Rising Sea Levels Will Become California's Greatest Land Use Challenge:

How the State of California Must Take a Stronger Role in Requiring Local Governments to Adopt Adaptive Land Use Controls in Order to Prevent Economic and Environmental Destruction Resulting from Sea Level Rise.

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I. INTRODUCTION TO SEA LEVEL RISE.

Sea level rise, a critical and predictable consequence of climate change, arises from warming global temperatures and the resulting thermal expansion of warming oceans, melting mountain glaciers, and loss of extensive ice sheets.[1] The Intergovernmental Panel on Climate Change (IPCC), a body of the United Nations, projects that more frequent and more devastating sea level rise will occur by the end of the 21st century.[2] Research anticipates sea levels along the California coast will rise approximately five to twenty-four inches above 2000 levels by 2050.[3] Rising sea levels can wreak havoc on coastal ecosystems and their inhabitants. [4] They also "threaten the lives and safety of thousands of coastal residents and billions of dollars of coastal property."[5] California's coastal counties generate around $662 billion in wages and $1.7 trillion in gross domestic product (GDP) annually.[6] This threat to coastal infrastructure simultaneously endangers the local jobs and regional industries that depend on these coastal resources and economies.[7] Changing conditions due to sea level rise are placing enormous stress

[1] Christina Nunez, *Sea Level Rise, Explained*, NAT'L GEOGRAPHIC (Feb. 19, 2019), https://www.nationalgeographic.com /environment/global-warming/sea-level-rise/.

[2] LISA V. ALEXANDER ET AL., IPCC, SUMMARY FOR POLICYMAKERS, *in* CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS, 23 (Thomas F. Stocker et al. eds., 2013).

[3] ROBERT A. DALRYMPLE ET AL., NAT'L RESEARCH COUNCIL, SEA-LEVEL RISE FOR THE COASTS OF CALIFORNIA, OREGON, AND WASHINGTON 108 (2012).

[4] Megan M. Herzon & Sean B. Hecht, *Combatting Sea Level Rise in Southern California: How Local Governments Can Seize Adaptation Opportunities While Minimizing Legal Risk*, 19 HASTINGS W.-N.W. J. ENVTL. L & POL'Y 463, 463 (2013).

[5] *Id.*

[6] EASTERN RESEARCH GRP., INC. FOR NOAA OFFICE OF COASTAL MGMT., THE NATIONAL SIGNIFICANCE OF CALIFORNIA'S OCEAN ECONOMY (2015), https://coast.noaa.gov/data/digitalcoast/pdf/california-ocean-economy.pdf.

[7] Herzon & Hecht, *supra* note 4, at 467.

on California's coastal governance system.[8] Although various local communities have taken measures to prevent destructive harm to their local coastal economies,[9] local jurisdictions are not properly equipped to protect the State's coast at a regulatory level because of local politics and jurisdictional limits. Due to these detrimental forecasts, the State of California must act quickly to ensure that its beautiful coastal environment, its citizens, and its economy remain intact when sea levels reach devastating heights. As such, the State must take a more direct approach in regulating land uses along its coast to protect its beloved coast and the livelihoods of coastal Californians. Direct State involvement and regulatory governance will ensure that uniform procedures are implemented throughout each coastal community, which in turn, will ensure that the entire State's coast is protected from the devastating effects of sea level rise.

The threats associated with sea level rise may result in California's greatest land use challenge yet. The challenge includes managing housing displacement when coastal structures are voluntarily removed or naturally destroyed, loss of crucial economic regions, and political, social, and legal resistance from private property owners and developers.[10] State and local government bodies will need to work in tandem to protect coastal infrastructure and to develop adaptation plans using their combined land use authority. This paper explores the idea that although local authorities are equipped with various tools to manage threats of sea level rise at the local level,[11] the State of California must take a more direct approach to protect its coastal systems and ensure that its entire coastline is adequately preserved.

Because most land use decision-making authority has been delegated to local cities and counties,[12] the State's role in local land use planning is minimal. As explained below, California can take a stronger, more direct approach to local land use planning by mandating cities and counties to: (a) limit coastal development in zones subject to sea level rise impacts; and (b) relocate existing coastal structures. Additionally, the State can provide its strongest regulations by adopting new State laws and policies towards development and the removal of current developments along its coast. Through these land use controls and an overall push for adaptation measures, California will stand a greater chance of surviving the looming devastation of sea level rise and avoid having to manage housing, economic, and environmental disasters.

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[8] DALRYMPLE ET AL., *supra* note 3, at 108.

[9] GABRIEL PETEK, LEGISLATIVE ANALYST'S OFFICE, PREPARING FOR RISING SEAS: HOW THE STATE CAN HELP SUPPORT LOCAL COASTAL ADAPTATION EFFORTS 25 (2019), https://lao.ca.gov/Publications/Report/4121.

[10] *Id.* at 9.

[11] As will be further explained throughout this paper, the California Planning and Zoning law provides local jurisdictions the authority to prevent or condition future coastal development. However, as will be spelled out, local jurisdictions are unlikely to do so.

[12] CAL. GOV'T CODE §§ 65000 – 66035 (West 1967).

