

Managed Retreat and the Life Estate: A Practical Path Forward for Coastal Communities



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About the Author



Sam Gross is a third-year student at William & Mary Law School. A native of Toledo, Ohio, he graduated from the University of Michigan in 2013 with a B.A. in Philosophy and taught high school social studies for several years prior to law school. Following graduation he plans to practice corporate litigation in Wilmington, Delaware. Sam completed an Independent Writing course with Professor Elizabeth Andrews during the fall 2019 semester.

About the Virginia Coastal Policy Center

The Virginia Coastal Policy Center (VCPC) at the College of William & Mary Law School provides science-based legal and policy analysis of ecological issues affecting the state's coastal resources, by offering education and advice to a host of Virginia's decision-makers, from government officials and legal scholars to non-profit and business leaders.

With two nationally prominent science partners – the Virginia Institute of Marine Science and Virginia Sea Grant – VCPC works with scientists, local and state political figures, community leaders, the military, and others to integrate the latest science with legal and policy analysis to solve coastal resource management issues. VCPC activities are inherently interdisciplinary, drawing on scientific, economic, public policy, sociological, and other expertise from within the University and across the country. With access to internationally recognized scientists at VIMS, to Sea Grant's national network of legal and science scholars, and to elected and appointed officials across the nation, VCPC engages in a host of information exchanges and collaborative partnerships.

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VCPC grounds its pedagogical goals in the law school's philosophy of the citizen lawyer. VCPC students' highly diverse interactions beyond the borders of the legal community provide the framework for their efforts in solving the complex coastal resource management issues that currently face Virginia and the nation.

I. INTRODUCTION

Climate change will permanently alter the coastal landscape of the United States in fundamental ways. From destructive flooding to eroding shorelines and crumbling infrastructure, coastal communities are increasingly being forced to confront the social, economic, and environmental upheavals caused by a changing climate. Yet as coastal municipalities around the United States slowly struggle with difficult decisions about their future, they must also face the constraints of the present. From the outset, coastal officials face electorates unwilling to make the direct sacrifices needed to obtain long-term benefits. Still, even where community consensus exists, inadequate budgets and inevitable legal challenges impede broad community transformations and chill the appetite of local leaders to take bold steps. These thorny considerations frequently force civic and governmental leaders to settle for less than optimal climate resiliency plans; plans that inadequately address the impending impact of climate change on the country's coastal communities.

This paper focuses on a frequently discussed but rarely implemented solution to sea level rise: “managed retreat” away from at-risk and overdeveloped coastal areas. The paper begins by examining the threat posed by sea level rise through the lens of two contrasting municipalities: Miami, Florida and Nags Head, North Carolina. It then outlines the concept of managed retreat as well as the controversies surrounding this approach. Specifically, it examines the widespread voter hostility to condemnation efforts, the deterrent effect of inevitable legal challenges, and the financial burden of such efforts on cash-strapped municipalities.

After analyzing these hurdles, the paper assesses government buyback programs as an alternative method of procuring at-risk coastal properties to facilitate managed retreat. After concluding that buyback programs are an insufficient substitute to eminent domain, the paper ultimately proposes that local authorities use life estates as a tool to mitigate the obstacles standing in the way of local governments doing what is best for their communities.

II. CURRENT CONDITIONS

A. Miami, Florida

The city of Miami, Florida is the economic and intellectual center of southern Florida. The city boasts a vibrant cultural life and operates the busiest cruise port in the entire world.¹ It is also one of the largest metropolitan areas in the United States with approximately 2.75 million people residing in Miami-Dade County.² Miami's appeal stems, in part, from its convenient proximity to

¹ Taylor Dolvin, *PortMiami is Remaking the City's Skyline for \$1.5 Billion, One Cruise Terminal at a Time*, MIAMI HERALD (Nov. 4, 2019), <https://www.miamiherald.com/news/business/tourism-cruises/article236564698.html>.

² U.S. CENSUS BUREAU, QUICK FACTS: MIAMI-DADE COUNTY, FLORIDA, <https://www.census.gov/quickfacts/fact/table/miamidadecountyflorida,FL/PST045218>.

popular bodies of water.³ However, while the city's lowland topography is conducive for recreational activities, it also makes Miami especially vulnerable to rising global sea levels.⁴ The effects of this rise are being felt even now. Since 1994, Miami sea levels have risen by four inches.⁵ These rising seas are already impacting low-lying Miami neighborhoods in the form of higher storm surges and a 320 percent rise in nuisance flooding over the past few decades.⁶

Just as important, though perhaps less visible, are the effects of this rise on Miami's infrastructure, most notably the city's residential and commercial septic systems. Septic tanks, which treat wastewater for properties not connected to the city's sewer system, must be located above the groundwater table and remain unsaturated to work effectively.⁷ However, rising sea levels also cause an elevation in long-term groundwater levels in coastal areas, which then prevents septic systems from properly functioning.⁸

Already, almost one thousand properties in the wider Miami-Dade County area have experienced septic system failures as a result of current sea level rise, and this number is expected to grow dramatically in coming years.⁹ Experts anticipate that the widespread malfunctioning of these compromised systems will create serious public health and environmental concerns.¹⁰ Although solutions have been proposed, they carry hefty price tags in excess of \$2.3 billion.¹¹

The city's predicament will only increase in the coming decades. By the year 2030 Miami is expected to see an additional rise of six to ten inches compared to 1992 levels.¹² In another thirty

³ For instance, the Atlantic Ocean, Biscayne Bay, and several rivers and lakes are all located within the larger Miami-Dade area.

⁴ More than 85,000 Miami residents live at least three feet below sea level. *Surging Seas Risk Finder: Miami-Dade County, Florida, USA*, CLIMATE CENTRAL, https://riskfinder.climatecentral.org/county/miami-dade-county.fl.us?comparisonType=county&forecastType=NOAA2017_int_p50&level=3&unit=ft&zillowPlaceType=postal-code (Calculated using block level data from the 2010 U.S. Census to determine population density combined with 2019 NOAA Coastal Topographical Lidar elevation data.).

⁵ MIAMI-DADE CTY. DEP'T OF REG. & ECON. RESOURCES, SEPTIC SYSTEMS VULNERABLE TO SEA LEVEL RISE 5 (2018) (This increase is based on the calculated increase in monthly mean sea levels measured at the Virginia Key tide gauge from 1994 through September 2017 available from the National Ocean and Atmospheric Administration at <https://tidesandcurrents.noaa.gov/stationhome.html?id=8723214>).

⁶ Matthew Cappucci, *Sea Level Rise is Combining with Other Factors to Regularly Flood Miami*, WASH. POST (Aug. 8, 2019), <https://www.washingtonpost.com/weather/2019/08/08/analysis-sea-level-rise-is-combining-with-other-factors-regularly-flood-miami/>.

⁷ MIAMI-DADE CTY. DEP'T OF REG. & ECON. RESOURCES, *supra* note 5, at 13–14.

⁸ *Id.*

⁹ *Id.* at 6 (“Within the next 25 years, the County can expect the number of residential systems that may be periodically compromised during storms or wet years to significantly increase from approximately 56% today (58,349 parcels) to more than 64% by 2040 (67,234 parcels).”).

¹⁰ MIAMI-DADE CTY. DEP'T OF REG. & ECON. RESOURCES, *supra* note 5, at 15-16 (noting that problems in septic systems can lead to the spread of disease and the dispersal of household chemical pollutants into wells, lakes and other water ecosystems.).

¹¹ *Id.* at 8.

