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UPHILL BOTH WAYS: THE CHALLENGES AND OPPORTUNITIES OF ROLLING EASEMENT IMPLEMENTATION IN NEW YORK STATE

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UPHILL BOTH WAYS:
THE CHALLENGES AND OPPORTUNITIES OF
ROLLING EASEMENT IMPLEMENTATION IN NEW YORK STATE

A Research Paper

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

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Ian Thomas Blair

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ABSTRACT

Rolling easements, legal mechanisms that allow coastal land-use flexibility while prohibiting shoreline armoring, are one tool in the climate change adaptation toolkit. Conceptually, rolling easements allow communities to balance the desire for coastal economic development and natural preservation while anticipating climate change impacts. However, the reality of their enforcement is fraught with legal hurdles. This paper aims to bridge a knowledge gap between planning journals and law reviews by connecting the distinct legal features of rolling easements to planning strategies. Specifically, this paper examines how five states have incorporated rolling easements into their Coastal Management Plans and then uses New York State as a case study to assess the feasibility of rolling easement implementation. By highlighting three different approaches New York could take towards integrating rolling easements, this paper seeks to facilitate a productive discussion about the opportunities and obstacles of how rolling easements could add to the field of coastal adaptation.

BIOGRAPHICAL SKETCH

Ian Thomas Blair is a Master of Regional Planning candidate at Cornell University's College of Architecture, Art, and Planning. Blair holds a Bachelor of Arts in Religious Studies with a Russian minor from Lewis & Clark College in Portland, Oregon. Before Cornell University, they served in various public service organizations, including AmeriCorps State in Austin, TX, accepted an assignment in Ukraine with the United States Peace Corps, and were evacuated while completing a project with the Ministry of Education in Georgia with the United States Peace Corps Response. At Cornell University, Blair assisted with writing a Building Resiliency in Communities Grant roadmap for the City of Ithaca in the 2020 Winter Infrastructure Practicum. Blair interned with the New York State Water Resource Institute in the Summer of 2021, where they researched flood risk perception in Kingston and Troy, NY. They participated in the AAP NYC Urban Design semester in the Fall of 2021 and assisted the NYC Economic Development Corporation in assessing the feasibility of offshore wind energy marshaling sites around Brooklyn and Staten Island.

To those who stroll the coast

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LIST OF ABBREVIATIONS

Source	Abbreviation	Meaning
Federal	CMP	Coastal Management Plan
Federal	CRS	Community Rating System
Federal	CZMA	Coastal Zone Management Act of 1972
Federal	FEMA	Federal Emergency Management Agency
Federal	HMP	Hazard Mitigation Plan
Federal	NFIP	National Flood Insurance Program
Federal	NOAA	National Oceanic and Atmospheric Administration
Federal	OCM	Office of Coastal Management
General	SALT	Shoreline Adaptation Land Trust
General	SLR	Sea Level Rise
Maine	MDEP	Maine Department of Environmental Protection
Maine	MSZA	Mandatory Shoreland Zoning Act
New York	CEHA	Coastal Erosion Hazard Area
New York	CLCPA	Climate Leadership and Community Protection Act
New York	CRRA	Community Risk and Resiliency Act
New York	CSC	Climate Smart Communities
New York	DEC	Department of Environmental Conservation
New York	DHSES	Division of Homeland Security and Emergency Services
New York	DOS	Department of State
New York	LIS CMP	Long Island Sound Coastal Management Program
New York	LWRP	Local Waterfront Revitalization Program
New York	NPFA	Natural Protective Feature Area
New York	NYS	New York State
New York	SHA	Structure Hazard Area
Rhode Island	CRMC	Coastal Resources Management Council
Rhode Island	CRMP	Coastal Resources Management Program
South Carolina	BMA	Beach Management Act
South Carolina	OCRM	Office of Ocean and Coastal Resource Management
Texas	GLO	General Land Office
Texas	NRC	Natural Resource Code
Texas	OBA	Open Beaches Act
Virginia	CRO	Coastal Resilience Overlay (Norfolk)
Virginia	URO	Upland Resilience Overlay (Norfolk)

INTRODUCTION

Coastlines are dynamic sites of competing interests. The allure of living near water generates recreational opportunity and economic risk that needs to be carefully managed. With expected sea level rise and more frequent and intense storm events due to Anthropocene-driven climate change, communities must deal with fluctuating shorelines that will generate conflicts among property owners. None of this is more visible than on the coasts of New York State (NYS). With shores that touch two Great Lakes, the tidal estuary Hudson River, and the rest bordering the Atlantic Ocean (New York Harbor and Long Island Sound), NYS needs unique coastal management strategies that can adapt to varied ecosystems and community needs (NYS Dept. of Environmental Conservation, n.d., NY's Coastal Waters). Recognizing that 16 million of NYS's 19.7 million people live in coastal areas (NOAA Office of Coastal Management, n.d.) and are at higher flood risks under climate change, how should authorities approach climate change adaptation planning?

Noting that the National Oceanic and Atmospheric Administration's (NOAA) Office for Coastal Management (OCM) considers the use of rolling easements as a coastal hazard management strategy (NOAA OCM, 2019), this paper explores the potential of a middle ground between "defend" and "retreat" coastal climate adaptation approaches. In its simplest terms, rolling easements are various legal mechanisms to allow shorelines to migrate inland with sea-level rise; theoretically, they occupy a privileged space in the coastal adaptation landscape as they balance economic development and coastal preservation. Some states have begun to employ this tool for coastal management, and it presents some opportunities and challenges in mitigating climate change impacts and property rights disputes.

This paper evaluates the potential contributions of rolling easements in the coastal adaptation landscape and in NYS on two levels: legal theory and governmental application. By examining how rolling easements have been employed in state-level Coastal Management Plans (CMPs), as required for state participation in the National Oceanic and

Atmospheric Administration administered federal Coastal Zone Management Act of 1972, this paper argues for careful addition of such implementation within the NYS CMP.

Rolling easements are complex legal tools that were born out of a theoretical interpretation of several legal doctrines. The paper first scopes the continuum of coastal adaptation tools by contextualizing the unique position of rolling easements in the coastal management landscape by locating them in a grander landscape of political approaches to coastal management. The first third of the paper will delve into a theoretical explanation of these assumptions, expounding on the essential approaches of coastal adaptation and placing them into a context of the nexus of Constitutional and land use law. Bridging theory and application, the middle third contextualizes this theoretical understanding with an examination of the legal frameworks within NYS and identifies a policy mismatch. The final third of the paper is dedicated to application: studying state use of rolling easements in CMPs. Through highlighting the history and approach of rolling easements in five states, the paper concludes with possible avenues that NYS can take if it deems rolling easements beneficial to its state CMP. Ultimately, while rolling easements have a convincing theoretical argument for their use and creation, politics, prior litigation, and uncertain future conditions make their employment more difficult in application.

LEGAL FRAMEWORK OF COASTAL MANAGEMENT

The question of who can regulate coastal development in the United States is essential for rolling easements. As coastal activity has both commercial and ecological implications that extend beyond state borders, achieving a consensus among multiple stakeholders across all levels of governance is necessary. To understand the legal implications of rolling easements with their relationship to coastal management, this paper will use an Assessment document included with the Coastal Zone Management Act of 1972 (CZMA) as the foundation for cross-state comparison. Congress passed the CZMA to incent states to manage United States' coastal resources better. The legislation was created when a worrisome lack of coordinated coastal planning generated harmful pollution and erosion across the nation's coastlines and impacted state boundaries; activities one state did off its coasts often tended to impact other states' coastlines negatively (Garten, 2016). The CZMA established a voluntary partnership between the National Oceanic and Atmospheric Administration (NOAA) and the 34 coastal states and territories to provide a framework to address diverse ecological and economic coastal needs.

The CZMA is a voluntary grant-in-aid program. On behalf of Congress, NOAA develops minimum standards for coastal management for states to meet. To receive the allocated funding, each state must craft a program meeting or exceeding those standards taking into consideration its unique context and goals (Garten, 2016). In essence, states need to administer and enforce NOAA-led standards for coastal resource management to receive much-needed funding for expensive coastal projects, such as harbor maintenance, dredging, and beach renourishment. It is important to note that federal standards are not specific rules. Rather the CZMA provides incentives for states to enhance their coastal management by focusing on nine key areas of national interest: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean resources, energy facility siting, and aquaculture. The resulting Coastal Management

Program (CMP) is a customizable plan each state makes according to its coastal management needs.

For clarification, the CZMA is three programs: the National Coastal Zone Management Program, the National Estuarine Research Reserve System, and the Coastal and Estuarine Land Conservation Program. This paper will only focus on the National Coastal Zone Management Program, where funding for coastal management activities is situated within the four types of grants under the Act: Section 306 – Administrative Grants, Section 306A – Coastal Resources Improvement Grants, Section 309 – Coastal Zone Enhancement Grants, and Section 310 – Technical-Coastal Nonpoint Pollution Control Program. This paper utilizes Section 309 Grants to compare state coastal management approaches.

For a state to be eligible for a Section 309 Grant, it must create a Coastal Zone Enhancement Assessment and Strategy report and regularly revise it every five years. The report should highlight how the state's Coastal Management Program (CMP) addresses one or more of the nine enhancement areas of national significance. Due to the federalist nature of the CZMA -- each coastal state has the power to craft and implement its CMP considering its own legal, economic, and environmental needs – the Section 309 Assessment and Strategy report allows cross-state comparisons. It is derived from an NOAA template that allows functional searchability and captures different state approaches toward the same enhancement area goal. States identify which activities they employ with “yes” and “no” responses and follow up with short text paragraph answers regarding progress on activities or the most notable changes in status on previously reported activities.

The activities identified in the Section 309 Assessment and Strategy report, specifically in the Coastal Hazards part, articulate a wide variety of tools for how a state can craft coastal management policies:

- Shorefront setbacks/no build areas
- Rolling easements

- Repair/rebuilding restrictions
- Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)
- Repair/replacement of shore protection structure restrictions
- Inlet management
- Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)
- Repetitive flood loss policies (e.g., relocation, buyouts)
- Freeboard requirements
- Real estate sales disclosure requirements
- Restrictions on publicly funded infrastructure

However, every one of these activities needs to be analyzed and understood within the context of their political implications before a comprehensive rolling easement discussion can occur. Fortunately, rolling easements are uniquely positioned in the coastal adaptation toolkit because of their ability to straddle both development and conservation desires.

It should be noted that, while coastal land management is not directly mentioned in the US Constitution, Congress "is empowered by the commerce clause of the Constitution to enact comprehensive land planning and regulatory programs in the coastal zone" (Finnell, 1978). The Commerce Clause gives Congress the power "to regulate commerce with foreign nations, and among the several states, and with the Indian tribes" (U.S. Const. art. I, § 8, cl. 3). While this is an exceptional avenue for coastal management and potentially one that may need to be invoked with both the commerce and supremacy clauses as climate change impacts worsen, it will remain outside the scope of this paper. "Congress is not well equipped to carry the full burden of experimentation, amendment, and interstitial

development of coastal land management programs" (Finnell, 1978). Instead, this paper will focus on cooperative state programs through coastal management programs.

POLITICAL ASSESSMENT OF COASTAL ADAPTATION

Due to the political nature of coastal adaptation, adaptation tools are prone to facing opposition, particularly when property owners perceive regulations as constraints on their ability to develop coastal properties. To comprehend the distinct position of rolling easements on the spectrum of potential solutions for addressing climate change, it is crucial to recognize the political orientation of various planning tools. The politics of coastal adaptation can be illustrated in a continuum in Figure 1, where photos are positioned on a spectrum with "Defend," "Accommodate," and "Retreat" on the axis.

Figure 1 - Coastal Adaptation Continuum

In general, coastal adaptation approaches can be described as defend, accommodate, and retreat (Titus, 2011). Within these approaches are technical tools that municipalities or private landowners can and do utilize. There is no one-size-fits-all approach, and the specific environmental context should inform the tools used in the area. In context, political conditions should also be considered, which requires an understanding of land use and property law, which will be discussed shortly.

The "Defend" approach involves the use of hard infrastructure components to hold back the sea. By installing structures such as dikes, seawalls, and bulkheads, communities can maintain current land use and continue to live their everyday lives. However, this approach is considerably expensive and can have adverse side effects on neighboring communities as water is redirected and erosion around the infrastructure is exacerbated.

"Accommodate" refers to accommodating or adapting to more frequent flooding events in communities. Using land use planning as a foundation, the accommodation approach can be pursued either structurally or non-structurally. Structural accommodation can be pursued by modifying and/or enforcing building codes that dictate freeboard requirements (elevating buildings to allow water to move under the structure). Non-structural accommodation refers to ecological projects, like beach renourishment or "living shorelines," that utilize natural processes to slow down coastline loss without compromising habitat or impacting nearby communities. Accommodation also encompasses a similar concept, "Adapt", with both being more practical when compared to Defend, as these very similar approaches are generally less expensive and clarify risk perception by living with the risk. However, they are only temporary solutions that require more maintenance (beach renourishment involves either importing sand or dredging offshore sand to fill eroded beaches). They can have harmful impacts on both the onshore environment (e.g., blocking viewscapes, impacting stormwater collection) and the offshore (e.g., disturbing ocean flood ecosystems and agitating resting chemical agents) (Vidal & Van Oord, 2010). So, many planners and state agencies are promoting "soft" shoreline protections through accommodation and/or retreat pathways.