Finally, this paper explores land use management techniques utilized in other nations, such as the Netherlands and China, in combating the adverse effects of sea level rise and flooding upon their citizens, economies, and geography. These techniques are analyzed to determine whether they could realistically be adopted to manage California's crisis.

II. CURRENT LOCAL LAND USE AUTHORITY.

One of California's potential tools for tackling sea level rise lies within local land use authority, which gives coastal cities and counties the ability to develop customized plans regarding development on, and use of, coastal lands within their jurisdictions.[13] Primarily through the California Coastal Act and the Planning and Zoning Law,[14] local agencies have the authority to adopt various land use adaptation measures that would combat or reduce the threat of sea level rise. However, such land use controls are inadequate to address the State-wide concern over sea level rise because such controls are limited to each locality's jurisdiction, resulting in a lack of coastal management uniformity along California's coastline. Further, local politics influence each locality's approach to coastal regulation, resulting in stronger or weaker land use protections amongst California's numerous coastal communities. Therefore, changes must be made at the State level that push for stronger State control and uniform procedures amongst coastal communities to adequately prepare for the impending threats of sea level rise. This section further explains California's existing coastal-related land use regimes while exploring potential reforms on a local jurisdiction's authority that would improve coastal land use management in light of climate change and sea level rise predictions.

A. The California Coastal Act

The California Coastal Act, enacted in 1976, created the California Coastal Commission (Coastal Commission), a State agency charged with planning and regulating land uses along the State's coast.[15] Primarily, the Coastal Commission regulates land use activities in the coastal zone[16] and approves coastal land use plans proposed by local agencies and private developers.[17] The Act aims to preserve and protect coastal resources through a permitting scheme, requiring

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[13] *Id.*

[14] CAL. PUB. RES. CODE §§ 30000 – 30900 (West 1976); CAL. GOV'T CODE §§ 65000 – 66035 (West 1967).

[15] *Our Mission: Protecting & Enhancing California's Coast*, CAL. COASTAL COMM'N, https://www.coastal.ca.gov/whoweare.html (last visited Oct. 26, 2020).

[16] The "coastal zone" begins inland at about 1,000 yards from the mean high tide line of the Pacific Ocean and extends seaward three nautical miles.

See KURT HOLLAND ET AL., CAL. COASTAL COMM'N, CALIFORNIA COASTAL VOICES 131 (2017), https://www.coastal.ca.gov/coastalvoices/CaliforniaCoastalVoices.pdf.

[17] CAL. PUB. RES. CODE §§ 30000 – 30900 (West 1976).

developers proposing to build within the coastal zone to obtain a permit from the Coastal Commission.[18] This scheme is considered a key reason why the California coastline has not been entirely dominated by large-scale development.[19] The following sections explore the permitting system and land use management plan components of the Coastal Act, concluding with recommendations on how the State government can secure more control over the process.

Although the major component of the California Coastal Act was the creation of the Coastal Commission, the Act exempted the San Francisco Bay from the Coastal Commission's jurisdiction. [20] The San Francisco Bay is managed by the Bay Conservation and Development Commission (BCDC).[21] BCDC was created in 1965, prior to the adoption of the Coastal Act, and similarly requires developers to obtain the appropriate permits prior to developing along the San Francisco Bay.[22] To date, BCDC is known for having prevented the San Francisco Bay from disappearing and saving thousands of acres of coastal land by working "with local governments on special area plans to encourage appropriate new development" and discouraging development in certain areas.[23] These partnerships have provided for continued development along the Bay's coast and demonstrate how the State must work in tandem with local jurisdictions to ensure that continued development is done responsibly and with threats of sea level rise in mind. However, BCDC's limited jurisdiction illustrates how efforts at the local level are not enough to prevent devastation to the State's entire coast. Despite BCDC's successes in the San Francisco Bay, these successes are limited to particular coastal communities in the Bay Area, illustrating how the State currently lacks programs or incentives that encourage uniformity along California's entire coast. A stronger and more direct approach by the State of California is required to ensure that its entire coastal zone is protected from the devastating effects of sea level rise.

1. Local Government and Local Coastal Programs (LCPs).

Under the Coastal Act, a permitting scheme requires those who wish to develop along the coastal zone to acquire a Coastal Development Permit from the Coastal

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[18] CAL. PUB. RES. CODE §§ 30001, 30600 (West 1976).

[19] *Lawsuit to Protect Coastal California*, SIERRA CLUB, https://www.sierraclub.org/san-francisco-bay/marin/lawsuit-protect-coastal-california (last visited Apr. 25, 2019).

[20] CAL. COASTAL COMM'N, *supra* note 15; BCDC's jurisdiction covers eight separate bays: Suisun Bay, San Pablo Bay, Honker Bay, Richardson Bay, San Rafael Bay, San Leandro Bay, Grizzly Bay, and the San Francisco Bay. *See History of the San Francisco Bay Conservation and Development Commission,*

S.F. BAY CONSERV. & DEV. COMM'N, https://bcdc.ca.gov/history.html (last visited Oct. 28, 2020).