¹² SOUTHEAST FLORIDA REGIONAL COMPACT SEA LEVEL RISE WORK GROUP, UNIFIED SEA LEVEL RISE PROJECTION: SOUTHEAST FLORIDA 1, 13 (2015), <https://southeastfloridaclimatecompact.org/wp-content/uploads/2015/10/2015-Compact-Unified-Sea-Level-Rise-Projection.pdf> (The Report uses the NOAA Projections produced for the National

years, by 2060, Southeast Florida is anticipated to hit a rise of twenty-six inches.¹³ Projections forecast that in the coming years flooding in Miami-Dade County could compromise an estimated \$8.7 billion worth of residential property and associated infrastructure.¹⁴ Yet, despite this danger, there has been little appetite in the city for retreat. Instead, residential development has continued at a frenzied pace in Miami's highest risk areas.¹⁵

B. Nags Head, North Carolina

Communities across the Eastern Seaboard are grappling with faster than anticipated sea level rise, with some locales experiencing flooding not expected for decades under previous projections.¹⁶ However, few communities have been forced to face the effects of climate change like the popular tourist town of Nags Head in North Carolina's Outer Banks. Simulations produced by the North Carolina Department of Environmental Quality estimate that an astounding six feet of land erodes off the North Carolina coast every year.¹⁷ This precipitous erosion rate has especially affected island communities, like Nags Head, putting the area's billion-dollar tourism industry in jeopardy.¹⁸

However, this threat to the local community and its economy has not gone unaddressed. On the contrary, the town's authorities have initiated thirteen separate projects to adapt to the new environment.¹⁹ In one notable example, the town raised taxes and spent \$43 million to replenish ten miles of eroding beach with sand pumped in from the sea floor,²⁰ which equates to approximately 4 million cubic yards of sand.²¹ Nevertheless, despite these extraordinary efforts, experts agree that the town's resilience projects, though impressive, will only carry the community

Climate Assessment (High Curve), the USACE Guidance (High Curve), and the median of the IPCC AR5 Projections as the basis for its sea level rise projections.).

¹³ *Id.*

¹⁴ CLIMATE CENTRAL, *supra* note 4.

¹⁵ *Id.* "Recent growth (2010–2016) has been 2.4x faster in the risk zone than in safer zones."

¹⁶ Jim Morrison, *Flooding Hot Spots: Why Seas Are Rising Faster on the U.S. East Coast*, YALE ENV'T 360 (Apr. 24, 2018), <https://e360.yale.edu/features/flooding-hot-spots-why-seas-are-rising-faster-on-the-u.s.-east-coast> (citing Arnoldo Valle-Levinson et al., *Spatial and temporal variability of sea level rise hot spots over the eastern United States*, GEOPHYSICAL RES. LETTERS (Aug. 9, 2017), <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017GL073926>).

¹⁷ Sarah Gibbens, *This Seaside Community is Getting Swallowed by the Ocean*, NAT'L GEOGRAPHIC (July 2, 2018), <https://www.nationalgeographic.com/environment/2018/07/climate-change-outer-banks-environment/> (citing data from the North Carolina Division of Coastal Management ArcGIS Map Simulation available at <https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=f5e463a929ed430095e0a17ff803e156>).

¹⁸ Barbara Barrett, *A Coastal Town Pummeled by Climate Change Prepares for the Future*, GOVERNING (July 26, 2019), <https://www.governing.com/topics/transportation-infrastructure/sl-dare-county-climate-change.html>.

¹⁹ *Id.*

²⁰ Doug Hubley, *From Folks on the Front Lines, Short Term Students Learn About Sea Level Rise*, BATES U. (May 30, 2019), <https://www.bates.edu/news/2019/05/30/from-the-folks-facing-it-short-term-students-learn-about-sea-level-rise/>; Jeff Hampton, *Nags Head Rebuilding Its Beach for the Second Time in 8 Years*, THE VIRGINIAN-PILOT (May 9, 2019), https://www.pilotonline.com/government/local/article_949266a4-7194-11e9-a93ba7058188cbbf.html.

²¹ Barrett, *supra* note 18.

so far. Even Nag Heads' Mayor, Ben Cahoon, has conceded that ultimately the community will be left with no other option except some form of retreat.²²

III. MANAGED RETREAT

A. Definitions

Although managed retreat is one of the most commonly proposed approaches to combat sea level rise, there is no universal definition of what “managed retreat” means or requires. A cursory survey of relevant sources reveals countless diverging definitions. Some academics and popular commentators employ amorphous phrasing or less technical terminology such as “purposeful movement,”²³ leaving “waterlogged” zones,²⁴ or “a deliberate pulling back from coastal areas.”²⁵ Conversely, other experts have opted for more detailed policy articulations,²⁶ while news outlets often focus instead on the human element and define managed retreat through the narrow lens of governmental purchases for at-risk homes.²⁷

Despite these differing characterizations, it is generally possible to distill the driving purpose and key characteristics of managed retreat. Put simply, the aim of managed retreat is to

²² *Id.*

²³ Anne Siders, *Social Justice Implications of U.S. Managed Retreat Buyout Programs*, 152 CLIMATE CHANGE 239, 239,

https://scholar.harvard.edu/files/siders/files/siders_socialjusticeusretreat_climaticchange2018_acceptedversion.pdf (“Managed retreat, the purposeful movement of people and infrastructure out of vulnerable floodplains, is one possible adaptation strategy.”).

²⁴ Kate Yoder, *Retreat From Rising Seas? It May Be Controversial, but It's the World's New Reality*, MOTHER JONES (Sept. 2, 2019), <https://www.motherjones.com/environment/2019/09/retreat-from-rising-seas-it-may-be-controversial-but-its-the-worlds-new-reality/> (“[Managed retreat is] the idea that communities and governments should be strategic about moving people away from areas that have become too waterlogged to live in safely.”).

²⁵ Matt Simon, *Retreat? Pish. Democrats Dare Not Speak Climate Change's 'R' Word*, WIRED (Sept. 5, 2019), <https://www.wired.com/story/democrats-climate-change-retreat/> (“There the topic was managed retreat or strategic retreat, a deliberate pulling back from coastal areas. It means giving up some buildings and infrastructure to the rising sea while moving others.”).

²⁶ See e.g., Peter Plastrik & John Cleveland, *Can It Happen Here? Improving the Prospect of Managed Retreat by US Cities*, INNOVATION NETWORK FOR COMMUNITIES (Mar. 2019) (“[Managed retreat] uses public policies, including regulations, investments, and incentives to remove existing development—buildings, infrastructure, entire neighborhoods—over time and prevent future development in parts of the city that cannot, should not, or will not be armored or accommodated for potentially devastating climate hazards.”); Miyuki Hino et al., *Managed Retreat as a Response to Natural Hazard Risk*, 7 NATURE CLIMATE CHANGE 364, 364 (2017), <https://www.nature.com/articles/nclimate3252> (“[Managed retreat is] the application of coastal zone management and mitigation tools designed to move existing and planned development out of the path of eroding coastlines and coastal hazards.”) (internal quotation marks omitted).