Retreat, the final path, proactively relocates "people, structures, and infrastructure out of harm's way before disasters or other threats occur to avoid damage, maximize benefits, and minimize costs for communities and ecosystems" (Georgetown Climate Center 2021). Retreat is a complex and emotionally challenging subject. Retreat as a coastal adaptation measure is often an unpopular choice due to the combination of two factors:

firstly, the political and economic ramifications for private landowners and secondly, the reliance on federal property acquisition funds to subsidize it, which limits its scalability across different levels of governance (Siders, 2019). Consequently, in many instances, it is a challenging and, consequently, an unappealing option. (Siders, 2019).

Within the "Accommodation" pathway, the land use planning choices exist on another continuum that relates to the political will of the municipality. These can be described as: 1) setbacks, 2) rolling easements, or 3) laissez-faire (Titus, 2011), with setbacks representing "hard" restrictive regulation upon coastal communities, whereas laissez-faire represents absolutely no regulation whatsoever. Rolling easements fall into the middle of these two extreme legal approaches, as illustrated in the figure below.

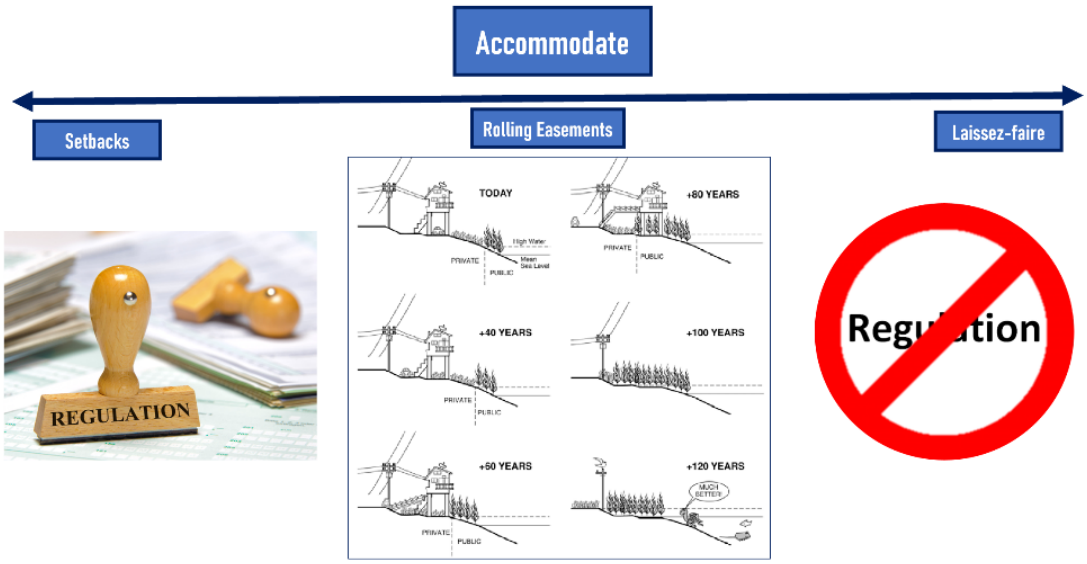

Figure 2 - Accommodation Land Use Spectrum

C

oastal setbacks dictate the minimum distance which structures must be set back from the shoreline. Setbacks are executed through municipal ordinances — regulations enacted by municipalities that govern boundary lines and where structures can be built on property lots. Setbacks are considered "hard" because they 1) are regulated by local municipal governments, as opposed to voluntary choice by private property owners, and 2) restrict development in specific zones with which developers and private landowners may take

issue. The restriction of economic productivity on property parcels can produce Takings clause litigation if done improperly.

On the opposite side of setbacks is the laissez-faire approach, where a local government will not make any effort to prevent development, or shoreline protection, but allow the force of the market and nature to nudge property owners to manage their response to sea level rise (SLR) and other impacts of climate change. The foundation of this approach assumes that property owners are more likely to manage these risks if they bear all related rewards and burdens. The laissez-faire approach would allow coastal development in some areas but would limit governmental support of programs like beach renourishment or federal coastal line subsidies for barrier islands. With the strong possibility of compounding damage from climate change, landowners ideally would opt to move out of such risky areas for safer places. However, the current floodplain policy backed by the National Flood Insurance Program (NFIP) prevents this approach from being effective; the NFIP is known to have induced coastal development with the risk of building insured by the US federal government (Michel-Kerjan, 2010). With the federal government insuring federally backed mortgages with less-than-actuarial risk payments into the NFIP, the confidence in the laissez-faire approach to climate change may do more harm than good.

In between these two approaches is the category and policy tool of rolling easements - an idea to make no effort to restrict the development but prevent shore protection via a variety of legal mechanisms across varying levels of government: for example, regulation in municipal-level zoning ordinances of specific coastal districts or by property lot-levels via transferring any right to hold back the sea from owners inclined to do so to an organization that would not. The definition of a rolling easement is "(1) a law that prohibits shore protection or (2) a property right to ensure that wetlands, beaches, barrier islands, or access along the shore move inland with the natural retreat of the shore" (Titus, 2011). The innovation of rolling easements lies in their condition-triggered nature, which allows all real

estate stakeholders to understand the risks associated with coastal living, especially those induced by phenomena like sea-level rise.

Situating coastal adaptation planning in its greater political context will allow better decision-making at the state coastal management level. Since no tool exists in a vacuum but in a deliberate policy position belief about private property, rolling easements are theoretically situated in a measured setting that can benefit all parties involved.

KNOWLEDGE GAP OF ROLLING EASEMENTS IN LITERATURE

The literature on rolling easements can be broadly categorized into two groups: 1) articles published in planning journals that cover it as one of several coastal adaptation tools rather than the main focus, and 2) papers featured in law reviews that specifically analyze the constitutionality of rolling easements within the legal world. Virtually, there are no overlaps between these two types of literature; law journals almost entirely concentrate on the legality of rolling easements on their own, whereas planning journals scope out how rolling easements are situated within a range of tools without focusing on their legality. Due to this gap, law reviews rarely mention the greater context of the Coastal Zone Management Act (CZMA), and planning journals fail to capture the fraught legal state of rolling easements. Within these two categories, a striking gap is observed between the theoretical possibilities of rolling easements and their application as state-level climate adaptation tools in the political sphere.

The reason for this gap can be derived from how loose the definition of rolling easement is among academics and state agencies. As stated earlier, Titus defines a rolling easement as "(1) a law that prohibits shore protection or (2) a property right to ensure that wetlands, beaches, barrier islands, or access along the shore move inland with the natural retreat of the shore" (Titus, 2011). An examination of how different states have incorporated rolling easements into their Coastal Management Plans (CMPs) reveals a discrepancy between how they are conceptualized in the law review domain and how they are put into practice as a coastal adaptation tool. This suggests that rolling easements are implemented in diverse ways, contingent upon the political context in which they are situated. However, this variation in implementation primarily reflects the underlying intention behind the creation of rolling easements. I have classified this desire among three distinct aims: 1) a desire for public access to the coast, 2) a desire for ecological restoration/erosion control, and 3) a climate change retreat strategy. These aims will be discussed in the state review section.

The law review publications focus on three things: understanding how to keep shores' open access to the public, defining what constitutes the shoreline for public and private ownership, and responses to the controversial Texas Supreme Court ruling, *Severance v. Patterson* (2012), which ruled that rolling easements can only be enforced in specific conditions. Fundamentally, the power of the rolling easement lies within the strength of the public trust doctrine. If a rolling easement is not linked to that doctrine, it falls into Takings Clause trouble, where regulatory authorities are at risk of litigation for just compensation. Simplified, law review literature presents as follows:

Setbacks	**Rolling Easements Situated in the Public Trust Doctrine**	**Rolling Easements as Exactions**
At Risk for Takings Clause	Safe	At Risk for Takings Clause
– Restriction on economic productivity can be seen as a Taking (without ample notification) (*Lucas v. South Carolina Coastal Council*)	– Common law provide protection from litigation where enforcement is done for the public good	– The burden of an easement imposed on private property owner needs to be proportional to the benefit for public usage. (*Dolan v. City of Tigard*, 1994)

Table 1 - Overview of Land Use Planning Takings Challenges

In total, the count of papers on rolling easements is small. There are roughly 21 law reviews discussing and assessing those in ten states or across the US generally: Texas (4), California (1), New Jersey (1), Virginia and North Carolina (1), Maine, Connecticut, and Massachusetts (1), New Hampshire (1), Oregon (1), and the US (11). There is one GIS analysis of rolling easement policies in Florida. As of the writing of this paper, no study has examined the implementation of rolling easements in New York, despite New York being ranked fourth in the country for flood exposure loss (Garfield, 2018).

The most notable difference between planning journals and law reviews is that when planning journals reference rolling easements as a tool, they generally cite Titus's Rolling Easement Primer (2011) without understanding the severe consequences of Severance v. Patterson (2012) enacted on rolling easement efficacy in Texas and for the greater US. For

law reviews, a generally optimistic attitude is taken with the unique position of rolling easements' abilities to circumvent Takings litigation for sea level rise and public access to beaches without linking to any real-world application of rolling easements. To reconcile the gap between these two perspectives, the following section will provide the necessary legal knowledge to comprehend the distinctive nature of rolling easements and identify their potential integration into relevant planning initiatives.

Given that coastal adaptation measures are situated within a political framework, this section aims to clarify the boundaries of real property and water law precedents to bridge the gap between the planning literature and legal reviews. This section will elucidate the optimism around rolling easements seen in law reviews due to its unique nature of circumventing Takings challenges.

Coastal climate adaptation is informed by the powers of land use law, finding much of its strength through police powers allocated in zoning. However, pursuing a setback-only policy is cause for concern: For one, if done incorrectly, it puts municipalities at risk of litigation due to the Takings Clause of the 5th Amendment. Regardless of whether setbacks are fixed, informed by lot size, or calculated by an erosion rate, they still maintain a status quo future – a hypothetical where structures will withstand climate forces because the setback is assumed as a protective barrier.

Rolling easements put the risk back into the conversation as property owners can develop with full understanding that there is a term limit on their stay on the property. Rolling easements circumvent that risk by balancing public and private desires. The desire to balance coastal economic development and preservation could benefit from a legal tool that sets up expectations that respond to future condition changes while maximizing current usage. But where there is coastal property, the boundaries of property law become blurred, and trouble can arise. Depending on the laws of each US state, property owners possess a varying amount of property that touches water ranging from where the land starts from low tide to high tide to visible vegetation. Greater questions arrive when the dynamic nature of tides and storm surges enter the equation.

Littoral (e.g., coastal - where land and water touch) property borders a fluctuating waterbody, and the boundaries are constantly changing. How do people decide on where the property ends? In the US context, private real property is land and attached buildings owned

by a private landowner as opposed to the government. Extending from the physical land, private property is typically described as a "bundle of rights" that attach with land ownership. These rights most commonly include the right to sell real property, the right to land usage, and the right to exclude others (Peloso, 2018). It differs from public lands, which are open and accessible to anyone. US property law generally borrows its foundations from English Enclosure Laws, which have fixed boundaries for private property ownership. To identify whose property belongs to whom, a surveying system was developed through "metes and bounds" — specific lines and accompanying descriptions of property on a cadastral map that a surveyor would produce. However, this system conflicts if the property in question is along a waterbody where the tides rise and fall.

In Common Law, there are a series of laws that establish where property lines are when water advances and retreats on the shoreline. These laws inspire current US property law and are foundational to the US interpretation of applicable law. They are referenced in numerous State Supreme Court cases around the country that can advance or detract from the legal ability to enforce rolling easements in NYS.

Unlike non-littoral property, which has static and unmoving boundaries, any parcel bound by water may wander, grow, or shrink in size with the waterway's movement. This riparian dynamic led to the development of the property law principles of 'reliction', 'accretion' and 'avulsion,' which dictate to whom title belongs depending on the characterization of the water's movement in both spatial and temporal terms. There are three legal concepts to consider. The first is the law of Reliction (LII, 2021c), the idea that a gradual washing away of soil, such as erosion or rising water on the shore, moves the established line of ownership inwards toward the land. Therefore, a property owner would lose the land quantity if reliction is enforced and therefore loses the ability to exclude others and control inside that boundary. In contrast, the law of Accretion (LII, 2021a), the second concept, is when the line of ownership moves forward into where the waterbody was once located (e.g., a drought dries up a lake or river). The landowner would gain property in this

situation. In the case of a rapid change of a water body (e.g., due to a hurricane or flood), the third concept, the law of Avulsion (LII, 2021b), maintains that the property line will remain at the previous location before the event. These laws are summarized below:

Common Water Law	Impact
Law of Reliction	Property owner loses land.
Law of Accretion	Property owner gains land.
Law of Avulsion	No change in property

Table 2 - Common Water Law

The foundation of past and present Supreme Court cases that have influenced the trajectory of rolling easements is informed by these three fundamental principles of Common Water Law. An easement is a legal tool that allows someone the right to access property they do not own. A utility company desiring to lay wires to connect your house to the greater electrical grid would need an easement to perform that job on your property. In a utility use case, the easement is static. Rolling easements are different; they are dynamic due to an externality. *The most significant component of a rolling easement is the moving right of access triggered by either a condition or event, usually with the rise of the sea to a certain level or erosion to a certain amount*. Easements can be established in several ways: dedication, prescription, or custom. Easements can also be affirmative, meaning the recipient can do an activity on another's property, or negative, meaning the property owner cannot implement specific uses on the property. Each of these is important for planners to understand which is best for their communities.