[21] *History of the San Francisco Bay Conservation and Development Commission*, S.F. BAY CONSERV. & DEV. COMM'N, https://bcdc.ca.gov/history.html (last visited Oct. 28, 2020).

[22] *Id.*

[23] *Id.*

Commission.[24] By providing the Coastal Commission permitting authority, the Coastal Act intended to allow the State Coastal Commission to guide land use and development along the coast.[25] The Coastal Commission's jurisdiction is limited to the coastal zone, which begins inland at about 1,000 yards from the mean high tide line of the Pacific Ocean and extends seaward three nautical-miles, the State's outer limit of jurisdiction.[26] However, this jurisdiction can be expanded inland up to five miles in "significant estuarine, habitat, and recreational areas" or can be limited in "developed urban areas."[27] Overall, the Coastal Act establishes local control by requiring any proposed land use within the coastal zone to acquire a development permit from the Coastal Commission.

Although the Coastal Act, on its face, seems to provide the State's Coastal Commission with a large amount of control over coastal land uses, local agencies may become certified by the Coastal Commission to take over permitting authority along their jurisdictional coastal lands.[28] This delegation significantly reduces the Coastal Commission's direct authority over coastal land uses throughout the entire State.[29] In order to acquire this permitting authority, local agencies must prepare a Local Coastal Program (LCP), a plan that outlines the proposed uses of the coastal land within their jurisdiction.[30] LCPs are submitted to the Coastal Commission for review and approval.[31] An LCP must contain the local agency's ground rules for how it will approve individual development permits and must specify the appropriate type, size, and scale of development that will be approved under its program.[32] In order to be approved by the Coastal Commission, an LCP must be consistent with the Coastal Act's requirements and policies, which include reducing restrictions on the public's right to access of the sea and coastal beaches, protecting the marine environment, and prioritizing coastal dependent uses.[33]

Once an LCP is approved by the Coastal Commission, developers who wish to develop in these localities must obtain coastal development permits from the authorized local agency before commencing coastal projects, rather than from the Commission itself. Through this delegation of coastal planning authority under

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[24] JORDAN DIAMOND ET AL., THE PAST, PRESENT, AND FUTURE OF CALIFORNIA'S COASTAL ACT 5 (2017), https://www.law.berkeley.edu/wp-content/uploads/2017/08/Coastal-Act-Issue-Brief.pdf.

[25] HOLLAND ET AL., *supra* note 16, at 131.

[26] *Id.*

[27] *California Coastal Map*, Data Basin, https://databasin.org/datasets/ece6ae2d026b43959cfa11cceb2c07ac (last visited July 26, 2019).

[28] *Local Coastal Programs*, CAL. COASTAL COMM'N, https://www.coastal.ca.gov/lcps.html (last visited Oct. 28, 2020) (discussion of "Dual Permit Jurisdiction Zones," which require the approval of the Coastal Commission *and* the local government is beyond the scope of this paper.

[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *See* DIAMOND, ET AL., *supra* note 24 at 5.

[33] *Id.* at 18 ("The Coastal Act and strong background principles of property law (e.g., the public trust doctrine) can serve as bases for protecting ocean and coastal resources.").

the Coastal Act, local governments play an essential role in land use planning along the State's coast.[34] Thus, LCP certification decreases the State's land use authority and increases local authorities' regulatory power over their coastal lands. By using this power, local agencies can approve or decline permits that propose coastal projects or can conditionally approve permits where the projects demonstrate lack of compliance or harmful impacts to coastal resources.[35] This delegated power does not mean jurisdictions will approve every permit application that comes their way. Depending on local politics and appointments, a local authority may try to reduce the number of development permits approved or set a cap on the number of permits that can be approved within a given time period. By reducing the number of approved permits, California's coastline could see a reduction in new coastal development, thus reducing adverse effects of sea level rise now and in the future. Alternatively, new building standards, such as height and setback limits or new water-proofing technology, could be imposed on new coastal development projects, in an attempt to limit destruction and damage to these structures as sea levels continue to rise.

However, while local agencies can reduce the number of additional projects undertaken along their coastlines or impose strict building standard conditions, locally-sponsored land use conservation measures have practical limitations. Local political, social, and economic pressures typically affect a locality's willingness to implement such measures, particularly during election years. Fears of general public dissatisfaction or concerns over potential hostility with private developers typically influence local politicians.[36] Thus, stronger State involvement and direction may be required to ensure that local agencies are properly managing the coastal zone, free from political pressures.

2. State Intervention and Response Through LCPs.

As a State agency, the California Coastal Commission should take stronger steps to impose mandatory policies and requirements for localities to follow when exercising their delegated permitting authority under the Coastal Act. Specifically, the Coastal Commission has the authority to directly and closely regulate local land use in two ways: (1) by rejecting proposed LCPs that fail to address sea level rise mitigation and adaptation measures; and (2) by recognizing and utilizing its appellate power in regard to local permitting decisions.

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[34] Elizabeth Castillo, *Without urgent action, California's sea-level rise a threat to housing, economy, report says*, CAL. MATTERS (Mar. 17, 2020), https://calmatters.org/environment/2019/12/californias-sea-level-rise-a-threat-to-housing-economy-lao-report-says/.

