rough proportionality requirements of *Nollan* and *Dolan,*"[116] thereby overruling the Supreme Court of Florida, which had concluded that the "doctrine of exactions" does not apply "to an alleged exaction that does not involve the dedication of an interest in or over real property" and to a situation in which "an exaction does not occur and no permit is issued by the regulatory entity."[117]

The ultimate impact of *Koontz* on impact fees and exactions of money will depend on the willingness of government regulators to risk judicial challenges by continuing to employ these tools and on the outcomes of subsequent judicial decisions. Even though state and local government officials can find some solace in Justice Kennedy's assurance that the Court's ruling "does not affect the ability of governments to impose property taxes, user fees, and similar laws and regulations that may impose financial burdens on property owners,"[118] not all fees will receive the same judicial indulgence:

> Because the government need only provide a permit applicant with one alternative that satisfies the nexus and rough proportionality standards, a permitting authority wishing to exact an easement could simply give the owner a choice of either surrendering an easement or making a payment equal to the easement's value. Such so-called "in lieu of" fees are utterly commonplace, and they are functionally equivalent to other types of land use exactions.[119]

Justice Elena Kagan, writing for the four dissenters, painted an even bleaker picture:

> The majority turns a broad array of local land-use regulations into federal constitutional questions. It deprives state and local governments of the flexibility they need to enhance their communities—to ensure environmentally sound

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basis. *See Ehrlich v. City of Culver City*, 12 Cal. 4th 854, 50 Cal. Rptr. 2d 242, 911 P.2d 429, 444 (1996). However, in *Town of Flower Mound v. Stafford Estates Ltd. Partnership*, 135 S.W.3d 620, 640-41 (Tex. 2004), the Texas Supreme Court expanded application of the test further, holding that *Nollan* and *Dolan* can apply to certain non-real property conditions that arise from generally applicable regulations.

116. *Koontz*, No. 11-1447, slip op. at 15.

117. *Koontz*, 77 So. 3d, at 1222.

118. *Koontz*, No. 11-1447, slip op. at 18.

119. *Id*. at 15 (citing Ronald H. Rosenberg, *The Changing Culture of American Land Use Regulation: Paying for Growth with Impact Fees*, 59 SMU L. REV. 177, 202-203 (2006)).

> and economically productive development. It places courts smack in the middle of the most everyday local government activity.[120]

Until we have more judicial gloss on the *Koontz* ruling, government officials who choose to exact coastal impact fees should play it safe and make sure that they can satisfy the *Nollan* essential nexus and the *Dolan* rough proportionality requirements.[121]

Even a total prohibition of permanent structures could survive judicial scrutiny, despite the result in *Lucas* after remand to the state court.[122] First, drawing inspiration from the justices not part of the *Lucas* majority who expressed doubts concerning the finding that a total deprivation had in fact occurred,[123] government counsel could demonstrate that more than token value remained on the targeted parcels even after the challenged regulation went into place. Much like what happened in the *First English* case on remand, in which the California Court of Appeal found that the floodplain ordinance did not deprive the owner of

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120. *Id*. at 18 (Kagan, J., dissenting).

121. The *Koontz* Court also ruled that "[t]he principles that undergird our decisions in *Nollan* and *Dolan* do not change depending on whether the government *approves* a permit on the condition that the applicant turn over property or *denies* a permit because the applicant refuses to do so." *Id.* at 8. *See also* Mark Fenster, *Failed Exactions*, 36 VT. L. REV. 623, 644 (2012) (footnotes omitted):

> Wary government agencies might simply deny permits and face lower scrutiny under the *Penn Central* test rather than discuss mitigation measures as conditions for approval and face heightened scrutiny under *Nollan* and *Dolan*. By inhibiting a government agency's willingness to bargain without inhibiting its authority to deny a property owner's application to develop, applying *Nollan* and *Dolan* to failed exactions would eliminate a valuable right from property owners—or at least an important opportunity to reach a preferred end—while simultaneously removing a key regulatory tool and process for government agencies. This represents the worst possible result: government agencies cannot negotiate adequate, workable mitigation measures with property owners; property owners are more likely to be denied discretionary approvals from wary government agencies; and the entire regulatory process becomes more rigid and mechanical, resulting in a larger proportion of denials and fewer negotiated solutions to pressing environmental and planning conflicts.