The property rights of rolling easements can manifest in various forms: affirmative easements, such as public access to dry beaches, conservation easements that prevent hard shoreline protection, and restrictive covenants on specific properties to prevent a property owner from altering the natural environment. James Titus developed a summary of rolling easement options:

Interest	Enforcer	Purpose	Objective	Caveat
Shoreline migration conservation easement	Government or land trust	Conservation or recreation	Prohibit shore protection. May have provisions for removing homes.	May be costly to enforce unless carefully drafted.
Legal covenant	Developer	Any	Prohibit shore protection for access to migrate inland. But the court cannot enforce the agreement; only awards provable damages for failure to comply	Strict rules for when covenant can be create known as "privity." Damages only.
Equitable covenant	Developer	Any	Prohibit shore protection or ensure that access migrates inland.	Easier to create than legal covenant, but court may decide not to enforce if harm to owner is greater than benefit to neighbor.
Future interest in land	Anyone	Limit duration of land ownership	Terminate ownership when sea level rises or shore retreats enough to submerge parcel.	Abolished in some states. Careful drafting need to show purpose.
Rolling affirmative easement	Neighbor or state	Any	Access along the shore migrates inland; remove structures that block access.	Must be clear about the intention to migrate inland.
Rolling boundary	Neighbor	Any	Boundary between landowners migrates with	Few examples other than for public trust lands.

			shore; preserve width of road or conservation buffer.	
Action abate nuisance or quiet title in court	Neighbor or state	Abate nuisance or enforce a right	Private owner asks court to prevent shore protection or allow access along shore based on common law.	Requires a court to make new law, which courts usually decline.
Rolling conservation easement	Government or land trust	Conservation or recreation	Amend existing conservation easements to also prohibit shore protection.	May be costly to enforce unless drafted carefully.
Transferable development rights	Government	Any	Compensate owner who yield land to rising sea, with right to develop new coastal lot.	Difficult to define where to transfer the development.

Table 3 - Titus's Rolling Easement Options

Transferable development rights, and legal expectations which allow developers who yield coastal land the right to build in adjacent, ideally safer ground nearby, can become rolling easements.

The affirmative custom easement of public access to dry beaches is part of a more extensive set of legal principles called the public trust doctrine. Property law is explicitly a matter reserved generally for each state to decide, as opposed to the federal government. There are, however, two significant limitations to states' administration of property rights: the Public Trust Doctrine and the Takings Clause (a provision in the Fifth Amendment of the US Constitution that there will be no takings of private property for public use without payment of just compensation) (Craig, 2007).

Private ownership of property is part of American property law. Ownership, use, and enjoyment of land along the coast are governed by common law and constrained by

other doctrines, including the public trust, land use laws, and constitutional takings precedent. A NYS court case has created a test to determine if an unconstitutional taking has occurred. The case, *Penn Central Transportation Company v. New York City* (1975), requires courts to weigh several factors, including "1) the economic impact of the regulation, the character of the governmental action, and the property owner's reasonable investment back expectations" to make a decision. This is supportive of municipal actions as it depends on the property owner to prove the economic damage of the change as opposed to the state proving it does not.

Protecting property will be a property owner's first impulse in the face of sea-level rise and climate changes in storm frequency. Under New York law, "a property owner may leave the land in its natural state and is not required to adopt or construct preventative measures to prevent the possible flow of surface water from his property to that of nearby landowners" (Kossoff v. Rathgeb-Walsh, Inc. 1958). Any improvements made by a property owner affecting the flow of surface waters must satisfy all of the following rules: 1) they must be to develop the property for a rational use suited to the property; 2) they must be made in good faith; and 3) they must not direct surface water onto the property of another by artificial means, such as drainage ditches or pipes (Osgood v. Bucking-Reddy 1994).

The decisions of other states do not bind New York, but sometimes the laws of other states could help inform decisions in New York. Texas has been held up as a prime example of a state implementing rolling easements through its Open Beaches Act (OBA), where state law provides an easement that moves with the water, which preserves the public's right to beach access throughout the state.

> [I]f the public has acquired a right of use or easement to or over an area by prescription, dedication, or has retained a right by virtue of continuous right in the public, the public shall have the free and unrestricted right of ingress and egress to the larger area extending from the line of mean low tide to the line of vegetation bordering on the Gulf of Mexico. (Texas Natural Resource Code Ann. § 61.011)

Even with this specified definition of the shoreline, from mean low tide to the line of vegetation, states still face litigation.

Unfortunately, a significant Texas State Supreme Court ruling, *Severance v. Patterson,* has weakened how powerful and useful a rolling easement can be in Texas. It provides that property owners retain their title in the case of avulsive changes. As climate change is expected to increase the frequency and intensity of storms, avulsive changes will become more common, and property owners may try to protect their land by building structures that could 1) restrict public access to the shoreline as well as 2) generate erosion and push water to other areas. Suppose NYS tried to enact a statewide rolling easement resulting from sudden coastline migration due to severe storm events. In that case, courts could view this as a total loss of the land's economic value; therefore, it would fall under the Takings Clause, and municipalities or the state would need to reimburse the property owners.

Integrating the relevant legal jargon and information into the framework of climate change adaptation planning in coastal regions is crucial for planners to identify which planning tools are effective and what challenges may arise in different contexts. Given the high vulnerability of these areas, property owners may face future complications that could potentially be mitigated through the application of rolling easements, benefiting both private and public stakeholders. However, before exploring the feasibility of implementing rolling easements in NYS, it is important to determine which entities possess the necessary legal authority to execute such measures.

UNDERSTANDING THE COMPLEXITY OF LEGAL AUTHORITY

Rolling easements require legal authority. At which level are these rolling easements executed? Are they enforced at the private landowner level (deeds), municipal level (zoning), or state level (coastal law)? Figure 3 illustrates the unique position of rolling easements in each of these levels of governance. Understanding the legal authority to implement climate change adaptation strategies lays the foundation for an implementation strategy that New York State could adopt – whether the state should lead with statutory authority or whether it could be delegated to local municipalities to implement or incentivize for private property owners to adopt.

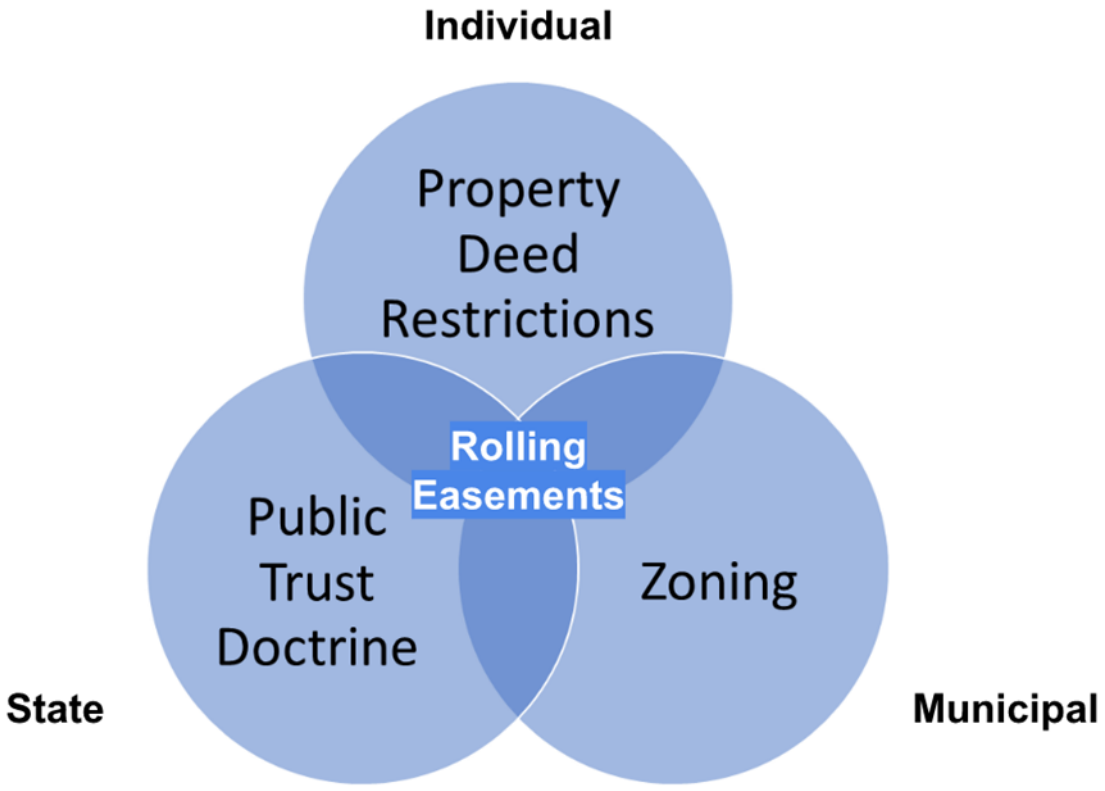

Figure 3 - Locating Rolling Easements in Governance

In the United States, the Constitution is the authoritative legal document, and the Bill of Rights specifies the rights of citizens and communities in relation to the federal

government. The 9th and 10th amendments allocate states to reserve all other powers not expressly delegated to, or prohibited by, the states and the people. Each state is responsible for granting or limiting authority to local municipalities, ranging from small villages to large cities.

The principles of local governance fall into two categories: Dillon Rule and Home Rule states. Dillon Rule refers to an opinion on local governance authority from Iowa Supreme Court Justice John F. Dillon in 1868. It is a limiting principle: stating that local government can only exercise "(1) powers expressively granted by the state, (2) powers necessarily and fairly implied from the grant of power, and (3) powers crucial to the existence of local government" (Moore, 2020). In general, Dillon Rule states have more of a challenge in dealing with climate change adaptation as they must be expressively granted the powers to adapt to climate change by the state government.

As legal opinions changed in US history, the idea of Home Rule became more popular in the early 20th century. Home Rule refers to the notion that each level of government (local, county, state, federal) exists in a different realm of authority. Therefore, these powers should be respected and not infringed. Home Rule, unlike Dillon Rule, is a granting principle that allows local governments a great deal of power, specifically with land use control and ownership of how their communities will develop.

New York State is a strong Home Rule state. Local governments have been granted powers that provide "counties, cities, towns, and villages general-purpose units of local government that allow them home rule powers to regulate the quality of life in communities and provide direct services to the people" (Home Rule Power, n.d.). According to NYS, "the home rule powers available to New York local governments are among the most far-reaching in the nation" (Home Rule Power, n.d.). Initially, each level of municipality was codified through adopted legislation of the Town Law, Village Law, General City Law, and County Law (MHR, n.d.). These laws still stand, though they have been overridden with a constitutional guarantee of "home rule" (Article IX, section 2). This can explain NYS's

current approach in its CMP – essentially waiting for municipalities to draft their own plans, request state technical help, and apply for state funds to implement such plans. This is in stark contrast to a Dillion Rule state, where county departments work on coastal projects on behalf of municipalities as those communities might not have expressive powers to execute them.

Local municipalities' most potent legal tool is land use control to regulate the community's physical development (DOS Land Use Planning & Regulation, n.d.). The Supreme Court recognizes land use controls as police powers (Article IX, Section 2). This is both a blessing and a curse as it means that every one of the 1,545 municipalities in NYS is responsible for their response to climate change. The recognition of land use control is the first burden of climate change adaptation that municipalities in states will face – whether they have the legal authority to implement a rolling easement.

An intersection of law and climate change adaptation planning, specifically for erosion, flooding, and SLR, can theoretically be found in the Public Trust Doctrine. This is the most critical piece that could influence NYS in a campaign to implement rolling easements - an area with great potential for municipal climate change adaptation planning. The public trust doctrine is a "legal principle establishing that certain natural and cultural resources are preserved for public use" (LII, 2022). The public trust doctrine finds its roots in the *jus publicum,* an ancient Code of Justinian. *Jus publicum* is a principle that the public has an overriding interest in access to water:

> "[T]he following things are by natural law common to all--the air, running water, the sea, and consequently the seashore. No one, therefore, is forbidden access to the seashore, provided he abstains from injury to house, monuments, and buildings generally; for these are not, like the sea itself, subject to the laws of nations" (On the Commons, 2005).