[35] DIAMOND, ET AL., *supra* note 24, at 17, 18.

[36] M.L. Harrison, *Development Control: The Influence of Political, Legal and Ideological Factors*, 43 THE TOWN PLAN. REV. 254, 272 (1972).

Additionally, the Coastal Commission released a guidance document on how local agencies should address sea level rise in their LCPs.[37] In this guidance document, the Coastal Commission recommends that local authorities devise general policies that apply to all development currently exposed to the impacts of sea level rise. [38] Further, it recommends that local authorities adopt more specific policies that incorporate land use changes to address specific risks in particular portions along their coastlines.[39] However, the Coastal Commission's authority should be statutorily strengthened to allow for these advisory guidelines to take the force of law and thus be imposed onto local jurisdictions. Additionally, by turning the Coastal Commission's recommendations on approaching sea level rise into requirements, uniformity in land use planning along the coast will increase.

a. The Coastal Commission's Ability to Reject Proposed LCPs That Do Not Adequately Address Sea Level Rise.

The Coastal Commission can further influence local land use planning along the coast by rejecting a local jurisdiction's LCP. A proposed LCP could be rejected for: (1) policy reasons; or (2) because it fails to comply with Coastal Commission regulations.

i. Rejecting LCPs for Policy Reasons.

The Coastal Commission's ability to ensure local agencies consider sea level rise predications and impacts stems from its ability to approve or reject a local government's proposed LCP.[40] By rejecting proposed LCPs that disregard certain environmental impacts on the grounds that such failures violate the Coastal Act's priorities and policies, the Commission can ensure local land use planning includes sea level rise adaptations. In its 2013-2018 Strategic Plan, the Coastal Commission stated that some of these policies included:

> Work[ing] closely with local governments to update LCPs to address coastal adaptation, including providing for resilient community development and infrastructure and ensuring the long-term protection of public coastal resources such as vulnerable coastal habitats, recreational beach environments, and public access.[41]

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[37] CAL. COASTAL COMM'N, SEA LEVEL RISE POLICY GUIDANCE: INTERPRETIVE GUIDELINES FOR ADDRESSING SEA LEVEL RISE IN LOCAL COASTAL PROGRAMS AND COASTAL DEVELOPMENT PERMITS 19 (2018), https://documents.coastal.ca.gov/assets/climate/2018ScienceUpdate_website_7.20.18.pdf.

[38] *Id.*

[39] *Id.*

[40] *See* HOLLAND ET AL., *supra* note 16, at 75.

[41] CAL. COASTAL COMM'N, CALIFORNIA COASTAL COMMISSION STRATEGIC PLAN 2013-2018: PROTECTING CALIFORNIA'S COAST FOR PRESENT AND FUTURE GENERATIONS 22 (2013), https://www.coastal.ca.gov/strategicplan/CCC_Final_StrategicPlan_2013-2018.pdf.

To do so, the Coastal Commission can adopt internal guidance for analysts to use when considering whether to approve or reject a proposed LCP. This guidance can encourage Commission representatives to hold informative meetings with local public officials and assign each locality a particular contact point at the Commission when undergoing an LCP planning or amendment process. These steps can provide greater transparency and increase partnerships between the State agency and the State's many local jurisdictions. In effect, these partnerships would allow LCPs to adopt stronger measures in response to threats from sea level rise. However, it should be noted that implementing these environmental conservation policies may depend on the ideological stances and priorities of the current Coastal Commissioners.

Despite being able to develop internal policies, for the Coastal Commission to efficiently control land use planning through LCP approvals and rejections, it must be able to implement a stronger regulatory stance quickly and effectively. In reality, however, the Coastal Commission cannot act on the already-approved LCPs currently in effect.[42] As a result, stronger regulatory approaches in approving LCPs will be delayed. Under the Coastal Act, the Coastal Commission must wait for a local agency to amend their LCP, triggering a need for re-approval and re-certification, or wait for new jurisdictions to apply for delegated permitting authority and propose LCPs.[43] This delay and uncertainty means that the Coastal Commission's ability to reject newly proposed or amended LCPs is both limited in application and insufficient to adequately address the imminent threat of sea level rise. As explained below, by turning the Coastal Commission's guidance on how to address sea level rise into requirements, the Commission's authority will be strengthened to ensure that local jurisdictions make these changes quickly and according to the State agency's priorities and policies.

ii. Rejecting LCPs for Failing to Comply with Coastal Commission Regulations.

Alternatively, the Coastal Commission can acquire stronger authority to reject LCPs that fail to address particular threats from sea level rise by acquiring the right to issue binding regulations. To strengthen the State's control over coastal development, the Coastal Commission's guidance for how local jurisdictions should address sea level rise must be given greater weight and taken seriously by local jurisdictions. By changing the Commission's recommendations into requirements, the State will gain more control over local coastal jurisdictions' land use decisions. In addition, to ensure these changes are made quickly, the State legislature could pass a bill that provides the Commission with the authority to issue binding regulations that work retroactively. This would force local jurisdictions with already approved LCPs to amend their LCPs to ensure

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[42] *Id.* at 5.