122. *See* Lucas v. S.C. Coastal Council, 424 S.E.2d 484, 486 (S.C. 1992) ("Coastal Council has not persuaded us that any common law basis exists by which it could restrain Lucas's desired use of his land; nor has our research uncovered any such common law principle.").

123. *See Lucas*, 505 U.S. at 1043-44 (Blackmun, J., dissenting) (footnote omitted) ("The Court creates its new takings jurisprudence based on the trial court's finding that the property had lost all economic value. This finding is almost certainly erroneous."); *id*. at 1062 (Stevens, J., dissenting) ("[O]n the present record it is entirely possible that petitioner has suffered no injury in fact even if the state statute was unconstitutional when he filed this lawsuit."); *id*. at 1076 (statement of Souter, J.) (citations omitted) ("The petition for review was granted on the assumption that the State by regulation had deprived the owner of his entire economic interest in the subject property. . . . It is apparent now that in light of our prior cases, the trial court's conclusion is highly questionable.").

all use (as was alleged in its complaint),[124] government counsel faced with a total deprivation claim need to take the time and effort to explain that valuable uses remain after building prohibitions are put in place in an SLR zone. Once facts are marshaled that demonstrate that a partial taking has occurred, the governing precedent will shift to the much more public-sector-friendly *Penn Central*.

Should government counsel be unable to find any meaningful use or value once the prohibition goes into effect, there is still a chance, though quite slight, that the total deprivation claim will fail. The government will have to demonstrate to the satisfaction of the court that, under background principles of state public nuisance law, the construction of permanent structures in a fragile and ever-shifting shoreline (such as a barrier island that has been devastated repeatedly by tropical storms and hurricanes) would pose serious harms to the public at large (and not just to one or two neighboring properties). The fact that the framers of the Constitution and the Fifth Amendment were unaware of environmental hazards such as fecal coliforms or may have lived in a pre-SLR era will not prove fatal to the government's case, for, as Justice Scalia conceded in the *Lucas* opinion itself, "The fact that a particular use has long been engaged in by similarly situated owners ordinarily imports a lack of any common-law prohibition (though *changed circumstances or new knowledge* may make what was previously permissible no longer so[)]."[125] Nevertheless, winning this argument will be difficult, as it should be if the landowner's use and value are truly reduced to zero or to a very negligible amount.

The takings analysis for the next tool—prohibiting landowners from paying for and using hard- and soft-armoring in order to salvage dry, developable land—might at first glance appear to

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124. *See* First English Evangelical Lutheran Church v. County of L.A., 258 Cal. Rptr. 893, 902 (Cal. Ct. App. 1989):

> True, the complaint *alleges* interim ordinance No. 11,855 denies First English "all use" of Lutherglen. But as will be seen shortly, the ordinance *does not* deny First English "all use" of this property. It does not even prevent occupancy and use of any structures which may have survived the flood. It only prohibits the reconstruction of structures which were demolished or damaged by the raging waters and the construction of new structures. In no sense does it prohibit uses of this campground property which can be carried out without the reconstruction of demolished buildings or the erection of new ones. First English's complaint stated solely a facial challenge to the interim ordinance and *as far as this ordinance itself was concerned*, many camping activities could continue on this property. Meals could be cooked, games played, lessons given, tents pitched.

125. *Lucas*, 505 U.S. at 1031 (emphasis added). Background principles are not limited to public or private nuisance, of course. Some courts have placed public trust in that category. *See, e.g.*, Esplanade Props., LLC v. City of Seattle, 307 F.3d 978 (9th Cir. 2002); McQueen v. S.C. Coastal Council, 580 S.E.2d 116 (S.C. 2003).

be identical to that used for partial (*Penn Central*) or total (*Lucas*) deprivations occasioned by the prohibition of permanent structures. There are, however, three key differences. First, a property owner who can demonstrate that without bulkheads, seawalls, revetments, dikes, beach nourishment or other means his or her land will be lost, and that he or she is prepared to pick up what could be a very substantial bill to prevent that (perhaps) total loss, will still have to demonstrate that government is the cause of the Fifth Amendment taking. It is important to recall that the *Armstrong* principle speaks about "[*g*]*overnment*," not rising seas or coastal storms, "forcing some people to bear *public* burdens."[126] Even Justice Scalia and his colleagues in the *Stop the Beach Renourishment* plurality, who highlighted the passive voice used in the Takings Clause,[127] speak of "the branch *of government* effecting the expropriation."[128]