Understanding the relevance of *jus publicum* is crucial since, as water levels rise and encroach on coastal properties, landowners may act to safeguard their homes against water damage and erosion. The natural tendency is to armor the shoreline to prevent these

conditions from happening or worsening. However, such structures would impede public access to the coastline and come into conflict with the *jus publicum*.

Such access is specifically targeted within NYS's Coastal Management Program, which will be discussed in the next section. Under New York law, historic precedent appears to grant a bright future for rolling easement implementation through the form of Reliction: "When the sea, lake or navigable stream gradually and imperceptibly encroaches upon the land, the loss falls upon the owner, and the land thus lost by erosion returns to the ownership of the People by virtue of the sovereignty of the state" (In re City of Buffalo, 206 N.Y. 319). The line between private property and state ownership of water is not clearly defined in NYS, though it generally follows the mean high tide mark. This means that how the tide is marked can alter the boundaries of coastal private property. Unlike other state constitutions, such as Hawaii or North Carolina, New York had no relevant provisions for the public trust doctrine embedded in the New York State Constitution. Nonetheless, specific statutes, such as N.Y. Pub. Lands Law §75, promote public access to waterways, and the CMP State Policies create favorable conditions for NYS to contemplate the adoption of rolling easements as an additional component of their existing set of coastal adaptation strategies. The following section will demonstrate how NYS presents an ideal case for exploring the feasibility of rolling easement implementation.

CASE STUDY FOR ROLLING EASEMENTS: THE NEW YORK STATE CONTEXT

With an understanding of the political orientation of approaches to coastal management and acknowledging the literature gap between law and planning journals, we can better assess how rolling easements could inspire innovative coastal management in the context of NYS. However, it is necessary to set the stakes. Coastal economies are vital for NYS, with 81% of its population living in coastal areas (16 million of the total 19.7 million) and 7.5 million people annually earning over $566 billion (equating to $1.4 trillion in the gross domestic product) (NOAA, "New York's Coastal Economy," 2021). But this productivity is vulnerable to drastically changing and damaging climate events, highlighted by the grave fact that between 2010 and 2018, there were 26 severe weather disasters affecting NYS, five of which cost more than a billion dollars (NCEI, 2021). The updated 2019 NYS Hazard Mitigation Plan captured this concern by identifying coastal flooding as a critical risk issue. The plan highlighted that "New York is very vulnerable to the impacts of sea-level rise, including storm surge and coastal flooding since much of New York State's coast is highly developed and populated" (MitigateNY, 2019). The highly developed coastline poses a serious problem as "many coastal areas of New York State are highly vulnerable to coastal hazards due to the lack of storm protection and the erosion of supportive and protective natural features such as beaches, dunes, and bluffs" (MitigateNY, 2019). Notably, there are no mentions of rolling easements.

A balanced approach to coastal development and adaptation is crucial to supporting healthy ecosystems and the livelihood of risk-sensitive communities in the reality of conflicting political interests. On one side, with housing affordability issues ever so salient in the current political atmosphere, many indicators point to the fact that coastal development and waterfront revitalization will continue. On the other side, NYS has already built out its coasts on Long Island, and property boundaries have already been established through hard armoring. Such current and potential developments present a future conflict for

private landowners trying to protect their property from erosion and rising sea levels and a future conflict for municipalities trying to maintain services and access to public beaches. Planners, real estate agents, governmental administrators, and property buyers should be aware of how private property rights will need to be balanced against the public's right to access and usage of waterfront areas and general ecosystem health.

Maintaining balance is crucial, and rolling easements represent a theoretical long-term solution to mitigate coastal hazards in NYS. However, to be effective on a statewide scale and work in conjunction with other tools, rolling easements must be incorporated into a sustainable framework. A viable example of such a framework is the New York State Coastal Management Program (CMP).

To create its CMP, NYS passed two laws – the Waterfront Revitalization and Coastal Resources Act of 1981 and Coastal Erosion Hazard Act of 1981. The former gives the NYS Department of Environmental Conservation (DEC) the legal authority to act, and the latter maps out the erosion concerns along the coasts of NYS. This mapping defines two types of Coastal Erosion Hazard Areas (CEHAs): Natural Protective Feature Areas (NPFAs) and Structure Hazard Areas (SHAs) (NYS DEC, n.d.). NPFAs are beaches, bluffs, and dunes, whereas SHAs are further inland, though both prevent development in these areas under certain distances and conditions. NYS uses a science-based erosion rate to control development in SHAs (40 times the long-term average annual recession rate from the landward feature (NYS DOS, 2020, February), which effectively acts as a setback.

Together, these two Acts give NYS the authority to implement its 44 state coastal policies, touching upon coastal resource issues such as revitalizing underutilized waterfronts, protecting fish and wildlife, enhancing public access to waterbodies, promoting water-dependent uses, and enhancing small harbors (NYS DOS, 2017). Most importantly, the CMP recognizes the constraints of economic coastal incubation and wildlife husbandry and tries to craft policies that balance each need in its language:

> "a balance between economic development and preservation that will permit the beneficial use of coastal resources while preventing the loss of living marine resources and wildlife, diminution of open space areas or public access to the waterfront, shoreline erosion, impairment of scenic beauty, or permanent adverse changes to ecological systems" (Executive Law, §912(1)), Article 42).

The State Coastal policies influence all coastal development at every level of government, from the local municipalities considering a Local Waterfront Revitalization Program (LWRP) grant to regions that want to lead the decision-making in their own ecological and commercial interests like the Long Island Sound. To receive funding and technical expertise, these levels of governance need to fit their desires within the confines of these CMP policies. These policies are implemented through previous state legislation. Fortunately, the current policies make ample room for the addition of rolling easements as a coastal adaptation tool.

Policy	Category	Description	Implementation Legislation
Policy 11	Erosion Mitigation	Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.	• Coastal Erosion Hazard Areas, Environmental Conservation Law (Article 34) • Flood Plain Management Act, Environmental Conservation Law (Article 36) • Water Resources Law, Environmental Conservation Law (Article 15) • Environmental Conservation Law Article 15, Title 5, Sections 0503 and 0505 • Waterfront Revitalization of Coastal Areas and Inland Waterways,
Policy 12	Erosion Mitigation	Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.	
Policy 13	Erosion Mitigation	The construction or reconstruction of erosion protection structures shall be undertaken only if they have reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement	

		programs.	Executive Law (Article 42) • State Environmental Quality Review Act, Environmental Conservation Law (Article 8) • Environmental Protection Act, Environmental Conservation Law (Article 54) • Community Risk and Resiliency Act (Chapter 355 of the Laws of 2014)
Policy 14	Erosion Mitigation	Activities and development including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.	
Policy 17	Erosion Mitigation	Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.	
Policy 19	Public Access	Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.	• Waterfront Revitalization of Coastal Areas and Inland Waterways, Executive Law (Article 42) • State Environmental Quality Review Act, Environmental Conservation Law (Article 8)
Policy 20	Public Access	Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.	
Policy 21	Recreation	Water-dependent and water-enhanced recreation will be encouraged and facilitated and will be given priority over non-water-related uses along the coast	• General Functions, Powers and Duties, Parks and Recreation Law (Title B, Article 3, Section 3.09) • Statewide Park and Recreation Plan, Parks and Recreation Law (Title B, Article 3, Section3.15)
Policy 24	Scenic Preservation	Prevent impairment of scenic resources of statewide	• Waterfront Revitalization of

		significance.	Coastal Areas and Inland Waterways, Executive Law (Article 42) • State Environmental Quality Review Act, Environmental Conservation Law (Article 8) • General Functions, Powers and Duties of the Department (Protection of Natural and Man-made Beauty), Environmental Conservation Law (Article 49, Title 1, Section 0103, Subdivisions 1 and 4) • State Nature and Historical Preserve Trust, Environmental Conservation Law (Article 45) • Tidal Wetlands Act, Environmental Conservation Law (Article 25) • Freshwater Wetlands Act, Environmental Conservation Law (Article 24)
Policy 44	Wetlands Preservation	Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas	• Tidal Wetlands Act, Environmental Conservation Law (Article 25) • Freshwater Wetlands Act,

			Environmental Conservation Law (Article 24) • Protection of Water, Environmental Conservation Law (Article 15, Title 5)

Table 4 - NYS Coastal Management Policies

Rolling easements could fit within the scope of any of the policies noted in Table 4; a rolling easement could be applied to support public access to the beach, as in Policy 20, support wetlands migration, like in Policy 44, or erosion mitigation in Policy 17. How these policies are implemented is important to note for NYS. A significant percentage of NYS's approach to establishing and maintaining its CMP is to empower municipalities to seek funding to resolve and fulfill goals identified within the state policies. It requires a balancing act of not just economic productivity and natural preservation but also effective delegation and regulation on differing levels of governance to support smart and consistent statewide land use policies. This balancing act is seen in the NYS CMP summarizes their interpretation and defines their coastal management through five approaches of managing coastal hazards, which can be interpreted as climate adaptation approaches: Structural, Non-structural, Insurance, Community Resiliency, Do-Nothing (NYS CMP 2017).

NYS CMP Coastal Hazard Responses	Summary
"Structural" Response	Constructing protective structures to defend property against damage by flooding or erosion (both artificial, like seawalls, and natural, like dune replenishment)
"Non-structural" Response	Strengthening of landforms and use of appropriate design features om buildings as protection against flooding. Initial siting of development entirely out of hazard areas or relocating property.
"Insurance" Response	The purchase of insurance as a safety net in case of coastal hazard damage
"Do-Nothing" Response	Acceptance of risk and eventual loss of property, the CMP notes that this is "not

	deliberately chosen… but forced upon [constituents], most often due to their unawareness of the hazards, or because of their inability to pay for the other alternatives."
Community Resilience Response	A layered combination of Structural, Non-structural, and Insurance responses

Table 5 - NYS Coastal Hazard Responses

The NYS CMP weaves the theoretical categories of defend, accommodate, and retreat in technical vocabulary, electing to combine a layered approach with the final response of "community resilience." For coastal hazard-related activities on the waterfront, these responses are reflected through the relevant Coastal Hazard Statutes, Regulations, and Policies within the 2021-2025 NYS CMP Section 309 Assessment and Strategies report (Table 6).

Significant Changes in Coastal Hazard Statutes, Regulations, and Policies for 2021-2025 NYS CMP Section 309 Assessment and Strategies (NYS DOS 2020)

Management Category	**Employed by NYS (Y or N)**	**CMP Provides Assistance to Locals that Employ (Y or N)**	**Significant Change Since the Last Assessment (Y or N)**
Shorefront setbacks/ no build areas	Y	Y	N
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	Y	N
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	N
Repair/replacement of shore protection structure restrictions	Y	Y	N
Inlet management	Y	Y	N

Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	N
Repetitive flood loss policies (e.g., relocation, buyouts)	Y	Y	Y
Freeboard requirements	Y	N	Y
Real estate sales disclosure requirements	N	N	N
Restrictions on publicly funded infrastructure	Y	Y	N
Infrastructure protections (e.g., considering hazards in siting and design)	Y	Y	Y

Table 6 - NYS Section 309 Coastal Hazard Assessment Checklist

While NYS officials understand that NYS needs to balance economic development with natural preservation on coastal lands, the Section 309 Assessment highlights that rolling easements are not currently utilized in NYS and there is a potential policy mismatch in how NYS manages its coasts. Investigating further into how these coastal policies are implemented reveals limitations.

The implementation of the CMP in recent years and its implications for coastal adaptation policies have become increasingly notable, particularly in the aftermath of Superstorm Sandy in 2012, which served as a significant catalyst for change in New York State. One of the defining responses to Sandy was NYS passing the Community Risk and Resiliency Act of 2014 (CRRA), which required that applicants consider impacts of extreme weather such as sea-level rise, flooding, and storm surge for certain state permitting and funding programs. The CRRA was amended by the 2019 Climate Leadership and Community Protection Act (CLCPA), which expanded the initial definitions of climate risk, from flood-related to all climate hazards. The CLCPA also adopted official science-based sea-level rise projections and gave guidance on natural resiliency measures and smart

growth policies for state public infrastructure agencies. In particular, the NYS Department of State (DOS) was tasked with preparing a collection of model local laws to increase community resiliency that municipalities could adapt and utilize in their own context.

Considering local municipalities work with limited resources, these model laws and reference books become essential for providing guidance on coastal land use implementation. However, in the guidebook of coastal protection tools and model local laws, the DOS, in consultation with DEC, put forward guidance for local municipalities to pursue setbacks as opposed to more flexible rolling easements. The DOS lists four types of setbacks, in order of increasing complexity, that municipalities can enact in their communities: 1) fixed setbacks, 2) tiered setbacks, 3) erosion-based setbacks, and 4) erosion and lot depth-based setbacks (NYS DOS, 2020).