[43] *See* CAL. PUB. RES. CODE § 30514(a) (West 1996).

compliance with the Commission's regulations. In addition, to prevent overly rushed updates to LCPs or backlash from local jurisdictions, the legislature could require the Commission to establish a time period for cities and counties to integrate such policies into their LCPs. This proposal illustrates how the State legislature can work to provide its State agencies with more control over coastal land use management techniques and policies.

In its *Sea Level Rise Policy Document*, the Coastal Commission recommends six steps for local jurisdictions to follow when addressing sea level rise in an LCP or LCP Amendment.[44] Steps one, two and three, referred to as the "Vulnerability Assessment," include the following recommendations: (1) identify the range of sea level rise projections in the planning area; (2) identify potential sea level rise impacts in the LCP's planning area; and (3) assess the risks to coastal resources and development in the planning area.[45] The last three steps provide specific action recommendations on how the local jurisdiction should use its "Vulnerability Assessment" data and implement appropriate land use regulations and policies.[46] These steps instruct local jurisdictions to: (4) identify adaptation measures and LCP policy options; (5) draft an updated or new LCP for certification with Coastal Commission; and (6) implement the LCP and monitor and revise as needed.[47] Overall, these six steps, if turned into requirements, would force coastal cities to consider the threats of sea level rise and plan ahead. These requirements could be a potential tool for combatting current views that prioritize local politics or highly valued coastal properties and businesses. By requiring local cities to prepare reports containing these steps, while allowing each jurisdiction to modify its management plans in accordance with its unique coastal land and geography, California, through the Coastal Commission, will have stronger control over its beloved coast. Thus, to achieve the goal of stronger State regulation of coastal land use, the State legislature should provide the State Coastal Commission with the authority to issue binding regulations.

b. The Coastal Commission's Appellate Power.

The second opportunity for the Coastal Commission to strengthen State authority over coastal land use planning is through its statutorily-recognized appellate power over permitting decisions.[48] Currently, the Coastal Commission serves as the appellate body for local permitting decisions once permitting authority has been delegated to local agencies through an approved LCP.[49] Through this process, the Coastal Commission can reject local actions if they are

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[44] *Sea Level Rise: Planning and Permitting*, CAL. COASTAL COMM'N, https://www.coastal.ca.gov/climate/slr/planning-permitting/ (last visited Oct. 30, 2020).

[45] *Id.*

[46] *Id.*

[47] *Id.*

[48] CAL. PUB. RES. CODE §§ 30000 – 30900 (West 1976).

[49] *See id.* § 30600.

inconsistent with the Coastal Act's requirements and policies. This appellate authority provides the Commission with some leeway in indirectly requiring localities to address and include threats of sea level rise in their decision-making processes when approving and rejecting coastal development permits. In conclusion, this appellate authority protects statewide interests in coastal resources.

However, the Coastal Commission lacks the power to arbitrarily overrule merely any project approval by a local jurisdiction. To initiate the appellate process, a party must appeal a locality's approval of a development permit.[50] In this sense, the Coastal Commission is restricted to reconsidering and overturning decisions when the challenged decision is brought to its attention and within its jurisdictional authority.[51] The appellate process can be troublesome because many citizens in coastal communities may be unaware of such permit approvals and thus fail to appeal them. Thus, underlying the Commission's appellate authority is the assumption that citizens are properly informed about land use decisions in their communities. As a result, the Coastal Commission's appellate power is overly dependent on the idea that citizens are well-aware of their local government's coastal development approvals and denials, and further, that they would file an appeal.

Another limitation of the Coastal Commission's appellate authority is that the "appellant must have exhausted all local appeals. . . ."[52] The exception to this rule is if "the local government charges a fee to appeal, restricts the class of people who can file appeals, or failed to follow the hearing and notice requirements for issuing a coastal development [permit]."[53] In effect, these requirements force opponents of a permit's approval or denial to undergo various hurdles or obstacles, or prove that they have been burdened by the local jurisdiction, in order to further their appeal before the Commission.

Moreover, the Coastal Commission's appellate authority is limited in its ability to overturn local approvals of coastal development projects by the specifics outlined in the local agency's LCP.[54] Depending on the specifications listed in the locality's LCP, the Coastal Commission can only overturn a permitting decision if it is inconsistent with that LCP.[55] This limitation stems from the fact that the Coastal Commission authorized the LCP, signifying approval of all the terms and proposed coastal uses outlined in that particular LCP. As such, the Coastal Commission is not permitted to overturn a permitting decision simply because it

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[50] CAL. COASTAL COMM'N, THE COASTAL COMMISSION PERMIT APPEAL PROCESS 1, https://documents.coastal.ca.gov/assets/cdp/appeals-faq.pdf (last visited Oct. 30, 2020).

[51] *But See Id.* ("The approval or denial of a major public works project or energy facility, regardless of its location, is also appealable.").

[52] *Id.*

[53] *Id.*

[54] *Id.* at 1-2.