The second difference is that landowners in this situation, unlike with a *Lucas*-like building prohibition, would be resting their cases on the violation of some kind of "fundamental right to maintain structures despite the effects of the forces of nature," which is a stick not found in any of the familiar bundles of property rights.[129] Indeed, the existence of government restrictions on rebuilding after structures are significantly damaged by natural hazards such as coastal flooding and extremely high winds,[130] common-law rules for attaching liability for diffused surface water,[131] and state and local requirements concerning the composition of building and foundational materials indicate strongly that placing even significant burdens on any such proffered right would

126. Armstrong v. United States, 364 U.S. 40, 49 (1960) (emphasis added).

127. STBR v. Fla. Dep't of Envtl. Prot., 130 S. Ct. 2592, 2601 (2010).

128. *Id*. (emphasis added).

129. For a copious compendium of the rights contained in the mythical bundle, see Craig Anthony (Tony) Arnold, *The Reconstruction of Property: Property as a Web of Interests*, 26 HARV. ENVTL. L. REV. 281, 285 n.20 (2002):

> *See* [JESSE DUKEMENIER & JAMES KRIER, PROPERTY (3d ed. 1993)], at 86 (the rights to possess, use, exclude, and transfer); [EDWARD H. RABIN ET AL., FUNDAMENTALS OF MODERN PROPERTY LAW (4th ed. 2000)], at 1 (the rights to exclude, possess or occupy, dispose of or alienate, manage, and receive income); [JOHN G. SPRANKLING, UNDERSTANDING PROPERTY LAW (2000)], at 5-6 (the rights to exclude, transfer, possess, and use); Richard A. Epstein, *Property and Necessity*, 13 HARV. J.L. & PUB. POL'Y 2, 3 (1990) (the rights to possess, use, and dispose of); A. M. Honoré, *Ownership*, *in* OXFORD ESSAYS ON JURISPRUDENCE 107, 113-24 (A. G. Guest ed., 1961) (the rights to possess, use, manage, receive income and capital, and maintain security; the incidents of transmissibility and absence of term; the prohibition of harmful use; and the liability to execution); Roscoe Pound, *The Law of Property and Recent Juristic Thought*, 25 ABA J. 993, 997 (1939) (the rights to possess, exclude, dispose of, use, enjoy the fruits and profits, and destroy or injure).

130. *See, e.g.*, Palazzola v. City of Gulfport, 52 So. 2d 611 (Miss. 1951). *See also* MANDELKER, *supra* note 84, at § 5.80.

131. *See, e.g.*, POWELL, *supra* note 32, at § 65.12[2].

be much less likely to result in a favorable takings ruling than cases involving the much more recognizable and respected (though certainly not absolute) rights to exclude and alienate.

The third way in which a takings challenge to the prohibition of armoring to protect existing structures is weaker than a ban on new, permanent structures is that, even if the court should somehow find that that the government is the cause of a total deprivation, the public and private nuisance exceptions claims will be easier for government counsel to mount. The negative environmental externalities attributable to seawalls, bulkheads, revetments, dikes, and the like are serious and diverse, not just to adjoining properties but to the coastal ecology as a whole. These serious impacts include exacerbated erosion, prevention of landward migration of wetlands, prevention of submerged aquatic vegetation, and trapped marine life.[132] Beach nourishment, too, is far from benign, despite its obvious aesthetic benefits:

> Beach nourishment affects the environment of both the beach being filled and the nearby seafloor "borrow areas" that are dredged to provide the sand. Adding large quantities of sand to a beach is potentially disruptive to turtles and birds that nest on dunes and to the burrowing species that inhabit the beach, though less disruptive in the long term than replacing the beach and dunes with a hard structure. The impact on the borrow areas is a greater concern: the highest quality sand for nourishment is often contained in a variety of shoals which are essential habitat for shellfish and related organisms. . . . As technology improves to recover smaller, thinner deposits of sand offshore, a greater area of ocean floor must be disrupted to provide a given volume of sand. Moreover, as sea level rises, the required volume is likely to increase, further expanding the disruption to the ocean floor.[133]

Armed with these facts, government counsel should be prepared to identify and defend the nuisance-preventing attributes of regulations banning armoring to protect one or a few improved coastal parcels.