Forward-thinking legislators might propose an established setback distance from the ocean. The rationale for adopting this approach lies in the belief that the designated distance is deemed safe based on a calculated or perceived analysis. Nevertheless, the severity and more frequent occurrence of storm events may affect the designated distance sooner than the perceived level of safety determined by the established setback extent. The most significant issue with setbacks is that, unlike rolling easements, where full access to the entirety of their lot is permitted and property owners need to make informed decisions with the risk of coastal living, setbacks restrict any development in these areas. From the perspective of property owners, setbacks limit the economic productivity of the land they have purchased.

To conclude, the case study of NYS presents a promising location for considering the inclusion of rolling easements as an alternative to the existing tools employed by the state. As much of the coastline of Long Island is already hardened, NYS is currently attempting to prevent the hardening of the rest of the coast through setback policy and opting to preserve open space with conservation easements. But conservation easements and setbacks might not be the only approach NYS pursues; the state could benefit from rolling easements to explore more land use possibilities while sustaining the goal of shoreline

armoring prevention. With rolling easements, the state benefits from continued economic productivity, the public benefits from continued access to the coastline, and private property owners benefit from continued economic use and a legally enforceable understanding of coastal risk. However, the potential legal implications of introducing rolling easements in NYS law merit further examination.

APPLICATION: REVIEW OF STATE ROLLING EASEMENT POLICIES

Rolling easements have been interpreted differently among state CMPs, and it can be challenging to compare them. However, by contextualizing how they were developed in their different legal ways and through their various triggering events, the rolling easements can be grouped into one of three movements: 1) public access to beaches, 2) concerns around natural preservation, and 3) a form of climate change adaptation policy. Six states currently employ rolling easements as part of their CMPs, though admittedly, none are acting at the level law reviews argue they could be. Five states (South Carolina, Texas, Oregon, Rhode Island, and Maine) represent four ways NYS could codify a statewide rolling easement policy. They also provide lessons learned from obstacles a state could face in implementation. The four approaches include constitutional amendments (Texas), legislative statutes (South Carolina), and permitting authorities (Rhode Island). South Carolina relies on legislation, and Oregon derives its power from common law.

To explore these state case studies, South Carolina and Texas will be introduced first because of their legal significance to current coastal management strategies and because Supreme Court cases were decided due to actions from their CMPs. Oregon will follow due to its close association with using the public trust doctrine that also inspired Texas's constitutional amendment. Rhode Island represents a different approach by highlighting a permitting process through its Coastal Resource Management Council to direct and control development. Finally, this paper will end with Maine's Sand Dune Rules that combine climate change concerns with natural preservation statutes.

Each state is presented because of its unique approach to employing rolling easements and the lessons learned from their historical contexts to employ such a policy. Each case study will briefly overview the historical context, highlight innovative components, and, if/where applicable, lessons learned from obstacles.

State Review Summary					
State	**Littoral Property Boundary**	**Rolling Easement Employment Method**	**Rolling Easement Trigger**	**Year Established**	**Legal Authority**
South Carolina	Mean High Water Mark	A statute from Science-Based Commission	Coastal Erosion	1988	Limited Home Rule
Texas	Vegetation line	The statute, then Constitutional Amendment	Public Access Threat	1959, then 2009	Dillon's Home Rule Combo
Oregon	Statutory vegetation line	A Statute from Public Trust Doctrine	Public Access Threat	1967	Strong Home Rule
Rhode Island	Mean High Water Mark	Permitting Process	Coastal Erosion	2008	Limited Home Rule
Maine	Mean Low Lower Mark	Statute from Agency	Climate Event	1979	Strong Home Rule
New York	Mean High Water Mark	NA	NA	NA	Strong Home Rule

Table 7 - State Review Summary

A. South Carolina

South Carolina presents a valuable coastal management case study due to its unique approach and significance to legal coastal management history. Understanding the context South Carolina can help other states carefully direct their approaches to include and avoid the advantages and disadvantages of its direction. South Carolina loosely employs a rolling easement within its CMP, understanding why can provide an important lesson in potential harm by only pursuing a static setback approach.

South Carolina selected "yes" that it employs rolling easements, though this tool looks different than the other states because of the history of its creation and the stages it went through to become what it is today. While the other states were triggered by a severe climate event or threat of restricted beach access, South Carolina's approach was due to the recognition of insufficient regulatory authority over its beaches and dunes (Beachfront Management Act, 1988). Between 1977 and 1986, the state recognized that private property owners were constructing various erosion control devices, without community input, which was accelerating coastal erosion on adjacent shorelines. It was due to this observation that South Carolina created its Blue Ribbon Committee on Beachfront Management in 1986 to study what the state's approach should be. South Carolina made two major decisions for its approach: 1) that it was going to use science to determine its jurisdictional lines, and 2) it was going to support a 40-year retreat policy (Beachfront Management Act, 1988).

In 1977, South Carolina passed the Coastal Tidelands and Wetlands Act establishing a comprehensive statewide beachfront management program that would serve as the Coastal Management Plan for participation in the CZMA. The Act established eight state policies to guide the management of its beaches, which included "Preserve existing public access and promote the enhancement of public access for all citizens including the handicapped and encourage the purchase of lands adjacent to the Atlantic Ocean to enhance public access", and "Severely restrict the use of hard erosion control devices and encourage the replacement of hard erosion control devices with soft technologies which will provide for the protection of the shoreline without long-term adverse effects" (Coastal Tidelands and Wetlands Act, 1977).

Regrettably, it was realized over the next decade that the Coastal Tidelands and Wetlands Act and subsequent CMP did not have enough regulatory authority to implement and enforce their respective policies, so in 1986, South Carolina's Blue Ribbon Committee on Beachfront Management was formed to study possible directions. The Committee comprised both private and public sector stakeholders, and the Committee's report served as

the foundation of the 1988 Beachfront Management Act. The Report found consensus on threats to beach and dune existence, life and property, coastal economy and tourism, and marine and coastal habitats. The report made some key findings that sea level rise was "scientifically documented" and may increase, shoreline arming "has not proven effective," and "retreat" is the best long-term strategy.

The major implication of the report, which became the foundation of the 1988 Beachfront Management Act (BMA), was the creation of two new lines of beach jurisdiction: the baseline and the setback line. Concentrating jurisdictional language around utilizing scientific methodologies to identify and calculate these lines, South Carolina set itself apart from general static beachfront setback lines other states typically used. To summarize how the BMA created these lines, it is necessary to understand that it first identified three types of coastal zones in which restrictions are either increased or decreased based on the stabilization of the natural environment in which it is located. While these lines look differently in each of the three zones, generally, the baseline represented the most landward point on the shore, and the setback line was the long-term erosion rate of the area multiplied by forty from the baseline. These jurisdictional lines would be reviewed every ten years by DHEC's Office for the legal significance of these delineations in 1988 was that the setback area, the space between the baseline and setback line, was treated as a no-build area.

South Carolina is worth mentioning because of the significance of the legal challenge that the BMA faced in the 1992 Supreme Court case, *Lucas v. South Carolina Coastal Council*. Because very little significant legislation dictating development restrictions in coastal areas was passed after the 1977 Coastal Tidelands and Wetlands Act, the 1988 Beachfront Management Act generated a stark change in what private property owners could do with beachfront property. Such new restrictions, in addition to the strongest hurricane to ever make landfall in South Carolina (Hurricane Hugo in 1989), created chaos for coastal private property owners that provided leverage for amending the BMA to rebuild damaged property structures. However, a year before Hurricane Hugo made landfall,

property owner Dave Lucas was prohibited from developing on his lot as it was in a newly BMA-declared erosion setback line. Lucas subsequently sued for just compensation. In *Lucas*, the trial court decided that the setback line was a taking because it deprived Lucas of any reasonable economic use of the property. South Carolina Coastal Council appealed the decision. When the case was heard by the trial court, South Carolina Coastal Council altered the setback line to something more developmentally flexible: a rolling easement. Instead of constructing a hard "no build area" between the baseline and the setback, regulated structures could be developed and maintained with the notice that no shoreline armoring is allowed. When the South Carolina Supreme Court heard the case, it ruled that the case was no longer eligible for judicial review. Lucas appealed, and the case went to the US Supreme Court, which agreed with the trial court's decision that it was indeed a taking and deprived Lucas of economic use. The US Supreme Court then remanded the case to the South Carolina Supreme Court to decide whether or not the state had powers to prevent the nuisance of erosion.

The South Carolina Supreme Court did not rule on whether the state had those powers; it simply stated it knew no rule in common law that would prevent Lucas from developing his property and remanded the case for a trial on the damages. Lucas and South Carolina Coastal Council settled before the trial.

Lucas is important for any approach to implementing rolling easements for NYS because it established that setbacks would require compensation – any time a municipality attempts to prevent development, even for public safety reasons like erosion control or floodplain management, property current in that district is ripe for a takings and would be required to pay compensation. Neither the US Supreme Court nor the South Carolina Supreme Court address whether compensation is required for rolling easements. This allows NYS municipalities to implement rolling easements knowing that there is no current legal precedent requiring compensation unless another case comes around and a court rules on this question.

It should also be noted that the BMA articulated a policy of retreat from vulnerable shoreline areas, as the second goal of the Act was "promoting wise use of the state's beachfront to include a gradual retreat from the system over a forty-year period." The retreat was never defined, and this caused confusion over what constituted retreat – if a structure is damaged, can it be rebuilt? What if a non-climate event, like a fire damages the structure? After three decades of legal pushback on the Act's language concerning South Carolina's coastline, the BMA was amended with the 2018 Beachfront Management Reform Act to drop the forty-year retreat policy. Then the 2022 OCRM Regulation Act completely erased any reference to "retreat" language by substituting it with the preferable approach of "preservation" after June 2023. The impact of language used in legislation is still something that coastal planners and lawmakers need to consider, even with the tools they possess.

B. Texas

It is difficult to place Texas' Open Beaches Act, which established the state's rolling easement policy, in a category of climate change adaptation. Its creation was born out of a desire to defend public beach access. This desire, public access to walk along and visit the Gulf of Mexico, would eventually pass as a legislative referendum to amend the state constitution to enshrine public beach access for all Texans.

Texas's story began in 1958 when the Texas Supreme Court decided what constituted the property beach lines for coastal property owners. Traditionally in Texas, state-owned land was delineated by the line of vegetation and low tide mark, meaning that the state owned the dry sand area of the beachfront. But in the 1958 Texas Supreme Court case, *Luttes v. State,* this line was redefined as the line of vegetation and the high tide water mark.

With the perceived threat of private property owners now able to restrict access, Texas legislature passed the Open Beach Act (OBA) in 1959, where it specified that the public:

> "...shall have the free and unrestricted right of ingress and egress to and from the state-owned beaches bordering on the seaward shore of the Gulf of Mexico, or if the public has acquired a right of use or easement to or over an area by prescription, dedication, or has retained a right by virtue of continuous right in the public, the public shall have the free and unrestricted right of ingress and egress to the larger area extending from the line of mean low tide to the line of vegetation bordering on the Gulf of Mexico." (NRC 2.E.61)

Two major caveats of this law are that 1) rolling of the shoreline is implied, but not specifically articulated, and 2) the Texas legislature did not apply this law across the entire coastline of Texas. The OBA only applies to 11% of the Texas coastline; "state-owned beaches" constitute 367 miles of Texas's 3,000+ miles of coastline.

As is the case for many laws, the OBA was amended in 1985. The Act was strengthened to defend public easements on the coast. In 1985, every coastal property transaction was required to put language in conveyance contracts that expressly acknowledged the public's right to access the beach up to the vegetation line. Enforcement of this easement was printed in every executory contract with a capitalized legend:

> "STRUCTURES ERECTED SEAWARD OF THE VEGETATION LINE (OR OTHER APPLICABLE EASEMENT BOUNDARY) OR THAT BECOME SEAWARD OF THE VEGETATION LINE AS A RESULT OF NATURAL PROCESS SUCH AS SHORELINE EROSION ARE SUBJECT TO LAWSUIT BY THE STATE OF TEXAS TO REMOVE THE STRUCTURES." (NRC §61.025)

This warning put future coastal property owners on alert that they should carefully plan the location of their structures with serious consideration of shoreline change to avoid possible litigation from the state. The overall language in the OBA revolves around defending public access, but not because of risky coastal living and smart climate change policy.

Hurricanes did hit parts of the Texas coast, and courts in Texas did uphold the public rolling easement component of the OBA throughout the Eighties and Nineties. In the aftermath of Hurricane Alicia, several houses were located seaward of the vegetation line, and the Texas Attorney General refused to allow the houses to be repaired and threatened to remove them from the beach (Feinman v. State, 1986). The 1986 case, *Feinman v. State,* clarified the rolling component of the OBA for the first time. In *Arrington v. Texas General*

Land Office, the courts confirmed that the rolling easement applied to state-owned beaches irrespective of whether or not the public used them.