²⁷ See e.g., Anne C. Mulkern, *Supreme Court to decide who wins beach protection as tide rises*, E&E NEWS (May, 2, 2017), <https://www.eenews.net/stories/1060053890> (“A draft version of the guidance includes sections on ‘managed retreat,’ the government process of buying threatened homes and relocating them or tearing them down.”); Brad Kuhn, *Will California's Sea-Level Rise Trigger Use of Eminent Domain?*, JD SUPRA (July 18, 2019), <https://www.jdsupra.com/legalnews/will-california-s-sea-level-rise-71541/> (“[M]anaged retreat’ — buying or condemning threatened homes and relocating them or tearing them down, which would thereafter free the coastline and preserve the beaches.”).

improve the safety of residents in coastal areas. In working towards this goal, the central feature of managed retreat is the removal of existing coastal infrastructure and the abstaining from future development in these at-risk areas. The American Planning Association (APA), a professional organization for urban planners, has captured both these elements in a definition that is neither too broad and potentially ambiguous, nor too narrow and thus potentially limiting. The APA has defined managed retreat as a process that “safely removes settlement from encroaching shorelines, allowing the water to advance unimpeded, and bans new development in areas likely to be inundated.”²⁸

B. Benefits

Managed retreat provides several key benefits over competing strategies embracing accommodation or protection.²⁹ At the most basic level, managed retreat is preferable to other approaches because it best eliminates risk to communities.³⁰ Importantly, while other approaches attempt to protect against rising seas while permitting people to remain in hazardous areas, managed retreat actually moves residents to safer ground.³¹

Over the long term, managed retreat is also the most cost-effective approach to sea level rise.³² Unlike other measures, retreat is a one-time investment. Once participants are relocated, there are no further steps that must be taken by local governments except for maintaining the natural coastline.³³ This analysis has been confirmed by empirical research, which has found that managed retreat is more cost-effective than other strategies over timescales greater than twenty-five years.³⁴ In contrast, other approaches will typically require local governments to use public funds to protect vulnerable infrastructure such as roads, bridges or sewer lines thus placing an ongoing financial burden on the entire community.³⁵ Aside from the public costs, extraordinary

²⁸ Laura Tam, *Climate Adaptation and Sea-Level Rise in the San Francisco Bay Area*, AM. PLANNING ASSOC. (Jan. 2012), <https://www.planning.org/planning/2012/jan/waterwarriorsside2.htm>.

²⁹ CAL. COASTAL COMM’N, RESIDENTIAL ADAPTATION POL’Y GUIDANCE 28 (2018), <https://documents.coastal.ca.gov/assets/climate/slr/vulnerability/residential/RevisedDraftResidentialAdaptationGuidance.pdf> (“Benefits of managed retreat strategies include allowing for the natural landward migration of the beach, dunes and wetlands as sea levels rise; decreasing hazard risk to structures; protecting coastal resources on the water’s edge; maintaining public access; and potential cost savings on construction, maintenance, and repair of shoreline protective devices.”).

³⁰ See Robert Freudenberg et al., LINCOLN INSTIT. OF LAND POLICY, BUY-IN FOR BUYOUTS 8 (2016), <https://www.lincolninst.edu/sites/default/files/pubfiles/buy-in-for-buyouts-full.pdf>.

³¹ *Id.*

³² Kerry Turner et al., *A Cost–Benefit Appraisal of Coastal Managed Realignment Policy*, 17 GLOBAL ENV’T’L. CHANGE 397 (2007).

³³ Robert Freudenberg et al., *supra* note 30, at 8.

³⁴ CAL. COASTAL COMM’N, *supra* note 29 (citing R. Kerry Turner et al., *A Cost–Benefit Appraisal of Coastal Managed Realignment Policy*, 17 GLOBAL ENV’T’L. CHANGE 397 (2007)).

³⁵ *Id.*; see also Jan Ellen Spiegel, *With Sea Levels Rising, These Strategies Could Help Coastal Communities Prepare*, YALE CLIMATE CONNECTIONS (Nov. 5, 2019), <https://www.yaleclimateconnections.org/2019/11/with-sea-levels-rising-these-strategies-could-help-coastal-communities-prepare/> (“Such fixes will become a cycle of artificially increasing costs using taxpayer dollars to fortify homes. That in turn increases those home values, which in turn means there’s still higher investment to protect when the next storm hits, which leads one to want to rebuild again. The circle is unbroken.”).

efforts to defend expensive coastal real estate can actually make matters worse by inspiring a false confidence in the stability of the community.³⁶ The ensuing investments are then lost when fortifications eventually fail.³⁷

In the end, many policy experts see managed retreat as simply inevitable for affected coastal communities.³⁸ As one expert explained, “Fighting the ocean is a losing battle. The only way to win against water is not to fight. We’re not winning or losing: we’re adjusting to changes in nature.”³⁹ Put another way, “[t]here are only so many ways to play against the rising sea.”⁴⁰

C. Drawbacks

1. Voter Hostility

Perhaps the most significant obstacle frustrating managed retreat efforts in coastal communities nationwide is the pervasive public hostility towards such proposals.⁴¹ In numerous coastal localities, managed retreat plans have been retracted or tabled in the face of intense community resistance.⁴² In others, local officials have faced community opposition before such plans were ever even formulated at all.⁴³ Local community members’ complaints range from the practical, such as anxieties over funding, reduced home values, and the effects on mortgages,⁴⁴ to

³⁶ Richard Lovett, *The Case for ‘Managed Retreat’ in the Face of Climate Change*, COSMOS (Aug. 23, 2019), <https://cosmomagazine.com/climate/the-case-for-managed-retreat-in-the-face-of-climate-change> (quoting a conversation with Richard Alley, a climate researcher at Pennsylvania State University).

³⁷ *Id.*

³⁸ Troy McMullen, *Once Prized and Profitable, Beachfront Real Estate Can Now be a Losing Proposition*, WASH. POST (Aug. 9, 2018), https://www.washingtonpost.com/realestate/once-prized-and-profitable-beachfront-real-estate-can-now-be-a-losing-proposition/2018/08/07/9757b248-7efd-11e8-b660-4d0f9f0351f1_story.html (“A growing chorus of scientists argues that the only permanent solution is relocation.”).

³⁹ Devon Ryan, *The Case for Managed Retreat*, STANFORD WOODS INSTIT. FOR THE ENV’T (Aug. 22, 2019), <https://woods.stanford.edu/news/case-managed-retreat>.

⁴⁰ Rosanna Xia, *The California Coast is Disappearing Under the Rising Sea. Our Choices are Grim* L.A. TIMES (July 7, 2019), <https://www.latimes.com/projects/la-me-sea-level-rise-california-coast/>.

⁴¹ See Larry Buhl, *Rising Sea Levels Leave CA Coastal Cities with Hard Choices*, CITY WATCH (Aug. 12, 2019), <https://citywatchla.com/index.php/2016-01-01-13-17-00/los-angeles/18235-rising-sea-levels-leave-ca-coastal-cities-with-hard-choices> (“The term is like kryptonite to many communities,” Cavalieri told Capital & Main.”); *see also id.* (“These words [managed retreat] alone have roiled the few cities bold enough to utter them . . . Retreat is as un-American as it gets, neighborhood groups declared.”).

⁴² Buhl, *supra* note 41 (discussing examples of community resistance). *See generally* Yoder, *supra* note 24.

⁴³ Marty Graham, *IB Tries to Calm Fears of Eminent Domain*, SAN DIEGO READER (Nov. 16, 2018), <https://www.sandiegoreader.com/news/2018/nov/16/stringers-ib-tries-calm-fears-eminent-domain/#> (reporting that hundreds of residents showed up to oppose the city’s use of eminent domain when in reality the council was not considering it).