The final tool in Table 2D is a state court decision that imposes ambulatory boundaries on parcels in coastal regions that have been ravaged by increasingly violent storms and subject to the

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132. *See, e.g.*, JAMES G. TITUS ET AL., U.S. CLIMATE CHANGE SCI. PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: *A FOCUS ON THE MID-ATLANTIC REGION* 99 (2009).

133. *Id.* at 98, 100 (citations omitted).

erosive effects of rising seas. While "rolling easement" is fast becoming an essential term in the SLR-adaptation lexicon, it is important to note that the phrase, according to one authoritative source, encompasses

> a broad collection of legal options, many of which do not involve easements. Usually, a rolling easement is either (a) a regulation that prohibits shore protection or (b) a property right to ensure that wetlands, beaches, barrier islands, or access along the shore moves [sic] inland with the natural retreat of the shore. Although the regulatory approach is the more common way to prevent shore protection, the non-regulatory approach may sometimes work better. Private land trusts, government agencies, and (for some approaches) even private citizens can buy (or secure donations of) rolling easements from property owners.[134]

On the one hand, the voluntary donation of fee title or servitudes such as easements by private owners to public agencies or land trusts involves no takings risks at all. On the other hand, exactions of these types of property interests by government officials in exchange for development permission would involve a serious takings risk, as discussed previously.[135]

The most problematic form of rolling easement, at least from the takings perspective, would be a judicial decision recognizing or establishing ambulatory boundaries at the expense of private coastal landowners, not just by the traditional, gradual process known as erosion,[136] but, more controversially, in circumstances involving sudden, avulsive events such as tropical storms and hurricanes.[137] Should a state high court allow a public beachfront

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134. TITUS, *supra* note 72, at 6. *See also id*. at 5-6:

> [A] rolling easement is a legally enforceable expectation that the shore or human access along the shore can migrate inland instead of being squeezed between an advancing sea and a fixed property line or physical structure. The "rolling easement holder" could be the government agency whose regulations prohibit shore protection, or the person, land trust, or government agency who obtains the property rights embodied in a rolling easement.

135. *See supra* notes 114-121 and accompanying text.

136. *See, e.g.*, POWELL, *supra* note 33, at § 66.01 ("The term 'erosion' denotes the process by which land is gradually covered by water.").

137. *See, e.g.*, STBR v. Fla. Dep't of Envtl. Prot., 130 S. Ct. 2592, 2598-99 (2010) (emphasis added) (citations omitted):

> When . . . there is a "sudden or perceptible loss of or addition to land by the action of the water or a sudden change in the bed of a lake or the course of a stream," the change is called an avulsion.
>
> In Florida, as at common law, the littoral owner automatically takes title to dry land added to his property by accretion; but formerly submerged land that has become dry land by avulsion continues to belong to the owner of the seabed (usually the State). Thus, regardless of whether an avulsive event exposes land previ-

easement to "roll" landward, in some cases even beyond the location of private buildings and other improvements, the private landowner would almost certainly bring a takings challenge based on the public's physical occupation of the land.[138] Even a partial takings claim would seem promising, in light of the fact that the public would gain access to the parcel.[139] However, the controversial concept that judicial branch activity is covered by the Takings Clause is still one vote shy of a Supreme Court majority. Should that fifth vote materialize in a future high court case, there are strategies that government counsel could pursue that might bring success.

Initially, it is important to focus carefully on Justice Scalia's formulation for the *Stop the Beach Renourishment* plurality: "If a legislature *or a court* declares that what was once an established right of private property no longer exists, it has taken that property, no less than if the State had physically appropriated it or destroyed its value by regulation."[140] The plaintiff would have the heavy burden of demonstrating that all three elements were present: (1) an established property right, (2) the elimination of

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ously submerged *or submerges land previously exposed, the boundary between littoral property and sovereign land does not change*; it remains (ordinarily) what was the mean high-water line before the event.

138. *See, e.g.*, Severance v. Patterson, 566 F.3d 490, 492-93 (5th Cir. 2009), *certified questions answered in* 370 S.W.3d 705 (Tex. 2012):

> Severance contends that because the beach boundary of her property migrated landward after Hurricane Rita, taking in land not previously encumbered by a public access easement, the enforcement of the easement on her beachfront properties constitutes a seizure in violation of the Fourth Amendment and a taking without just compensation in violation of the Fifth Amendment. The district court dismissed the action, ruling that Severance failed to state a claim for relief because Texas law recognizes a "rolling" beachfront easement; this type of easement predated Severance's purchase of her beachfront properties; the State may enforce the easement as natural changes occur in its location; and no constitutional violation results from an uncompensated change in the easement's location on Severance's property.