Changes in the Texas Supreme Court's support of the interpretation of the implicit rolling easement of OBA were seen in the mid-2000s, when the Pacific Legal Foundation, a libertarian legal counsel nonprofit that seeks to "defend Americans' liberties when threatened by government overreach and abuse," initiated several challenges to OBA. In *Brannan v. State*, the Pacific Legal Foundation pushed back on a rolling easement interpretation after Tropical Storm Frances pushed the vegetation line on existing residential structures in Surfside, Texas. Texas claimed a public easement over the dry sand beach areas where the houses were located, and a lawsuit was initiated. The process of enforcing the public beach access easement falls under the jurisdiction of the General Land Office (GLO). Regrettably, that was almost entirely through condemnation and litigation. With mounting legal pressure throughout the mid-00s, the aftermath of Hurricane Ike in 2008 led to Proposition 9, "Texas Rights to Beach Access" amendment, to the State Constitution to attempt to protect and enshrine the public's right to beach access. It passed with 77% in favor in 2009. But it wasn't enough to convince the Supreme Court to the implicit rolling easement interpretation in the OBA and the era of supportive rolling easements ended with the case, *Severance v. Patterson*.

Severance v. Patterson put the implicit OBA rolling easement into jeopardy. Californian and absentee landowner, Carol Severance, owned several properties along West Beach in Galveston, Texas. Severance, in purchasing this parcel, signed off and acknowledged the seaward vegetation line warning in the purchase contract, but one of these properties was impacted by Hurricane Rita in 2005. The subsequent aftermath of the hurricane pushed the vegetation line on the property landward across the parcel. The state sought to enforce an easement on the property as it argued it constituted a public beachfront as part of the OBA. Severance appealed, explicitly arguing for violations of the Fourth and Fifth Amendments.

The Pacific Legal Foundation also took this case, arguing that hurricanes were not natural processes and that the state "cannot redefine property rights in such a way as to deprive owners of their property without just compensation" (PLF, 2015). The Texas Supreme Court agreed and made a significant decision on understanding the rolling easement of OBA in Texas (as well as putting rolling easements across the country on alert). An avulsive event, like a hurricane, gives different legal decisions than everyday erosive events (reliction). Due to this, the court found it unreasonable and unlawful "to hold a public easement could suddenly encumber an area previously unencumbered without an underlying legal justification." And the state is required to prove the easement just as anyone else would.

While each state has its own definitions of littoral property boundaries, the *Severance v. Patterson* decision reverberated around the country and dampened rolling easement creation and enforcement. Since the 2015-2020 Section 309 Assessment cycle, most of the rolling easement affirming states have increasingly leaned heavily into mapping risk, developing state comprehensive climate plans and outreach programs instead of enforcing rolling easements as climate change strategies.

C. Oregon

Oregon has a special history with public access easements on its coasts; one can watch the most chartered legislative bill campaign in the state's history enshrined in an Oregon Public Broadcasting documentary. The movement to keep the shore open to the public was softly initiated in 1912 when Governor Oswald West worried about the Oregon coast's commercial development. He sought to find a way to protect it but "wanted to avoid opposition from owners of beach frontage with legislation specifically prohibiting further sales." Hence, he devised a strategy with his influence (Straton, 1977). The bill he put forward was only 66 words but declared the entire Oregon coast "a public highway and [would] forever remain open as such to the public" (Johnson, 2022). By declaring the coast a

public highway, it placed the tidelands and shoreline under the jurisdiction of the future State Highway Commission and prevented unrestrained coastal development. In 1913, the Oregon Legislative Assembly agreed and created the State Highway Commission, which also worked with the Parks and Recreation Department to create 36 state shoreline parks over the next two decades.

However, the current rolling easement being employed today found its roots in Oregon's 1967 Beach Act, which was inspired by Texas's Open Beaches Act. The legislation was spurred when, in 1966, William Hay, a beachfront motel owner, erected a barricade of driftwood logs around the dry beach adjacent to his motel at Cannon Beach, restricted public access, and posted signs "Surfs and Guests Only Please" (Straton, 1977). Hay thought he found a loophole as the initial 1913 legislation boundary only covered the wet beach, therefore granting his rights of exclusion on the dry beach. However, many disagreed and pressured politicians to remedy the situation.

When the Beach Act bill was introduced, it faced steep opposition from property owners and developers. The bill stalled in the Oregon Assembly until Governor Tom McCall and State Treasurer Bob Straub staged a dramatic media event by renting two helicopters and flying to several Oregon beaches with scientists to appeal to the public. The spectacle turned the tide, and the public overwhelmingly voiced its support for the bill.

The bill was passed in 1967 and "established public ownership of land along the Oregon Coast from the water up to sixteen vertical feet above the low tide mark" (HB 1601, 1967). This boundary has since been amended to be more dynamic, contingent on the location of dunes and other vegetation markers and is determined by the Oregon Department of State Lands. Given the tectonic uplift on the Pacific Northwest coast, Oregon's relative rates to sea-level rise have been noted as slower than other coastal areas in the continental US (Oregon Climate Change Research Institute, 2018). Still, according to the Oregon Climate Change Research Institute's report on sea level rise vulnerability (2018), about 27%

of Oregon's publicly owned lands are at risk of being impacted by sea level rise by the end of the century.

It is worth highlighting the statutory vegetation line differences from Texas's vegetation line. Since the Beach Bill granted public ownership to submerged and submersible land (wet and dry beaches), the vegetation line defines publicly owned beaches and privately owned upland property. Whereas, in Texas, the vegetation line defines the boundaries between public and private beaches and is the most natural seaward vegetation line (or mean high tide, whichever is further landward). This difference manifests in more publicly open beachfront in Oregon when compared to Texas.

D. Rhode Island

Rhode Island presents an alternative rolling easement implementation strategy because the state locates coastal management authority in the Coastal Resources Management Council (CRMC). The CRMC is a state-wide agency authorized by the Rhode Island legislature to develop and adopt policies and regulations necessary to manage the state's coastal resources, found in the Coastal Resources Management Program (CRMP). As opposed to other Home Rule states, which cannot dictate land use in those municipalities (and therefore need to incentivize local municipalities to adopt and enforce coastal ordinances), the CRMP manages all development on the coast through permitting processes that are contextualized use-dependent water "types" and in/around coastal "features." The CRMC was developed directly because the CZMA is the regulating body for the whole state.

As the CRMP employs different development standards depending on the water "types" and "features," private property owners work with the CRMC to understand what and where they can develop on the coastline. There are six "types" in the CRMP: conservation areas, low-intensity use, high-intensity boating, multipurpose waters, commercial and recreational harbors, and industrial waterfronts. To help define property boundaries in these water

"types," the CRMP designated ten types of coastal "features," including dunes, coastal wetlands, manmade shores, and developed barriers, among other natural and artificial elements. The soul of Rhode Island's rolling easement provisions can be found in Article 1, Section 17 of Rhode Island's Constitution, which states that:

> …the people shall continue to enjoy and freely exercise all the rights of fishery, and the privileges of the shore, to which they have been heretofore entitled under the charter and usages of this state, including, but not limited to, fishing from the shore, the gathering of seaweed, leaving the shore to swim in the sea and passage along the shore; and they shall be secure in their rights to use and enjoyment of the natural resources of the state with due regard for the preservation of their values...

The way in which rolling easement implementation is carried out in Rhode Island resembles more of a rolling coastal management statute than an easement. It works in a three-fold approach by preserving coastal areas damaged by erosion and upland development. The CRMP prioritizes the restoration of damaged wetlands, which create buffer areas and dictate usage in the water "types" section. The "types" prohibit new shoreline armoring and require damaged armoring devices to be removed. For structural development, a rolling setback is defined by a long-term shoreline change rate from an inland boundary of a coastal "feature." Considering the "rolling" setback line and that water "types" will continue to grow with the promotion of wetlands restoration, the CRMP acts similarly to a rolling easement because the shoreline is allowed to migrate unimpeded with sea level rise. However, private property owners can still use and maintain their lands until impacts occur.

E. Maine

Maine presents a realistic way for many states to implement coastal adaptation and a surprisingly progressive approach to calculating impacts since it is one of the few states that outright consider climate change in its calculations of where things can and cannot be built. The rolling easement that Maine employs is a combination of natural restoration and climate change adaptation planning; public access does not play a significant role in Maine's rolling easement. The two notable pieces of legislation that dictate Maine's approach are: 1) the

Mandatory Shoreland Zoning Act (MSZA) and 2) the Maine Sand Dune Rules (which fall under the Natural Resource Protection Act). Maine first passed the Mandatory Shoreland Zoning Act (MSZA) in 1971, which would set up the participation of coastal management at the municipality level.

The MSZA requires all municipalities to adopt, administer, and enforce local ordinances to regulate land use activities within "250 feet of great ponds, rivers, freshwater and coastal wetlands, and all tidal water within 75 feet of streams" (MSZA, 1971). The MSZA authorizes the Maine Department of Environmental Protection (MDEP) to establish minimum guidelines for local ordinances, though municipalities are not required to adopt the MDEP's minimum guidelines exactly. The MSZA encourages municipalities to draft and adopt their own ordinances in accordance with their local environmental and community contexts (as long as it is equally or more effective in achieving the purposes of the MSZA). Each municipality is required to have an ordinance, so if a municipality does not have the staff or time to draft one, the municipality can adopt the MDEP's model ordinances as standards. "Of the more than 450 municipalities with shoreland zoning ordinances, approximately 60 currently have "state-imposed" ordinances" (MDEP, 2003).

Whereas Texas and Oregon initiated their campaigns for rolling easements due to restricted beach access threats, Maine employed its rolling easements in the aftermath of storm destruction. Following a devastating winter storm in 1978 and subsequent snowmelt flooding in 1979, Maine's legislature drafted and passed the Natural Resource Protection Act that includes Maine's Coastal Sand Dune Rules. The Coastal Sand Dune Rules stand out among the state statutes discussed in the paper because these rules are forward-thinking in two significant ways: limitation of seawalls and prevention of risky new developments.

Its Section 5 (E) prohibits the construction of new seawalls and expansion of existing seawalls (unless the expansion would be less damaging to the coastal dune system and its Section 5 (C) completely prohibits new development in shore areas that will be, within 100 years, at risk as a result of changes in the shoreline from erosion or a two-foot sea level rise.

While it has been noted that the "two-foot sea level rise" is a conservative estimate of sea level rise for the region, the Sand Dune Rules effectively place the burden of evidence for development on the private property owner.

The Sand Dune Rules (SDRs) came into play in a 1992 Maine Supreme Court case, *Fichter v. Board of Env. Protection*, where the Supreme Court upheld the MDEP's denial of a permit and subsequent variance request. The Fichters wanted to build a house on an oceanfront lot, though the lot was located on frontal dune delineated land. Development on such dune lands violates SDR Section 6(B). Because the Fichters could not prove by clear and convincing evidence that their proposed oceanfront house project would meet the standards of Sections 5 and 6 of the SDRs, specifically that the house would not be damaged within the next 100 years, the Supreme Court sided with the MDEP.

In 2019, Governor Janet Mills signed into law the "An Act to Help Municipalities Prepare for Sea Level Rise," which confirms that Maine will "plan for the effects of the rise in sea level on buildings, transportation infrastructure, sewage treatment facilities, and other relevant state, regional, municipal or privately held infrastructure, property or resources" (Sec. 5. 30-A MRSA §4326, sub-§4-A) in an official statute. The law supports but does not further any powers derived from the Sand Dune Rules; in general, it requests municipalities to begin to reconsider their land use laws to prepare for sea level rise.

The rolling easement that Maine employs is a combination of natural restoration and climate change adaptation planning; public access does not play a significant role in Maine's rolling easement. This is due to the Colonial Ordinance of 1641-1647, established back to when Maine was under the jurisdiction of the Massachusetts Bay Colony, which holds a narrow construction of the public trust doctrine. Intertidal lands were given to private property owners; this law still resonates in many New England states.

CONSIDERATIONS AT THE LOCAL LEVEL

It would be remiss to limit analysis at the state level and not examine rolling easements at the local government level. Considering that rolling easements can be created through property rights, local context-directing legal language could be more effective than state-level coastal area categorization attempts. With each community working together to identify and enforce their beachfront management plans, the higher the potential would be accepted by the community and avoid property rights litigation. Through local zoning ordinances or even by lot-to-lot covenants, communities could select whether they want to support 1) public access to the shore, 2) ecological preservation of wetland coasts, or 3) a combination of both (as strategic relocation to accommodate for /or address changes that result from climate change).

While the dream is that rolling easements at the local level could promote smart, community-backed climate policy for vulnerable land, fickle local politics still creates a concerning obstacle. But what if there was a way to still support local direction without depending on political will? And what if that way aligned itself as an innovative market-responsive solution? This concept was first penned in 2015 by John Englander called a "Shoreline Adaptation Land Trust" (or SALT).

In his short policy position paper, Englander laid out the basic tenets of a SALT legal entity. Finding inspiration in the organization of land trusts, Englander imagined an arrangement between private property owners and SALTs to transition for inland migration as sea levels rise by having a charitable organization work with property owners to acquire land that is at risk instead of subjecting a property to regulations imposed by a legal authority (and therefore any risk resulting blowback to the leadership for such a decision).

This concept is now being realized; however, to understand how rolling easements could work at the local level, we need to introduce all the players present in this approach. In its

simplest terms, there are four actors: property owner, shoreline adaptation land trust, locality, and developer.