⁴⁴ *See e.g.*, STATE OF HAWAII DEP’T OF BUS. ECON. DEVELOPMENT & TOURISM, ASSESSING THE FEASIBILITY AND IMPLICATIONS OF MANAGED RETREAT STRATEGIES FOR VULNERABLE AREAS IN HAWAII’I FINAL REPORT 17 (2019), http://files.hawaii.gov/dbedt/op/czm/ormp/assessing_the_feasibility_and_implications_of_managed_retreat_strategies_for_vulnerable_coastal_areas_in_hawaii.pdf (“Owner skepticism and opposition in Hawai’i should be anticipated due to perceptions of how managed retreat affects property values and property rights in areas to be classified as vulnerable or threatened.”); *see also* Brooks Jarosz, *Despite controversy, Pacifica City Council Narrowly Approves Plan to Combat Sea Level Rise*, KTVU (Dec. 14, 2018), <https://www.ktvu.com/news/despite-controversy-pacifica->

more visceral objections about government intrusion and leaving long-time family homes.⁴⁵ Managed retreat also disrupts the lives of residents who have jobs nearby or simply cannot afford housing in less risky areas.⁴⁶ As one expert succinctly summed up, “If you tell residents with beachfront property that they’re going to have to move, you won’t get elected.”⁴⁷

One representative example is the California city of Del Mar, a small city of 4,200 people in San Diego County. With approximately 600 homes at risk of being wiped out, the city is a prime example of an entire community threatened by rising seas.⁴⁸ Despite this existential threat, and in contradiction of clear guidance from the California Coastal Commission, the Del Mar City Council unanimously rejected any attempt at managed retreat.⁴⁹ In doing so, the Council risks a potential showdown with state authorities.⁵⁰ However, the elected City Council had few practical choices. Its climate plan merely articulated the loud and clear views of its constituents. As one member of the Del Mar Sea Level Technical Advisory Committee put it when discussing retreat: “People just don’t want that word anywhere.”⁵¹

2. Legal Challenges

The Fifth Amendment of the U.S. Constitution generally prohibits government from taking private property for public use without providing the owner with just compensation.⁵² The principal purpose of the Takings Clause is “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.”⁵³ The classic example of this power is a physical taking in which the government takes a parcel of land and converts it to public use, for instance a new road or park. Nevertheless, the Supreme Court has also held that a taking may occur even where the government merely restricts the economic development or use of a property.⁵⁴

[city-council-narrowly-approves-plan-to-combat-sea-level-rise](#) (“The fiery meeting Monday lasted more than four hours . . . Property values, insurance coverage, future development, coastal erosion and funding were the main themes discussed among the community.”).

⁴⁵ See e.g., Xia, *supra* note 40 (quoting one upset coastal homeowner as declaring: “The public has rights to the beach, but I apparently don’t have rights to my house.”).

⁴⁶ Ryan, *supra* note 39.

⁴⁷ Buhl, *supra* note 41 (quoting Jennifer Savage, California Policy Manager for the Surfrider Foundation).

⁴⁸ Alison St. John, *Coastal Cities Wrestling with ‘Managed Retreat’ Ramifications of Rising Sea Levels*, KPBS (Aug. 1, 2019), <https://www.kpbs.org/news/2019/aug/01/coastal-cities-managed-retreat-rising-sea-levels/>.

⁴⁹ Phil Diehl, *Del Mar will Stand its Ground Against Managed Retreat*, THE SAN DIEGO UNION-TRIBUNE (Oct. 8, 2019), <https://www.sandiegouniontribune.com/communities/north-county/story/2019-10-08/del-mar-will-stand-its-ground-against-managed-retreat>.

⁵⁰ *Id.*

⁵¹ Theresa Pinto, *Florida’s Monroe County Approves \$10 Million for Home Buyouts*, MIAMI BEACH TIMES (July 25, 2019), <https://miami-beach-times.com/real-estate/floridas-monroe-county-approves-10-million-for-home-buyouts/>.

⁵² U.S. CONST. amend. V (“[N]or shall private property be taken for public use, without just compensation.”).

⁵³ *Armstrong v. U.S.*, 364 U.S. 40 (1960).

⁵⁴ *Penn. Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922) ([W]hile property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.”).

Municipalities must be even more wary of takings litigation after the Supreme Court's ruling in *Koontz v. St. John's River Water Management District*.⁵⁵ In that case, a landowner, Roy Koontz, requested a permit from the St. John's River Water Management District to develop a portion of his property.⁵⁶ The authorities agreed to issue the permit, only, however, on the condition that Koontz deed the remainder of his property into a conservation area and perform additional mitigation work.⁵⁷ Koontz refused the additional mitigation work arguing it was excessive; he then filed suit asserting that the demands constituted a taking without just compensation.⁵⁸

Ultimately, the Supreme Court held in favor of Mr. Koontz.⁵⁹ The Court reasoned that, although no property was actually taken, any conditions for a land-use permit must meet the requirements of the Court's earlier decisions in *Nollan* and *Dolan*.⁶⁰ In other words, any permit condition must be connected to the land use and approximately proportional to the effects of the use.⁶¹ Otherwise, the Court held, such conditions essentially become governmental extortion and amount to a taking of property without just compensation. Importantly, *Koontz* was the first Supreme Court case in which a government's monetary demand to a landowner, in itself, was found to be an unconstitutional taking.

Many coastal property owners, angered by perceived government overreach, view managed retreat and other coastal management policies as inappropriate and unconstitutional. These coastal homeowners—empowered by cases such as *Koontz* and funded by property rights advocacy groups—are unafraid to vindicate their rights in court. In one recent example, a California homeowner challenged the California Coastal Commission's permitting conditions related to the building of a seawall in front of her home.⁶² The homeowner, relying in part on *Koontz*, argued that the conditions were unconstitutional. The case ultimately wound its way to the California Supreme Court, which held in favor of the Commission on procedural grounds.⁶³ In total, the litigation extended several years and cost the family over \$1 million.⁶⁴ This and other such cases reaffirm that policies aimed at resisting sea level rise face likely challenges in court.

3. Financial Burden

The Supreme Court has held that when property is taken, the Fifth Amendment requires compensation to owners at full market value.⁶⁵ Because of this requirement, even with popular

⁵⁵ 570 U.S. 595 (2013).

⁵⁶ *Id.* at 601.

⁵⁷ *Id.* at 601–02.

⁵⁸ *Id.*

⁵⁹ *Id.* at 619.

⁶⁰ *Koontz*, 570 U.S. at 599 (citing *Nollan v. Cal. Coastal Comm'n*, 483 U.S. 825 (1987) and *Dolan v. City of Tigard*, 512 U.S. 374 (1994)).

⁶¹ *Id.*

⁶² *Lynch v. Cal. Coastal Comm'n*, 396 P.3d 1085, 1087–89 (2017).

⁶³ *Id.* at 1093.

⁶⁴ *Mulkern*, *supra* note 27.

⁶⁵ *See e.g.*, *U.S. v. Miller*, 317 U.S. 369, 373 (1943).

support and a clear legal path, the exorbitant cost of real estate in many coastal communities makes managed retreat simply unaffordable for many local governments.⁶⁶ An illustrative example is the small city of Del Mar, California. There, the median home price is approximately \$2.6 million and beachfront property is valued at even higher prices. The choicest homes on the beachfront in north Del Mar go for upwards of \$20 million.⁶⁷ Accordingly, even if the political willpower existed in Del Mar to implement managed retreat there, it is clear that the city simply could not afford to purchase the requisite land parcels.⁶⁸ The financial barriers posed by high real estate prices are not unique to California. For instance, the median single-family home price on Oahu is \$810,000. After crunching the numbers, a report commissioned by the State of Hawaii estimated that the costs of managed retreat on Oahu would “range in the billions.”⁶⁹

In another telling example, Florida created a home buyout program following Hurricane Irma in order to purchase properties “in high-risk flood areas to help reduce the impact of future disasters, and to assist property owners to relocate outside the threat of flooding.”⁷⁰ Cities or counties participating in the program could receive funds to purchase at-risk properties for pre-Irma rates from voluntary homeowners.⁷¹ However, once again, these funds were woefully insufficient given the cost of coastal real estate. For instance, when Monroe County approved a measure to participate it was allocated ten million dollars by the state.⁷² Yet, the median home value in Marathon, one of the four cities located within the county, is \$488,000.⁷³ Thus, as it currently stands, the program funds would allow for the purchase of only twenty homes.⁷⁴

Beyond the upfront cost associated with the outright purchase of high-priced real estate, municipalities also face substantial costs on the back end in lost tax revenues.⁷⁵ This funding decrease would be especially daunting for local officials because these property taxes often constitute a significant portion of a local government’s operating budget.⁷⁶ Moreover, cities run the considerable risk that suspending coastal development will create a chilling effect on

⁶⁶ J. Peter Byrne, *The Cathedral Engulfed: Sea-Level Rise, Property Rights, and Time*, 73 LA. L. REV. 69, 113–14 (2012) (“Land purchase poses the serious problem of financing payment. Outright purchase of large parcels adequate to meet probable environmental needs will cost a great deal of money, especially in light of the many other financial needs that sea-level rise will impose on public authorities.”).