[55] *See id.* ("The grounds for appealing a project are limited to whether the project conforms to the requirements of the LCP or the public access policies of the Coastal Act.").

believes that the locality *should have* denied or approved a permit in the name of conserving coastal resources. In effect, the Coastal Commission is restricted in overturning local decisions by being forced to point to specific violations of the current LCP, a plan that the Commission had previously approved.

Therefore, although the Coastal Commission is granted appellate power, such power is limited by the realm of their appellate authority and by the terms and conditions outlined in the applicable LCP. Thus, the Coastal Commission may intend to control future coastal development by regulating local land use authority through its appellate power. However, its appellate authority under the California Coastal Act is so restricted that it cannot adequately address the threats from sea level rise and play a strong role in coastal land use management. For these reasons, stronger State-direct approaches should be explored to provide the Coastal Commission with more authority.

B. The Planning and Zoning Law.

California's Planning and Zoning Law is another potential tool that may allow California to provide more direct State oversight over sea level rise management and land use planning. The Planning and Zoning Law requires that each of California's 533 incorporated cities and counties adopt "a comprehensive, long-term general plan for physical development" within their jurisdictions.[56] A general plan is a city or county's long-range policy document that lays out a community's future land use plans and overall objectives for development and expansion.[57]

The Planning and Zoning Law also authorizes cities and counties to adopt zoning ordinances, which regulate land uses and the intensity of development within the locality's jurisdiction.[58] Specifically, zoning ordinances are local laws intended to carry out the policies of a locality's general plan by laying out permitted uses for each specific parcel of land throughout the community.[59] Zoning ordinances describe limitations to development by identifying which parcels within a jurisdiction may be used for residential, commercial, industrial, mixed-use, or open space uses.[60] They also set specific standards that regulate details for new development, such as: lot size, building setback, minimum lot widths, height restrictions and the like.[61] Thus, through the adoption of a General Plan and related zoning ordinances, a local jurisdiction can adopt enforceable land

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[56] CAL. GOV'T CODE § 65300 (West 1965).

[57] STATE OF CAL., GOVERNOR'S OFF. OF PLAN. & RSCH., A CITIZEN'S GUIDE TO PLANNING (2001), https://web.archive.org/web/20150511210104/http:/ceres.ca.gov/planning/planning_guide/plan_index.html%23anchor175423.

[58] *See* CAL. GOV'T CODE §§ 65000 – 66035 (West 1967) (As stated in § 65000, "[t]his title may be cited as the Planning and Zoning Law.").

[59] STATE OF CAL., GOVERNOR'S OFF. OF PLAN. & RSCH., *supra* note 57.

[60] *Id.*

[61] *Id.*

use policies based on that jurisdiction's development priorities, furthering the State's problem of inconsistent planning policies along its coast.

1. How California Cities and Counties Can Address Sea Level Rise Through the Planning and Zoning Law.

Under the Planning and Zoning Law, California's local agencies are equipped with the regulatory authority to adopt general plans, specific plans, and zoning ordinances that directly and indirectly address the ensuing impacts of sea level rise.[62] Through large-scale planning in general plans and parcel-specific requirements in zoning ordinances, cities and counties may adopt policies that place fewer people and fewer structures in harm's way when the impacts from sea level rise occur. For example, local agencies could adopt stricter zoning ordinances for coastal development, either by adopting "no-build" zones in the most vulnerable areas along the coast or mandating any new development to abide by adaptive structure requirements. Additionally, a local agency may even adopt more extreme policies, such as ordinances that require removing older coastal structures before approving new coastal structures or incentives that encourage relocating coastal property owners further inland. Although such policies are likely to face resistance from local business and property owners that feel strong economic and sentimental connections to their buildings, these requirements would work to prevent coastal cities from facing drastic physical and financial harm once the impacts of sea level rise take full effect.

For example, the City of San Francisco has used its zoning authority to adopt measures that protect structures on Treasure Island from the threats of sea level rise.[63] Treasure Island is a man-made island located in the middle of San Francisco Bay.[64] The Treasure Island Master Plan concentrates development at the island's center, "elevate[s] the building pad for the island's proposed development area" and "protect[s] the buildings with a levee and a wide setback."[65] Treasure Island's Master Plan includes a variety of the recommendations mentioned above: a policy of shifting development away from the sea, the adoption of resistant-type building standards for new development, and the addition of physical barriers to protect current structures. Although these actions are limited to Treasure Island, they illustrate how cities are becoming more aware of the land use changes required to effectively combat threats of sea level rise. However, a stronger State approach

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[62] *See generally* DIAMOND ET AL., *supra* note 24, at 8, 18, 21.

[63] CITY OF S.F., HOUSING ELEMENT, *in* SAN FRANCISCO GENERAL PLAN 183 (2014), https://default.sfplanning.org/plans-and-programs/planning-for-the-city/housing-element/2014_Housing_Element_Part_I_DRAFT.pdf.

[64] *Treasure Island*, CAL. BEACHES, https://www.californiabeaches.com/beach/treasure-island-san-francisco/ (last visited Oct. 31, 2020).