- Property Owner: A property owner is someone who owns a property that is at risk, located near a water body. While the parcel may be highly desired at present due to its proximity to the water, the owner may find difficulties selling it in the future when the sea level rises, or more destructive climate events occur more frequently. If the property owner desires to sell the property, the owner may appeal for federal or state buyout money if it is unmarketable or undervalued due to climate events. Property owners may feel at risk in different ways, including based on their socio-economic background and emotional attachment to property and community. There may be a delayed or inconsistent desire to leave a risky property.
- Shoreline Adaptation Land Trust (SALT): A SALT is similar to a regular land trust – a SALT is a charitable organization that acquires land or easements (rights of usage) for conservation purposes. Where a SALT differs from a land trust is that a SALT specializes in shoreline environments and would potentially need to have money in reserve to finance the removal of any built structures on the property when a climate event occurs (for example, a storm event that causes damages that exceed 50% of the appraised value of structures on the property) or special circumstances (for example, 80% of the surrounding property owners abandon their properties in proximity to where the SALT property is located). A SALT acquires land to promote ecological restoration or protection.
- Locality: A locality is responsible for the overall maintenance and operation of the applicable community. Suppose an area of the community is experiencing climate migration. In that case, inconsistent departure of property owners could stress the locality as it is still responsible for providing services, such as utilities or trash pickup, while losing revenues from lost property taxes needed to maintain these services. A locality, subject to political will and public perception issues, also may

change policies to ensure the political success of elected leaders. This uncertainty can create conflicting interests in long-term strategies for climate change adaptation. Further, a locality may feel frustrated with state/federal disruption in the community and prevent individual owners from leaving.

- Developer: A developer desires to construct a project that will generate an attractive rate of return. To maximize the project's profitability, the developer may attempt to make the project as cost-efficient as possible. Such an attitude could lead to ignoring costly climate-resilient design practices. However, if incentives were provided, a developer may adopt these practices if they support the developer's self-interest.

While it may seem like these actors have limited collaboration opportunities, especially since SALTs desire to restrict, if not extinguish, opportunities to develop in ecologically vulnerable areas, the reality is that there are ways to align what seem divergent interests. While developers seek to increase profitability prospects, there are ways of creating incentives for each of these actors to achieve greater alignment of interests, as seen in the example of the use of SALTs in Norfolk, Virginia.

In 2018, the City of Norfolk embarked on a project to update its zoning ordinances for better climate resiliency after suffering from several costly flood events. The foundation of this resiliency approach revolves around a "resilient quotient" concept where proposals are crafted to a scoresheet to incentivize resilient design. To construct new projects, developers need to score points by adding, among other categories, resiliency features such as increased freeboard, storm-proofing standards, and energy efficiency. The bigger the project, the more points the developer needs, and the more resilient the project should become.

In its updated comprehensive plan, "plaNorfolk2030", Norfolk identified higher-risk and lower-risk flood areas, which resulted in the creation of two overlay districts to manage development in these respective risk areas: a Coastal Resilience Overlay (CRO) district and an Upland Resilience Overlay (URO) district, noting that a URO is a more desirable

property with a lower risk of flooding. While both types of overlay districts encourage development, the CRO aims to nudge development to be constructed to reduce flood risk and enhance the lifespan of new structures. In contrast, the URO aims to support more transformational redevelopment by emphasizing walkable, multi-modal, transit-rich neighborhoods. To visualize this, plaNorfolk2030 color-coded areas where the CROs are yellow and the UROs are purple (see Figure 4).

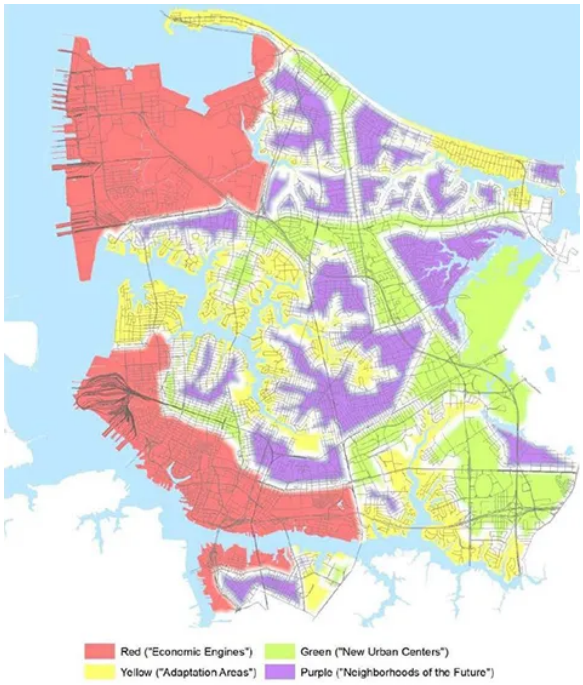

Figure 4 - plaNorfolk2030 Map

The City of Norfolk worked with land trusts to help draft its zoning ordinance and included specific clauses to incentivize smarter and more resilient development. One of these incentives is for developers to purchase and then extinguish development rights in the risky CRO district in exchange for points to develop in the advantageous and profitable URO district.

The way Norfolk's zoning ordinance works is that if a developer decides to pursue a project in the profitable URO, the developer needs to evaluate design standards and practices to score points in the resilience quotient. In the zoning ordinance language, one

way to gain points is to purchase land in the risky CRO and then partner with a shoreline adaptation land trust to extinguish development rights. Typically, most of the CRO has been developed and has structures already on the land. The developer would need to connect with a property owner in the CRO to move forward with these points.

The ideal situation would be that the developer finds a property owner who recognizes the risk the owner is exposed to and agrees with the deal. The developer and the SALT would work with the property owner to develop a schedule to enforce the rolling conservation easement. Potentially, the property owner may want to leave as soon as possible. However, if the property owner continues to live on-site, they would still retain life rights (sometimes referred to as a "life estate"), allowing them to continue to live in the property structure. Those life rights would end if 1) the property owner vacated or died or 2) the structure suffered a casualty loss equal to or exceeding 50 percent of the structure's appraised value. The SALT would hold and eventually enforce a rolling conservation easement on the land, needing some financial assurance that the SALT would be able to remove the structure after it is abandoned and restore the property in an ecologically advantageous way. The locality would no longer be required to provide services in the future after the life rights transfer to the SALT, saving the locality and its constituents/the community on mowing, sewage, upkeep, and utility costs. In this scenario, the developer earns credit towards the mandatory resilience quotient required to build in the URO.

Wetlands Watch created the below graphic to convey the benefits of each actor in connection with a SALT (see Figure 5):

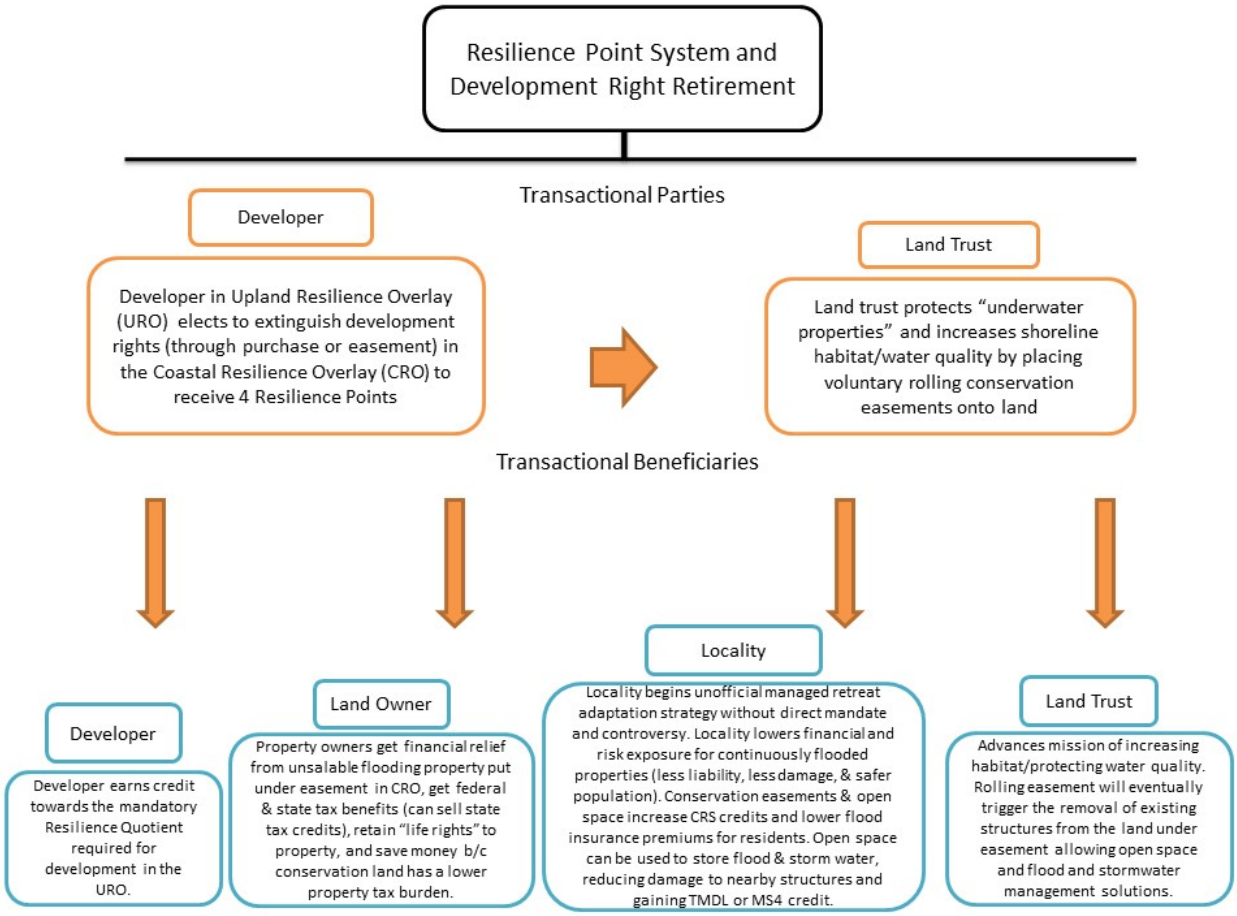

Figure 5 - Resilience Point System for SALTs

There remain some big questions about the use of SALTs and this approach. Due to the desirability of waterfront real estate, property appraisals can reach high valuations. In Norfolk's zoning ordinance, "the easement shall provide that life rights terminate if, at any time, the structure suffers a casualty loss equal to or exceeding 50 percent of the structure value" (Norfolk 3.9.19.D.ii 2018). An appraisal value can impact any "substantial improvement" clause stipulated in the property owner's life rights (the easement provides that the owner may not improve the property by more than 50% of the appraised value). It can generate an issue if a storm event causes damage because of how the 50% indicator will be interpreted. For example, if the property is assessed at a million or more dollars, a property owner can legally embark on a $499,999 improvement project under the above

substantial improvement clause. Such a project could work against the interest of the SALT and the purpose of the rolling conservation easement. The ordinance does stipulate a standard for expansion projects that exceed 50 percent of the gross floor area of the structure (Norfolk 5.12.2.A.3 2018), which relates to square footage and not valuation, though both these clauses leave room for what constitutes an "improvement" after a storm. How much can a property owner change the value or size of the structure after agreeing to a SALT rolling easement? In the example of a couple that wishes to live out their lives in their littoral property, but a storm causes substantial damage to the property, what amount of power do they have to remedy the structural damage? Can the city force them out of their residency?

In addition to the above, other questions remain unresolved: are the Resilient Quotient points weighted correctly to reflect actual transaction costs? Norfolk grants 4 points to this extinguishing agreement, but projects only need 4-10 points (depending on their size). Is the financial benefit to property owners for easements enough? What financial assurance does the SALT need to provide to guarantee potentially costly structural removal, especially when multiple structures need to be removed quickly? Answers to these questions will continue to be refined as the Living River Trust meets with the Elizabeth River Project Board of Directors later this year. What SALTs provide, though, is an additional option for rolling easement implementation and possible assistance in supporting an already established NYS climate adaptation program.

Analysis from these case studies can inform potential directions for New York State implementation, calibrating the local context with 1) the trigger event and 2) legal methods to employment. As opposed to other Mid-Atlantic and New England states, where water law has been informed by colonial agreements and grants intertidal lands to private property owners, New York law already supports the policy that the state's waters be conserved and developed for all beneficial public uses, which include domestic, municipal, agricultural, commercial, industrial, power, and recreational uses (N.Y. Env. Cons. L. §15-0105 2012). This can be used to support a campaign to expand rolling easements along the coast and throughout the state. However, learning from the five states above, various approaches can be implemented at different levels of the NYS government.

A. Statewide Statute on Trigger Conditions

Observing the example of Maine, is it in New York's best interest to wait for a climate event to push for rolling easements? Hurricanes, nor-easterners, and superstorms can present an opportunity to rally the public around new legislation in the spirit of public safety. However, this battles the human desire to build back lost property. While these events can change public risk perception on the coast, the cost of waiting for the next big statewide event and the dependence on traumatic climate events to stir legislation seems too risky to consider it. Noting that NYS already has legislation concerning climate change, this approach seems shortsighted given the current momentum in the state.