⁶⁷ St. John, *supra* note 48.

⁶⁸ CITY OF DEL MAR, CITY OF DEL MAR SEA-LEVEL RISE ADAPTATION PLAN 4 (2018), <https://www.delmar.ca.us/DocumentCenter/View/3580/Revised-Adaptation-Plan-per-Council-May-21> (“[T]he extremely high land value in Del Mar means that public acquisition of any private property the City does not control will be difficult and cost prohibitive for the City to pursue.”).

⁶⁹ HAW. DEP’T OF BUS. ECON. DEVELOPMENT, *supra* note 44, at 13, 16.

⁷⁰ REBUILD FLORIDA, VOLUNTARY HOME BUYOUT PROGRAM GUIDELINES 1.

⁷¹ Pinto, *supra* note 51.

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ Freudenberg et al., *supra* note 30, at 16.

⁷⁶ *Id.* at 35; *see also* UNION OF CONCERNED SCIENTISTS, UNDERWATER: RISING SEAS, CHRONIC FLOODS, AND THE IMPLICATIONS FOR US COASTAL REAL ESTATE 5 (2018) (“Our calculations show that in about 120 communities along US coasts, the properties that would be at-risk in 2045 currently represent a full 20 percent or more of the local property tax base.”) <https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf>.

surrounding property values, which could further reduce tax revenue intake.⁷⁷ Other potentially relevant costs include incidental expenses associated with relocation, as well as substantial costs to construct the new infrastructure needed to accommodate anticipated shifts in population.⁷⁸

IV. PROGRAM FRAMEWORKS

A. Buyouts Generally

Traditionally, buyback programs represent an alternative to eminent domain and are launched after a large natural disaster to purchase land parcels from voluntary sellers for pre-disaster market rates.⁷⁹ These buybacks provide “an easy way for residents who no longer want to live in high-risk zones to sell their homes and move to safer locations.”⁸⁰ And they are commonly funded by the federal government but administered by state or local authorities.⁸¹ Once an application is approved, the responsible agency then negotiates the purchase price.⁸²

However, these programs have several important shortcomings. First, though such voluntary buyouts do provide the opportunity to create a natural buffer from rising seas, the programs oftentimes must acquire numerous adjacent parcels in order to achieve the desired goal.⁸³ This endeavor can be difficult to achieve in practice. Instead, surveys of past buyback programs show that there are typically low levels of participation by targeted landowners.⁸⁴

The high costs associated with these programs can also limit their effectiveness. There are the immediate costs such as the actual purchase price of the property and other payments incidental to this purchase.⁸⁵ However, equally important are the long-term expenses associated with ownership of the property. These include ongoing maintenance costs and future expenditures when the property is eventually slated for demolition.⁸⁶

Moreover, the buyout process itself can be problematic. A recent review of buyouts in the United States found that such programs produce socially inequitable results in a variety of ways.⁸⁷ For instance, the programs often suffer from a lack of transparency, leaving the door open to political influence and “creating the potential for bias and public distrust in the system.”⁸⁸ These

⁷⁷ Andrea McArdle, *Managing "Retreat": The Challenges of Adapting Land Use to Climate Change*, 40 U. ARK. LITTLE ROCK L. REV. 605, 623 (2018).

⁷⁸ *Id.*

⁷⁹ *Id.* at 611–12.

⁸⁰ Freudenberg et al., *supra* note 30, at 8.

⁸¹ Siders, *supra* note 23, at 4.

⁸² *Id.* at 6.

⁸³ McArdle, *supra* note 77, at 619.

⁸⁴ ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, RESPONDING TO RISING SEAS OECD COUNTRY APPROACHES TO TACKLING COASTAL RISKS 44 (2019) (noting that “[i]n many cases where implementation has been attempted, relocation programmes have suffered from low levels of participation.”).

⁸⁵ Freudenberg et al., *supra* note 30, at 38.

⁸⁶ *Id.*

⁸⁷ Siders, *supra* note 23.

⁸⁸ *Id.* at 9, 18.

worries are not merely hypothetical. A study of post-Hurricane Sandy buyouts in New York City found that residents there expressed mixed levels of trust on whether officials were truly acting in their best interests.⁸⁹

Additionally, even theoretically objective decisional criteria can promote inequitable results. An “objective” cost-benefit analysis might prioritize the protection of high value property areas and promote retreat from areas found to be lower in value.⁹⁰ Yet, by forcing low-income members of the community to bear the brunt of the displacement this effect is hardly equitable. Additionally, this result creates the dual side effects of reducing the availability of affordable housing while simultaneously increasing property prices, thus further excluding displaced low-income residents from an already unkind housing market. The report ultimately concluded that “the value and logic structure underlying many decision criteria . . . can exacerbate historic inequalities unless countered by targeted efforts to address inequity.”⁹¹

In sum, buyback programs offer the prospect of accomplishing several goals. Buybacks can provide homeowners the financial means to move away from floodplains, reduce future disaster response costs, reduce potential community members’ exposure to dangerous conditions, and restore natural buffers in order to reduce future flooding.⁹² However, despite the initial potential of such programs to facilitate managed retreat, in practice the limited participation, social inequities, and costs of such programs reduce their viability as a comprehensive approach for enabling managed retreat in coastal communities.

B. Buyouts with Rentbacks

As previously explained, one essential problem with any widespread buyback system is the enormous expense of such programs. To overcome this hurdle, scholars have creatively proposed the idea of so-called conditional leases in which the government purchases a property, and then leases the acquired property back to the original owner for a certain length of time.⁹³

Perhaps the foremost modern expert in this area is Professor Andrew Keeler of East Carolina University, who has named the idea “buyouts with rentbacks” (BWR). Under Professor Keeler’s BWR regime, either a public or regulated private entity would purchase at-risk

⁸⁹ *Id.* at 9 (citing Sherri Brokopp Binder & Alex Greer, *The Devil is in the Details: Linking Home Buyout Policy, Practice, and Experience after Hurricane Sandy*, <https://www.cogitatiopress.com/politicsandgovernance/article/view/738/738>).

⁹⁰ *Id.* at 11–13.

⁹¹ *Id.* at 18.

⁹² ANNE SIDERS, *MANAGED COASTAL RETREAT: A LEGAL HANDBOOK FOR SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS*, COLUM. LAW. SCH. CTR. FOR CLIMATE CHANGE 109 (2013), https://web.law.columbia.edu/sites/default/files/microsites/climatechange/files/Publications/Fellows/ManagedCoastalRetreat_FINAL_Oct%2030.pdf.