The Supreme Court of Texas provided this clarification of state law in support of private landowners' claims:

> We hold that Texas does not recognize a "rolling" easement. Easements for public use of private dry beach property change size and shape along with the gradual and imperceptible erosion or accretion in the coastal landscape. But, avulsive events such as storms and hurricanes that drastically alter pre-existing littoral boundaries do not have the effect of allowing a public use easement to migrate onto previously unencumbered property. This holding shall not be applied to use the avulsion doctrine to upset the long-standing boundary between public and private ownership at the mean high tide line. The division between public and private ownership remains at the mean high tide line in the wake of naturally occurring changes, and even when boundaries seem to change suddenly.

Severance, 370 U.S. at 724-25 (footnote omitted).

139. *See* Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978) ("A 'taking' may more readily be found when the interference with property can be characterized as a physical invasion by government. . . .").

140. STBR, 130 S. Ct. at 2602.

that right by a court, and (3) the equivalence of that elimination with physical appropriation or destruction of value.

Regarding the first two elements, the plurality opinion conceded that a judicial "decision that clarifies property entitlements (or the lack thereof) that were previously unclear might be difficult to predict, but it *does not eliminate established property rights*."[141] Therefore, if the state of the law concerning littoral rights, public trust, accretion, reliction, erosion, avulsion, public access easements, and related matters should be in any substantial way unsettled, as it frequently is in coastal states,[142] the court would be clarifying, not taking. Government counsel should therefore marshal relevant precedents to demonstrate that the law, much like the coastal ecology itself, is in flux.

The existence of state precedent is what proved fatal to the plaintiff landowners' claims in *Stop the Beach Renourishment* itself, for as Justice Scalia noted in the opinion for the Court:

> Under petitioner's theory, because no prior Florida decision had said that the State's filling of submerged tidal lands could have the effect of depriving a littoral owner of contact with the water and denying him future accretions, the Florida Supreme Court's judgment in the present case abolished those two easements to which littoral property owners had been entitled. This puts the burden on the wrong party.

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141. *Id.* at 2610 (emphasis added).

142. *See, e.g.*, Feinman v. State, 717 S.W.2d 106, 111 (Tex. App.1986) ("[W]e conclude that the vegetation line is not stationary and that a rolling easement is implicit in the [Texas Open Beaches] Act."), *criticized in Severance*, 370 S.W.3d at 728 n.23 (citation omitted) ("*Feinman* does not consider the legal implications of the difference between avulsive and gradual changes to the coast, concluding the distinction to be immaterial to its decision because it apparently viewed the distinction not relevant to the question of an easement, only title to property. We disagree with the latter conclusion.").

See also Michael C. Blumm, *The Public Trust Doctrine and Private Property: The Accommodation Principle*, 27 PACE ENVTL. L. REV. 649, 665 (2010) ("The frontiers of the public trust doctrine no doubt lie in such upland resources with great public value. This amphibious evolution is only a continuation of the doctrine's historical advance from tidal to inland navigable waters."); Gregory S. Alexander, *The Social-Obligation Norm in American Property Law*, 94 CORNELL L. REV. 745, 802 (2009) (footnotes omitted):

> Historically, public access to beaches was quite limited. Basically, the public was permitted to access only the land between the mean high and low tide lines, i.e., wet-sand areas. The purposes for which the public was permitted to access this land were also limited—only fishing. In recent years some courts have added recreation as one of the purposes for which the public is entitled to use the wet-sand portion of a beach. The more striking expansion of beach access via the public trust doctrine, custom, and other doctrinal headings, however, has been the extension to privately-owned dry-sand portions of the beach. The New Jersey Supreme Court has taken the lead in this expansion of public beach access via the public trust doctrine. In *Matthews v. Bay Head Improvement Ass'n*, [471 A.2d 355 (N.J. 1984),] the court held a private nonprofit entity which owned or leased most of the beachfront lots in Bay Head did not have an unlimited right to exclude members of the public from the dry-sand portion of its beach.