Texas and Oregon represent different ways and times when rallying the public around the perceived threat of unregulated coastal development could manage and motivate political change in the state legislatures. Oceanic coastal NYS is most at risk for SLR, but given the divide between upper NYS and Long Island, a rallying cry for public beach access is unlikely to work because of the difficulty of travel to get to Long Island for most of the state. Long Island is already highly developed and parceled out on the coast, unlikely in

earlier times when Oregon was relatively undeveloped due to its historical background as a newer state in the United States and how its beaches were already being managed as highways in the early 1900s.

Regarding trigger conditions, South Carolina and its Blue Ribbon Council seem like the most realistic comparison for NYS. A multi-stakeholder committee looking at the exposures and vulnerabilities of coastal risks might recommend that rolling easements be employed. In the 2021-2025 Section 309 Assessment, NYS has focused on flood exposure mapping, SLR projections, Great Lakes level change, and multi-hazard planning. After the 2021-2025 cycle, which is mainly concerned with gathering data and establishing baselines, the critical next steps involve utilizing flood hazard data and projections to take action that prioritizes the public's welfare.

Recalling the State Coastal Policies, rolling easement implementation can easily be introduced to 1) protect wetland migration (Policy 44), 2) accelerate and articulate the importance of public beach access (Policy 20), and 3) strengthen the mapping and enforcement of CEHAs and NPFAs. This could be done through a statewide statute amending and updating the Waterfront Revitalization and Coastal Resources Act of 1981 and Coastal Erosion Hazard Act of 1981 to support the full state CMP. Similarly to how the DOS gave model law recommendations via lot size, boundary length, and erosion rate, curated rolling easements could be generated for ecological restoration, outdoor recreation, or public safety as to allow choice in a strong Home Rule State. Naturally, the same weaknesses of the slow administrative roll out are implicit with statewide statutes, though changing weather conditions may generate speedy action on the municipal level.

B. Rolling Easements Through Constitutional Amendment

NYS could approach the implementation of rolling easements similarly to Texas by asking the public to vote to amend the State constitution. The drafting language of the referendum vote would emphasize free and unrestricted rights for the public to access the

shore, like Texas. There are two ways to amend the constitution in NYS: either through the Legislature at any time or once every 20 years through convening a constitutional convention.

For the Legislature route, the proposed referendum's amendment language would be verified by the New York attorney general before needing to be passed by a simple majority in the New York State Senate and New York State Assembly. After passing both houses, the proposed referendum amending the constitution would be tabled until the next legislative session, when it would be placed on the ballot for the public to vote on. If the general statewide vote approves the amendment by a simple majority, it will not become party of the constitution until the following January. At its quickest, this process would likely take about four years.

For the constitutional convention route, 2017 was the most recent year that NYS voters voted to convene a state constitutional convention (Modern Courts 2022). The next opportunity for NYS votes might do so will be in 2037. In the timeline of climate change action urgency, this option is inadequate. However, given that New York's State Park system saw record-breaking attendance in 2020 and 2021 and water recreation contributes to tourism, a constitutional amendment supporting public access to beaches may be possible.

Enforcement of rolling easements through referendum can be challenging. The NYS Department of Environmental Conservation (DEC) likely would manage enforcement like how Texas utilizes the General Land Office (GLO) to enforce its rolling easements. Since much of the Long Island Sound is privately owned, it is reasonable to expect Takings challenges with a perceived loss of property utility and value. Hence, it is important for the DEC to locate any condemnation following the passage of a constitutional amendment with the "background principles" articulated in *Lucas vs. South Carolina*. With the public in mind of this referendum, courts will side with public safety and access concerns in changing sea level conditions on the beach.

However, the legal authority would still need to be defined, as NYS is a Home Rule State, and even if the public votes for an amendment to the State Constitution, the question of enforcement would still need to be answered. In the same way, Texas attempted to reinforce the public's right to beaches, NYS could also be incapacitated with the residual effects of *Severance*'s implications distinguishing avulsive events from accretive events like SLR, regardless of if climate change is influencing the increased intensity and frequency of hurricanes, tropical storms, and Nor'easters.

C. Rolling Easements Through Voluntary Municipal Implementation

Unlike Maine, NYS has not indicated that it will force zoning shoreline plans onto municipalities. And while NYS DEC acts similarly to South Carolina and Rhode Island, it does not have as much power outside mapped SHAs. The municipal powers granted through Home Rule and the current framework of the NYS CMP demonstrate the continuance of the status quo of having communities create and form land use ordinances themselves in the context of climate change adaptation. Fundamental to the 2021-2025 Section 309 Assessment is an underlying assumption that NYS's CMP investment in updated flood exposure mapping and SLR projections will help municipalities plan accordingly for climate change. This is supported by the amendment to Article 54, where NYS CMP officially stated, "We anticipate an increased number of Local Waterfront Revitalization Plans that include coastal and climate hazards planning" (CMP 2021). Accompanying this expectation, the CMP also highlighted significant changes for climate change impacts, including 1) countywide resiliency planning growth grant program, 2) NYS flood risk management technical guidance resources, and 3) further outreach on model local laws. It is highly likely that NYS is not going to approach anything at the state level and is trying to empower municipalities to manage their climate risks at their local level. Therefore, if NYS CMP desires to embark on such a campaign, the space for rolling easements will need to reside in guidance resources for local municipalities.

Therefore, the two avenues that NYS could take if it wanted to continue the voluntary implementation of rolling easements would be: 1) through an incentive program financially supported by NYS, but implemented and executed at the municipal level, or 2) through voluntary model ordinances located within Local Waterfront Revitalization Plans.

Leveraging the already existing NYS program, Climate Smart Communities (CSC), might be the most straightforward way possible. CSC is a voluntary certification program that helps local governments take action to reduce greenhouse gas emissions and adapt to a changing climate through a choice of actions that can receive points. Communities can start by becoming "registered" communities in which they commit to act by passing the CSC pledge. After pledging, they can pursue a tiered system of certification based on completing actions to adapt to climate change.

There are no references to rolling easements in the program, though there are two sections in which a rolling easement could be integrated into the current scoring regime. The CSC program has a section titled "PE6: Implement climate-smart land use," only PE6 Action: Zoning for Protection of Natural Areas could be associated with rolling easements. In this action, up to four points are allocated to developing and implementing a local zoning ordinance that helps conserve natural areas, with an additional two points for a base local ordinance for the strategic conservation of high-value areas for a maximum total of six points. The associated techniques for completing this action are cluster development zoning, overlay zoning, incentive zoning, special use permits, subdivision regulations, and site plan review. There is no reference to establishing the gradual release of inundated private littoral land to public doctrine.

If the DEC supports such an initiative, it could align the CSC with other flood mitigation programs, such as the National Flood Insurance Program's Community Rating System (CRS). In the CRS Coordinator's Manual, Activity 420 – Open Space Preservation, which is worth up to 1,450 points, communities can receive credit for preserving open space in the floodplain (CRS 2017). There is extra credit (max 50 points) for open space land

protected by “Deed Restriction” (CRS, 2017). For communities embarking on the journey of CSC certification, it would be in the state’s best interests to maximize municipal benefits with voluntary federal incentive programs.

By leveraging these federal programs, communities can not only accelerate their progress towards CSC certification but also improve the resilience of their infrastructure and reduce their carbon footprint. Ultimately, this can lead to cost savings, increased quality of life for residents, and a more sustainable future for all.

New York has State Coastal Policies that consider coastal development. New York coastal management targets flooding/erosion hazard policies and public access policies. Policy 20 specifically discusses public access and states that “access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided, and it shall be provided in a manner compatible with adjoining uses.” The explanation of the policy continues with “While such publicly-owned lands referenced in the policy shall be retained in public ownership, traditional sales of easements on lands underwater to adjacent onshore property owners are consistent with this policy, provided such easements do not substantially interfere with continued public use of the public lands on which the easement is granted.”

Whereas CSC is climate adaptation planning, the NYS DOS Local Waterfront Revitalization Program (LWRP) presents a different approach to land use control that does not require overt mentions of climate. Some places in NYS may view a voluntary climate certification program as a hassle and unnecessary because of political bias. However, these same places could be swayed to implement coastal adaptation practices if presented in the form of economic development. For NYS, if any waterfront municipality wishes to revitalize its economy utilizing waterfront space, it is required to plan and execute an LWRP that is consistent with the previously stated State Coastal Policies and CMP. The purpose of LWRP is to plan for long-term land and water use as well as specify the legal instruments for execution. The purpose of LWRP:

- Assure that new waterfront development is well designed and sited.
- Provide for public access to the water.
- Prevent the displacement of essential water dependent uses (recreational, commercial, and industrial) by uses which do not require a waterfront location, particularly residential and retail uses.
- Bring land use regulations into better conformity with the objectives of state regulations for the protection of natural areas.
- Assure that new development is designed to reduce impacts from the natural forces of flooding, erosion, and rising water levels (NYS DOS, n.d.).

As LWRPs involve coastal development, LWRPs need approval on all three levels of government: local, state, and federal. But if the actions are consistent with the goals of the NYS CMP, rolling easements could easily fit into LWRPs and capture the unique balancing position in the name of revitalization. Since NYS has invested heavily into flood exposure mapping and up to date SLR projections that will need to be used to craft the long-term vision of these coastal communities, this could be presented as a market-responsive legal tool that meets both economic development proponents and climate-smart policy.

The preceding approaches consider rolling easement implementation in isolation, however, dependence on solely one legal approach is precarious and unreliable. There is strength in layering legal mechanisms, either on top of each other or overlapping next to each other. Considering the strengths of utilizing rolling easements as a climate adaptation strategy that can balance risk-intuitive living with economic development, NYS could further rollout climate programs and economic development with a smart tool that balances both by sharing the risk across all parties. A review of these approaches, including the advantages and disadvantages, is illustrated in Table 8.

Rolling Easement Approaches in NYS					
Option 1: Statewide Statute on Trigger Conditions		*Option 2: Constitutional Amendment on Access*		*Option 3: Voluntary Municipal Implementation for Localized Context*	
Pro	Con	Pro	Con	Pro	Con
State initiated	Municipality pushback	State majority would demonstrate clear support	Extremely time-consuming	Contextually located	Patchwork initiatives could prove ineffective in statewide implementation
Clear trigger definitions	Susceptible to Takings (if done incorrectly)			Community consensus and support	Lack of expertise and funding could slow campaign
Amends existing legislation	Increase burden on DEC to enforce			Maximize financial incentives in other federal programs	Increase administrative burden on small communities

Table 8 - Rolling Easement Approaches in NYS

CONCLUSION

Theoretically, rolling easements offer a balanced approach to coastal development, climate adaptation, and conservation, but economic and political pressure realities make implementation challenging. With six states somewhat employing rolling easements as part of their CMPs, rolling easement employment should not be considered impossible for NYS; in fact, it can provide a way to navigate difficult conversations in developed coastal areas with open space is unavailable and climate change effects will soon be felt. Still, the ways that the states that employ rolling easements cannot be said to match climate change adaptation strategies. They are utilized in either public access or ecological preservation before anything can be said about phased climate retreat. Such a campaign, one with a primary focus of phased climate retreat, faces an uphill battle in any state, as demonstrated by the fact that even after some states employed rolling easements, they struggled with enforcing them. Fortunately, learning from these lessons and reinforced with NYS's current laws supporting the public trust doctrine and the rolling easements' ability to circumvent Takings Clause litigation, rolling easements represent an underutilized tool for adapting to gradual SLR.

Law, naturally, looks to the past for its answers, though it will need to envision different futures with the inevitability of climate change. This requires innovative strategies that utilize property law and public policy to collaborate with multiple stakeholders to best defend the public interest. A realistic way to implement rolling easements in the current political NYS climate might be through a municipality-by-municipality incentive system, like the CSC program. While such a program still faces the natural pressures that local communities face when developers are interested in developing coastal land -- tight budgets and an eye for the opportunity for greater revenue flow through increased valuations on developed properties and therefore increased property taxes, rolling easements can allow

land-use flexibility while satisfying the itch of coastal development with the caveat that the waters will eventually come. This approach avoids litigation around the Takings Clause and, ideally, would be supported by community-based adaptation where most constituents understand the importance of accepting forward-thinking adaptation planning.

Although the work required to address coastal hazards remains an uphill battle, it is essential to start today. Fortunately, there is hope knowing that significant progress has been made in NYS towards developing baselines for flood hazard data and projection. The rolling easement provides a flexible tool that can assist all parties in recognizing the risks of coastal living and developing plans for a future that is unpredictable and vastly different.

In conclusion, while the execution of rolling easements may pose many challenges, it offers a valuable way forward for addressing the impacts of coastal hazards and climate change. By incorporating rolling easements into a sustainable statewide framework, such as embedding it within the New York State Coastal Management Program, and maximizing the benefits of federal incentive programs, communities can take proactive steps to mitigate risk and ensure a more resilient future for all.

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