⁹³ See James G. Titus, *Greenhouse Effect and Coastal Wetland Policy: How the Americans Could Abandon an Area the Size of Massachusetts at Minimum Cost*, 15 ENVTL. MGMT. 39 (1990) <http://risingsea.net/papers/downloads/massachusetts.pdf>; see also Lisa A. St. Amand, *Sea Level Rise and Coastal Wetlands: Opportunities for a Peaceful Migration*, 19 B.C. ENVTL. AFF. L. REV. 1, 3 (1991).

properties.⁹⁴ The timing of these purchases would be determined using climate signals and modeling, and would occur earlier in the risk calculation than current buyout programs.⁹⁵ The entity would subsequently rent the newly purchased property back to the original seller, who could, if desired, continue to live on the property for a designated period of time.⁹⁶ At a pre-determined point, the rental agreement would terminate and the property would be remediated.⁹⁷

The BWR approach improves on the traditional buyback model in several key ways.⁹⁸ First, as Professor Keeler describes, the BWR approach provides a relatively neutral mechanism to facilitate resource transfer.⁹⁹ In other words, unlike historical approaches such as post-disaster assistance or insurance subsidies, the BWR approach does not bias people toward either all staying or all leaving within a short time period.¹⁰⁰ As a result, municipalities will face less abrupt spikes in relocation and could use the rentals to generate property tax revenues.¹⁰¹ This stability would also help municipalities better predict and thus prepare for long-term tax trends.¹⁰²

Additionally, Professor Keeler points out that BWRs make buyouts more economically and politically feasible.¹⁰³ The addition of rental income would create an extended source of capital, which, over decades, could significantly reduce the overall governmental expenditures required.¹⁰⁴ In fact, at least one estimate has concluded that these types of programs could reduce the cost of acquiring property by as much as 99 percent.¹⁰⁵ Notably, this price could be even lower given the prospect that rising sea may totally inundate targeted properties.¹⁰⁶

The flexibility of BWR also makes homeowners more likely to accept the buyouts. For example, a BWR agreement could stipulate any number of conceivable end points as the expiration of the arrangement.¹⁰⁷ Professor Keeler's proposed options for triggering expiration include when the original tenant leaves, when the house is damaged beyond a certain level, or when a pre-determined climate signal is observed.¹⁰⁸ Another potential option could include simply

⁹⁴ Andrew Keeler, *Accelerating Risks and Longer-Term Adaptation: If and When Resilience Isn't Stationary*, WM. & MARY LAW SCHOOL, VA. COASTAL POL'Y CENTER, RESILIENCE FUNDING FORUM (May 3, 2019), https://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/resiliencefundingforum/keeler-resilience-funding-forum-5_3.pdf.

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ Andrew Keeler, *Accelerating Risks and Longer-Term Adaptation: If and When Resilience Isn't Stationary*, WM. & MARY LAW SCHOOL, VA. COASTAL POL'Y CENTER, RESILIENCE FUNDING FORUM (May 3, 2019), https://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/resiliencefundingforum/keeler-resilience-funding-forum-5_3.pdf.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ Titus, *supra* note 93, at 39, 54–55.

¹⁰⁶ *Id.*

¹⁰⁷ Keeler, *supra* note 94.

¹⁰⁸ *Id.*

terminating the lease after a discrete number of years.

Nevertheless, the BWR method also has its drawbacks. Among these are the inherent difficulties that come with public ownership of rental property, the potential for corruption, and difficulties with gathering the necessary funds.¹⁰⁹ However, perhaps most crucially, although BWR would improve overall program participation as compared with traditional buyouts, it does not solve the underlying problem of potential holdouts.¹¹⁰ In the end, the government would still need to invoke its eminent domain powers in order to obtain key parcels from unwilling owners, thus fomenting public hostility and legal challenges. In sum, though unquestionably an improved option, BWR still has several important and unresolved questions that must be addressed prior to any effective implementation.

C. Life Estates

Another option would be conveying life estates to current residents instead of BWRs. This approach would allow the landowners to stay in their homes but they would not be able to convey any property interest. This option represents a middle ground between, on the one hand, buying landowners out completely, which would require them to relocate someplace else, and, on the other hand, doing nothing. Because localities considering condemnation to combat rising sea levels have been met with negative constituent responses, embracing a life estate based approach, rather than fee simple acquisitions, presents an opportunity to avoid the challenges to managed retreat efforts identified above.

Furthermore, acquiring coastal land tracts using life estates presents a viable means of easing the public outcry around these takings actions because life tenants would be permitted to continue the enjoyment and use of their land.¹¹¹ Although a small subset of coastal residents might have deeper ties to their property, for example as an inherited estate in the family, most property owners are less likely to agitate against the policy when it does not affect them in a tangible way. On the contrary, “the private owner would receive ready cash from the [government] purchase and still remain on the land.”¹¹² To many, such a transaction would, in all likelihood, be viewed as an ideal property sale scenario.

Relatedly, a life estate acquisition approach also diminishes the anger at perceived “big government” intrusion into the lives of ordinary citizens. In Shenandoah National Park, discussed in more detail below, public outcry erupted after news outlets published heart-wrenching tales of families being removed and locals had their lives upended with little or no warning. Similarly, in the debate over managed retreat news coverage often highlights the possibility of displacements

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ Keeler, *supra* note 94.

¹¹² Steven A. Hemmat, *Parks, People, and Private Property: The National Park Service and Eminent Domain*, 16 ENVTL. L. 935, n.112 (1986) (noting that Congress has statutorily vested the Interior Secretary with condemnation power for numerous NPS units including well-known ones such as Yosemite National Park and Cape Cod National Seashore).

and the discontent of local communities; detailed policy considerations often go overlooked. In modern times this coverage can also be magnified by social media platforms, which help to amplify outspoken community voices and facilitate grassroots community organizing and protests.

Life estates solve this problem in two ways. First, there is no immediate removal to provoke antagonism in the community. The potential for visceral anger at seeing neighbors or friends face the prospect of removal is eliminated. Second, life estates will end at different times. As a result, managed retreat becomes less newsworthy. There is no dramatic seizure of numerous properties in a short period. Rather, there is a gradual and unobtrusive accretion of the requisite properties to the appropriate governmental authority.

V. CASE STUDY: THE NATIONAL PARK SERVICE

A. Powers and Policies

Today the National Park Service (NPS) administers 84.6 million acres, or 3.4 percent of all land in the United States.¹¹³ Although this massive park system is now an established fixture of our national identity, this has not always been true. On the contrary, through much of the twentieth century the federal government, through the NPS, controversially condemned large swaths of private land in order to establish new national parks. This newly minted parkland at times led to highly contentious showdowns between the government and local citizens. Given the current controversies surrounding governmental takings in coastal communities, the NPS's large-scale condemnation actions offer empirical insight and policy ideas, as well as a cautionary note, for current managed retreat proposals.

The NPS, like other government agencies has broad authority to take private property with just compensation when it is for a "public purpose."¹¹⁴ Although not required, Congress has also granted eminent domain power to certain individual park units under their respective authorizing acts.¹¹⁵ Over time, the NPS has acknowledged the burdens of eminent domain. For instance, in a 1992 report the NPS found that, among other problems, acquiring land through eminent domain could generate "high acquisition costs" and "potentially expensive and time-consuming litigation."¹¹⁶ The NPS report also concluded that purchasing land outright is the agency's most expensive acquisition strategy given the combined costs associated with the purchase and

¹¹³ *National Park Service*, ALLGOV.COM, <http://www.allgov.com/departments/department-of-the-interior/national-park%20service?agencyid=7251#targetText=land,owned%2C%20but%20managed%20by%20NPS>.