> There is no taking unless petitioner can show that, before the Florida Supreme Court's decision, littoral-property owners had rights to future accretions and contact with the water superior to the State's right to fill in its submerged land. Though some may think the question close, in our view the showing cannot be made.[143]

Moreover, the eight participating justices did not feel bound to rely only on those precedents cited by the Supreme Court of Florida when they dismissed the petitioner's claims. The state high court decision

> did not abolish the Members' right to future accretions, but merely held that the right was not implicated by the beach-restoration project, because the doctrine of avulsion applied. The Florida Supreme Court's opinion describes beach restoration as the reclamation by the State of the public's land, just as *Martin* [*v. Busch*, 93 Fla. 535, 112 So. 274 (1927)] had described the lake drainage in that case. Although the opinion does not cite *Martin* and is not always clear on this point, it suffices that its characterization of the littoral right to accretion is consistent with *Martin* and the other relevant principles of Florida law we have discussed.[144]

The confusing state of the common law provides an important advantage for attorneys fending off a judicial takings claim.

In the unlikely event that the state high court has acted contrary to established precedent in a blatant attempt to make public what was once clearly private, the plaintiff would still need to prove the third element—that the court's decision occasioned the functional equivalence of a physical appropriation or total deprivation taking. Yet, the facts on the ground (or, rather, under the water) belie the assertion that the government, and not the forces of nature, is the primary or major cause of any physical appropriation in a rolling-easement avulsion situation. In addition, unless the Court should employ conceptual severance to segregate the public access easement from the parcel as a whole,[145]

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143. *STBR*, 130 S. Ct., at 2610-11.

144. *Id.* at 2612 (citation omitted).

145. *See, e.g.*, Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 331 (2002) (citation omitted):

> Petitioners seek to bring this case under the rule announced in *Lucas* by arguing that we can effectively sever a 32-month segment from the remainder of each landowner's fee simple estate, and then ask whether that segment has been taken in its entirety by the moratoria. Of course, defining the property interest taken in terms of the very regulation being challenged is circular. With property so divided,

which would itself be a departure from precedent,[146] the odds of a total deprivation, as noted previously,[147] would run in the highly unpromising slim-to-none range.

VI. ARMSTRONGING, NOT LEGAL STRONG-ARMING

There are good reasons why the Takings Clause should not determine the validity of rolling easements specifically and SLR adaptation generally. Returning to the text and sentiments of *Armstrong*, we are instructed that the Clause's dozen words were "designed to bar Government from forcing" the few to bear "public burdens."[148] They are not a surefire warranty of landowner protection against all hazards. Neither should they serve as a threat to responsible citizens and their public servants who, relying on the best science available, are finally taking steps to adjust to the new reality of mega-storms, melting glaciers, increased greenhouse gas emissions, and warming oceans.

As many of the victims of Hurricane Sandy have recently learned, along with the aesthetic, recreational, and economic benefits of living close to the sea come heightened risks of destruction to persons and property. For those who are un- or underinsured, or for those for whom government assistance proves inadequate, there are no convenient defendants with deep pockets who are subject to the jurisdiction of the courts. Polar ice caps are not subject to service of process; lawsuits blaming companies that produce and consume coal and other fossil fuels for the damages wrought by powerful storms could not survive summary judgment. How regrettable it would be if, looking back a decade or two from now, the legal landscape were littered with takings lawsuits threatened and brought against state and local governments who chose to act while politicians continued to engage in demagoguery, and the waters continued to rise.

> every delay would become a total ban; the moratorium and the normal permit process alike would constitute categorical takings. Petitioners' "conceptual severance" argument is unavailing because it ignores *Penn Central's* admonition that in regulatory takings cases we must focus on "the parcel as a whole." We have consistently rejected such an approach to the "denominator" question.

The term "conceptual severance" derives from Margaret Jane Radin, *The Liberal Conception of Property: Cross Currents in the Jurisprudence of Takings*, 88 COLUM. L. REV. 1667, 1674-80 (1988).

146. *See* Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 130-31 (1978) ("In deciding whether a particular governmental action has effected a taking, this Court focuses rather both on the character of the action and on the nature and extent of the interference with rights in the parcel as a whole—here, the city tax block designated as the 'landmark site.' "). For subsequent Court cases invoking this language, see Keystone Bituminous Coal Ass'n v. DeBenedictis, 480 U.S. 470, 497 (1987); *Tahoe-Sierra*, 535 U.S. at 327.

147. *See supra* notes 123-124 and accompanying notes.

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