[65] Laura Tam, *Strategies for Managing Sea Level Rise*, S.F. BAY AREA PLAN. & URBAN RSCH. ASS'N (SPUR) (Nov. 1, 2009), https://www.spur.org/publications/urbanist-article/2009-11-01/strategies-managing-sea-level-rise.

that mandates all coastal jurisdictions to adopt similar policies and building requirements will ensure uniformity for land use management strategies along California's coast.

a. Structural Relocations and Reducing Development within the Coastal Zone.

Policies that allow for "smart development," such as requiring development on Treasure Island to occur on elevated land, would face less local and political resistance along the coast over measures that completely ban development. However, once more severe impacts from sea level rise occur, structures located in zones once seen as invulnerable may still be substantially damaged or completely destroyed. Thus, local jurisdictions must instead focus on policies that prioritize complete relocation and removal of coastal inhabitants and an overall retreat from future coastal development. Without doing so, structures remaining on the coast will continue to face threats as the impacts of sea level rise continue to threaten California's coast.

To reduce development within coastal zones, coastal cities and counties must act quickly to update and revise their general plans and adopt more conservative zoning ordinances within their coastal zones. Zoning authority is a powerful tool that local governments may use to preemptively mitigate threats from sea level rise.[66] By rezoning coastal areas from their current residential, commercial, or industrial uses into conservation or open space areas, a local agency would immediately be able to restrict or reduce new development along its coastline. Additionally, as current-existing coastal structures begin to wear-down or even recede into the ocean, new zoning regulations could restrict property owners from rebuilding or drastically remodeling these structures, further encouraging complete relocation from the coast.[67] By quickly implementing sea level rise-focused zoning ordinances, coastal cities and counties may avoid or mitigate devastating economic, environmental, and housing displacement impacts that may result from sea level rise.

Although some localities already consider the potential for sea level rise impacts in the Safety Element[68] of their general plans, strong zoning changes that limit or stop development in coastal zones altogether, as those expressed above, have not yet been seen or incorporated into general plans. Thus, these new zoning ordinances do not come without obstacles.

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[66] JESSICA GRANNIS, GEO. CLIMATE CTR., ZONING FOR SEA LEVEL RISE 2 (2012), https://www.georgetownclimate.org/files/report/Zoning%20for%20Sea-Level%20Rise%20Executive%20Summary%20Final.pdf.

[67] *Id.* at 3.

[68] General plans must include seven elements, including the Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety elements. *See* SAHAR SHIRAZI ET AL., GOVERNOR'S OFF. OF PLAN. & RSCH, GENERAL PLAN GUIDELINES 39 (2017), https://www.opr.ca.gov /docs/OPR_COMPLETE_7.31.17.pdf.

First, there will certainly be backlash from development companies, coastal businesses, and wealthier Californians hoping to own coastal property or visit luxury coastal hotels. Such local political and economic pressures may discourage city and county councils from taking these actions, perhaps out of fear of losing re-election races or disappointing powerful constituents. Although local politics may prevent an immediate adoption of these zoning requirements, politicians must remember the long-term goals of protecting California's coast from sea level rise. These goals include ensuring the safety of coastal residents and preventing an economic crisis from the sudden loss of coastal structures and businesses. Overall, such goals outweigh the temporary political pressures they might face.

Second, such zoning ordinances are imperfect, as they wouldn't allow for immediate forced removal of existing structures. Owners of legal prior non-conforming uses are entitled to reasonable delays in compliance and are typically allocated lengthy amortization periods, as provided in a local agency's zoning code.[69] A non-conforming use is a lawful use existing on the effective date of a new zoning restriction that has continued since that time without conformance to the ordinance.[70] Thus, despite quick updates to general plans and zoning ordinances, there will be circumstances in which local jurisdictions' decisions will fail to take effect immediately. Further, property owners with non-conforming uses are entitled to a reasonable amortization period, meaning that local governments are forced to allow these non-conforming uses for a period of time after the new zoning regulations go into effect.[71] However, local jurisdictions may work to amend such amortization periods in three ways. First, they may reduce the time allotted to non-conforming uses through a new ordinance. Second, they may reduce the ability of property owners with these structures to make repairs and improvements. Third, local jurisdictions may provide financial incentives to property owners who relocate sooner.

Thus, revised general plans and zoning ordinances have the potential to force changes in land use regimes. Yet local economic and political pressures, in addition to legal rights for non-conforming uses, may prevent local agencies from adopting strong policies that take immediate effect. As such, intervention at the State level is necessary to ensure that stronger changes are implemented at local levels and that local agencies properly plan ahead for sea level rise and its associated impacts.

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[69] Osborne M. Reynolds Jr., *The Reasonableness of Amortization Periods for Nonconforming Uses – Balancing the Private Interest and the Public Welfare*, 34 WASH. U. J. URB. & CONTEMP. L. 99, 100-04 (1988).

[70] *Id.* at 99 n.2.

[71] *Id.* at 104.