¹¹⁴ Although the Fifth Amendment uses the phrase "public use," the Supreme Court has interpreted this term as authorizing condemnation when it is for a "public purpose." *See e.g.*, *Haw. Hous. Auth. v. Midkiff*, 467 U.S. 229, 230, (1984) ("Where the exercise of the eminent domain power is rationally related to a conceivable public purpose, a compensated taking is not prohibited by the Public Use Clause."); *see also Kelo v. City of New London*, 545 U.S. 469, 479–80 (2005).

¹¹⁵ Hemmat, *supra* note 112, at n.46.

¹¹⁶ PROTECTING ARCHEOLOGICAL SITES ON PRIVATE LANDS, U.S. DEP'T OF THE INTERIOR NAT'L PARK SERVICE INTERAGENCY RESOURCES DIV. (1993), https://archive.org/stream/protectingarcheo00henr/protectingarcheo00henr_djvu.txt.

management of the land.¹¹⁷ In 2001, the NPS Director at the time, Robert Stanton, officially ordered that condemnation be used only “as a last resort.”¹¹⁸ Nevertheless, despite an emphasis on alternatives, condemnation for acquiring private land for the national parks continues to the present day.¹¹⁹

One alternative to immediate acquisition that continues to be used by the NPS is to acquire the property through condemnation, but subsequently allow the previous owner to retain use of the property for either a term of years or the life of the occupant.¹²⁰ When obtaining land in this way the NPS calculates the purchase price of these parcels as the current value of the property minus one percent per each year of the reservation.¹²¹ When a life estate is granted, the NPS policy dictates “the 1 percent of the appraised value per year deduction will be based on actuarial tables.”¹²² Moreover, reservations of use and occupancy for a term of years or a life estate may only be granted for parcels not exceeding three acres in size.¹²³ One park official in the early 1990s estimated that there were approximately 1600 properties on Park Service lands in which the owners had reserved the rights of use and occupancy.¹²⁴

B. Shenandoah National Park

The creation of Shenandoah National Park presents an especially apposite example of the political controversy and turmoil that often accompany NPS condemnation efforts, as well an illustration of the potential salutary effects of the life estate. The Park, which was officially established in December 1935, extends for close to 200 thousand acres through much of the Blue Ridge Mountains in North-central Virginia. Yet as the first major national park east of the Mississippi, its creation did not come easily. On the contrary, formidable legal, financial, political, and social hurdles nearly prevented its formation.¹²⁵

In 1925, after years of coaxing from politicians and other influential figures, Congress authorized a new national park in the Southern Appalachians.¹²⁶ However, Congress made clear that no federal funds would be provided to purchase the parkland.¹²⁷ Accordingly, Virginia

¹¹⁷ *Id.*

¹¹⁸ NAT'L PARK SERVICE, DIRECTOR'S ORD. #25 (Jan. 19, 2001), <https://www.nps.gov/policy/DOrders/DOrder25.htm>.

¹¹⁹ Hemmat, *supra* note 112, at 936–37.

¹²⁰ St. Amand, *supra* note 93, at 19 (citing a telephone interview on June 27, 1990 with Will Kriz, Land Acquisitions, National Park Service).

¹²¹ *Id.*

¹²² NAT'L PARK SERVICE, *supra* note 116.

¹²³ *Id.* (“A reservation for residential use only may be for a term of years (up to 25) or a life estate, on an area not exceeding 3 acres in size.”).

¹²⁴ *Id.*

¹²⁵ Dennis E. Simmons, *Conservation, Cooperation, and Controversy: The Establishment of Shenandoah National Park, 1924-1936*, 89 VA. MAG. OF HISTORY AND BIOGRAPHY 387 (1981), https://www.jstor.org/stable/4248512?seq=1#metadata_info_tab_contents.

¹²⁶ *Id.*

¹²⁷ *Id.*

officials began slowly acquiring land along the crest of the Blue Ridge Mountains through voluntary purchases and eminent domain.

Despite early pledges that only certain residents located in the path of development would need relocate, in early 1934 the National Park Service announced they would accept title to the park only if *all* inhabitants living on land located within the future park were removed.¹²⁸ This removal policy meant that about 600 families, encompassing between three to four thousand people, would need to leave their homes.¹²⁹ The emotional disputes that followed between local residents and Virginia officials “left scars which have not entirely healed to this day.”¹³⁰

However, despite the widespread removal of these longtime residents, not all inhabitants within the park boundaries were forced to immediately leave. Rather, beginning as early as 1927, the leader of the Shenandoah project, William Carson, began granting two-year leaseholds to certain park residents who needed additional time to relocate outside the park.¹³¹ Additionally, forty-two elderly residents were given life estates and permitted to remain on their land.¹³² A life estate is a type of property ownership in which the property is held only for the duration of a specified person's life, usually the possessor's.¹³³ In other words, to create a life estate, an owner conveys a property to another party, such as the government, but then retains a lifetime right to occupy and enjoy the land.

The extensive use of land condemnation in Shenandoah Park teaches two important lessons. First is the importance of community buy-in. The Virginia government took essentially no steps to prepare the public for the massive removal that would eventually be required. It is therefore unsurprising that the government subsequently lost the battle for public opinion in the affected communities. Angry letters bombarded public officials and newspapers published sympathetic portrayals of those forced to relocate.¹³⁴ Had the government adequately prepared the families being affected, the result would almost certainly have been more subdued.

The second takeaway is the potential of non-fee simple land purchase arrangements, such as leaseholds or life estates, to curtail potential negative public opinion in the affected communities. It wasn't until immediate condemnations began on a widespread scale that public opinion soured. While it is true that this second wave of condemnation applied to a larger population, the image of reluctant county sheriffs forcing sharecroppers off their lands almost certainly reduced public support for government condemnation efforts. Life estates offer a strategy to increase popular support for controversial land acquisitions.

¹²⁸ *Id.* at 400–01.

¹²⁹ *Id.* at 399.

¹³⁰ *Id.* at 401.

¹³¹ *Id.*

¹³² NAT'L. PARK SERVICE, *Shenandoah National Park: From Idea to Reality* (Mar. 5, 2019), <https://www.nps.gov/articles/shenandoah-national-park-idea-to-reality.htm>.

¹³³ *Estate*, BLACK'S LAW DICTIONARY (11th ed. 2019).

¹³⁴ *Id.* at 401.

VI. OTHER FACTORS

A. Social Justice Concerns

Managed retreat “has the potential to cause social, economic, and psychological harm through loss of community, local tax revenue, and sense of place.”¹³⁵ Yet these ill effects are not distributed evenly. Instead, it is low-income communities that most often bear the brunt.¹³⁶ The life estate can help resolve these important concerns regarding the socially inequitable impacts of coastal adaptation policies.

First, life estates benefit communities in the short-term compared to buyouts and other approaches. Buyouts relocate local residents while simultaneously reducing the availability of affordable housing stock. As a result, low-income residents who opt for a buyout must grapple with the loss of their community while facing fewer options for the future. The BWR approach does not solve this problem. Because many homeowners would presumably be unable to afford the rents, even homeowners in low-income neighborhoods who own their homes outright would presumably still be pushed out to new areas after the buyout occurs.

Life estates on the other hand create no new expense for these homeowners. Instead, the participating homeowners would merely receive a slightly reduced selling price, while still being permitted to retain their current living situation. This arrangement could be a boon to the homeowners, providing funds to reinvest back into the community or for whatever other purposes the homeowner desires. Again, for many homeowners in low-income neighborhoods this influx of capital could truly transform their lives for the better, or even just provide a much-needed safety net for the seller’s family.¹³⁷

Another major problem with buyouts and other managed retreat approaches is that seemingly objective metrics mask what is in reality subjective decision-making about who can participate in the programs. Here too, life estates can ameliorate the problem. As an initial matter, by reducing the purchase costs associated with retreat more properties and neighborhoods can be included, thereby reducing the need for such subjective decision making at all.

Yet, to the degree these subjective decisions must still be made, life estates could improve the equitable outcomes by keeping neighborhoods healthier for longer. The major problem with a buyout program’s piecemeal approach is that it artificially creates abandoned homes and increases

¹³⁵ Siders, *supra* note 23, at 3 (citing Sherri Binder et al., *Rebuild or Relocate? Resilience and Post-Disaster Decision-Making after Hurricane Sandy*, 56 AM. J. COMMUNITY PSYCHOL. 180 (2015)).

¹³⁶ See UNION OF CONCERNED SCIENTISTS, WHEN RISING SEAS HIT HOME 11 (2017), <https://www.ucsusa.org/sites/default/files/attach/2017/07/when-rising-seas-hit-home-full-report.pdf> (“Climate change is known to pose risks to low-income communities, communities of color, and other traditionally underserved communities—risks more severe than those faced by wealthier, often whiter communities, especially in urban settings.”).

¹³⁷ See e.g., Zack Friedman, *78% Of Workers Live Paycheck To Paycheck*, FORBES (Jan. 11, 2019), <https://www.forbes.com/sites/zackfriedman/2019/01/11/live-paycheck-to-paycheck-government-shutdown/#499e04074f10>.

blight in affected neighborhoods. BWRs are better in that homes would be maintained and rented rather than left deteriorating and idle. However, rentbacks would nevertheless replace permanent neighborhood residents with inherently transitory renters and, in doing so, reduce neighborhood prosperity.

Life estates, on the other hand, would protect important community relationships and cohesion. By retaining the same longtime homeowners and reducing the timeframe that properties might be left unoccupied, the residents can continue to foster and maintain inter-community relationships and organizations. These longtime residents are also more likely to be involved in the civic and social life of the neighborhood and work towards its continued success. Similarly, because community members will continue to own their homes long-term, potentially raising children or grandchildren in the neighborhood, the life estate preserves important collective investment in the community and incentives the upkeep of existing neighborhood infrastructure. Finally, life estates put the timetable for departure in the hands of the homeowners, rather than an unyielding government agenda. A life estate program would empower local residents and enable them to formulate more strategic and intentional departures.

B. Financial Burden Powers and Policies

Acquiring land at the conclusion of a life estate can also be “simpler and less costly than other land acquisition strategies.”¹³⁸ To understand why, it is helpful to use current U.S. housing data. The first step in appraising the value of a life estate is to determine the life tenant’s age. In 2018, the average age of homeowners across the 100 largest metropolitan areas in the United States was fifty-four years old.¹³⁹ Next, this age is inputted into a life estate value table. Although numerous such tables exist, the Social Security Administration serves as a reliable benchmark. The Administration calculates the property of a life estate with a life tenant aged fifty-four as worth about 81% of the current market value of the property.¹⁴⁰ In other words, the life estate reduces the value of the property by about 19 percent.¹⁴¹ A hypothetical home originally valued at \$1 million in fee simple is instead appraised at approximately \$810,000 if sold with a life estate. Thus, because of the delay in actual possession, the government “can be assured of eventually acquiring the tract at a value below the cost of an outright fee simple acquisition.”¹⁴²

While these reductions in value may not sound significant, it could result in potentially immense cost savings when applied across entire neighborhoods. For example, a 19 percent reduction in the median Del Mar home price of \$2.6 million equates to approximately half a million

¹³⁸ STRATEGIES FOR PROTECTING ARCHEOLOGICAL SITES ON PRIVATE LANDS, COLO. HIST. SOC’Y OFF. OF ARCHAEOLOGICAL AND HIST. PRESERVATION 22, <https://www.historycolorado.org/sites/default/files/media/documents/2019/1617.pdf>.

¹³⁹ *LendingTree Compares Average Homeowner Age Across U.S.*, CISION PR NEWSWIRE (Nov. 19, 2018), <https://www.prnewswire.com/news-releases/lendingtree-compares-average-homeowner-age-across-us-300753081.html> (Results were calculated using the U.S. Census Bureau’s American Community Survey, which studied occupied households from 2012 to 2016.).

¹⁴⁰ SOCIAL SECURITY ADMINISTRATION, PROGRAM OPERATIONS MANUAL SYSTEM: LIFE ESTATE AND REMAINDER INTEREST TABLES, <https://secure.ssa.gov/apps10/poms.nsf/lnx/0501140120>.

¹⁴¹ *Id.*

¹⁴² Hemmat, *supra* note 112, at 944.

dollars in the purchase price of each home. Furthermore, although fifty-four years old is the nationwide homeowner average, this number almost certainly trends higher in coastal communities where people tend to retire. In fact, seven of the top ten metropolitan areas with the highest homeowner age are located in Florida coastal regions.¹⁴³ Thus, for example, in North Port, Florida, where the average homeowner age is just over sixty-three years old, the savings are dramatic. A life estate purchase method in North Port would reduce the initial purchase price of homes by close to 30 percent.¹⁴⁴ These purchase price reductions offer cash-strapped jurisdictions the opportunity to accrue significant savings when budgeting for their sea level rise responses.

VII. CONCLUSION

Coastal communities in the United States face a crisis. It is increasingly clear that coastal communities may win short-term battles but not a war against the rising sea. Instead, the focus must turn to the difficult decisions regarding how and when managed retreat will occur. The stakes for this retreat are enormous. Coastal communities account for nearly 123 million people in the United States—nearly 40 percent of the entire U.S. population.¹⁴⁵ By the end of this century, up to 13 million Americans could be forced from their homes due to sea-level rise.¹⁴⁶

Certain novel approaches can help foster managed retreat. For instance, BWRs are flexible and more economically and politically feasible than traditional buyout strategies. However, this option is susceptible to holdouts, as well as potential corruption and other drawbacks. Life estates are another option. Life estates offer local officials a lower-cost, empirically tested strategy to assist managed retreat implementation. By allowing current residents to remain in their properties, local officials can assuage concerns over perceived governmental intrusions and avoid separating people from their community, culture, and long-time family homes. Likewise, the large-scale use of life estate purchases will extend the turnover of coastal properties into a staggered, decades-long process, further tempering public hostility to managed retreat plans.

In the coming years, the United States' civic and governmental leaders will continue to struggle with difficult decisions about the future, while simultaneously facing the political, legal, and financial constraints of the present. A life estate based approach would certainly have questions that would need to be answered along the way. Still, life estates can serve as a powerful policy tool to foster managed retreat and can aid leaders in the fight to preserve the health and safety of coastal communities.

¹⁴³ CISION PR NEWSWIRE, *supra* note 139.

¹⁴⁴ *Id.*; SOCIAL SECURITY ADMINISTRATION, *supra* note 140.

¹⁴⁵ Lydialyle Gibson, *Scholars Advocate “Managed Retreat”—Before Climate Change Sinks Coastlines*, HARV. MAG. (Aug. 22, 2019), <https://harvardmagazine.com/2019/08/scholars-advocate-managed-retreat-from-coastlines-before-climate-change-makes-them>.

¹⁴⁶ See Mathew Hauer, *Migration induced by sea-level rise could reshape the US population landscape*, 7 NATURE CLIMATE CHANGE 321 (2017) (Calculated using NOAA sea level rise datasets for twenty-two coastal states and the District of Columbia combined with Internal Revenue Service's county-to-county migration datasets.).