2. State Intervention: Amending the Planning and Zoning Law.

A major way for the State to take a more direct role in the realm of general plans and zoning ordinances requires action by the California State Legislature. Ideally, the Legislature would amend the State's Planning and Zoning Law to specifically address sea level rise by compelling local jurisdictions to adopt policies that align with those identified above. By removing some of the local jurisdictions' authority over how to address sea level rise, the State will be able to directly influence local planning and work towards uniformity in land use policies along the coast. An ideally amended Planning and Zoning law would include: a required "Sea Level Rise" Element for coastal jurisdictions to implement in their general plans; model zoning ordinances for coastal cities to consider, ideally backed with financial incentives to adopt similar ordinances; and the creation of a new State agency focused on studying proper land use policies for addressing sea level rise, which would act as an advisor to all coastal jurisdictions on land use planning matters. By providing these mandates and financial incentives, the State will be able to better control how land use planning is handled along its coast and will be able to directly influence how local jurisdictions manage their coastal lands.

III. STRONGER STATE RESPONSES.

A necessary evaluation of the current legal framework will determine whether California should take a stronger and more direct approach with land use measures responsive to sea level rise. California already passed landmark policies in response to threats from climate change.[72] The State has shown a strong desire to directly address adverse impacts of air pollution and the housing crisis by mandating localities to meet particular quotas.[73] For example, California's Climate Adaptation Strategy (CAS) is a statewide initiative aimed at recommending adaptation strategies across various sectors of the State.[74] As implied by its name, the plan focuses on adaptations – or "adjustments in natural or human systems to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities."[75] A key recommendation in CAS states that "State agencies should generally not plan, develop, or build any new significant structure in a place where that structure will require significant

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[72] *See* CAL. NAT. RES. AGENCY, 2009 CALIFORNIA CLIMATE ADAPTATION STRATEGY 11 (2009), http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf; *id.* at 3 (recognizing the critical detriments that could be felt to the State's geological, ecological, and financial wealth if no actions are taken).

[73] *See* CAL. HEALTH & SAFETY CODE § 38500 *et seq*. (West 2019) (codifying "AB32" – extending and strengthening the limit on greenhouse gas emissions created by SB 32 by raising its goal for greenhouse gas emissions to 40 percent below 1990 levels by 2030).

[74] CAL. NAT. RES. AGENCY, *supra* note 72, at 4.

[75] *Id*.

protection from sea level rise . . . ."[76] Although this recommendation can encourage jurisdictions to consider incorporating such policies into their land use planning, the CAS is not binding. This illustrates the need for stronger mandates by the State – mandates that *require* local jurisdictions to consider these important environmental and financial detriments and in response, take affirmative action to plan accordingly.

To continue its climate leadership role, California should adopt new laws that directly address sea level rise. For example, California could create market-based incentives for developers to tear down diminishing coastal structures. Additionally, the State could adopt regulatory schemes that mandate local agencies to implement stricter zoning ordinances, similar to those listed above. By crafting new laws, the State could prioritize the threat of sea level rise and subject parties in all sectors (government, landowners, private developers, etc.) to stronger State directives regarding coastal land use management.

A State law creating market-based incentives for private parties that adhere to California's prioritized land use policies would not be new.[77] For example, the Williamson Act encourages private landowners to enter into contracts with their local governments that, in turn, restrict their land to agricultural or open space uses.[78] By entering into these contracts, landowners receive the benefit of lower property taxes.[79] The Act further encourages landowners to remain in these contracts for long-terms and in effect, indefinitely, by imposing annual tax increases upon landowners who intent to shift their lands' uses away from conservation.[80] This market-based incentive has clearly encouraged land owners to use their land in a way promoted by the State, with about 16 million acres currently enrolled in the Williamson Act program.[81] Thus, the adoption of market-based incentives for removal of current coastal structures, relocation away from the coast, and preservation of land along the coast is not unrealistic.

In addition to targeting private landowners' actions, California could create a tax-incentive program for project developers to take on more inland coastal projects. This program should be conditioned on the fact that such developers no longer pursue projects directly on the coast. Examples of such incentives could include prioritized or streamlined permitting approvals in inland areas, a reduction of development fees in inland areas, or even increased fees and hurdles for proposed coastal development. Such economic incentives could provide

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[76] *Id.* at 7.

[77] *See* CAL. GOV'T CODE § 51200 *et. seq*. (West 2019).

[78] *Williamson Act Program*, CAL. DEP'T OF CONSERV., https://www.conservation.ca.gov/dlrp/wa (last visited Nov.. 1, 2020).

[79] *Id.*

[80] *Id.* ("In return [for entering into contracts with local governments] landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.").

[81] *California Land Conservation Act*, CAL. FARM. BUREAU FED., https://www.cfbf.com/wp-content/uploads/2019/06/CaliforniaLandConservationAct.pdf (last visited Nov. 1, 2020).

developers the financial push they need to get on board with reducing coastal development and shifting most of their projects inland.

Additionally, a "1-for-1" policy would also encourage removing worn-down or abandoned coastal structures. Under such a program, developers could be required to pay for removing an existing deteriorating coastal structure for every new one they propose to build directly on the coast. However, the financial incentives provided here would need to be substantial, since developers would not only assume the financial risk of their own projects but would also suffer the detriment of assuming the costs to remove an unrelated structure. Alternatively, this policy could be adopted without a strong financial incentive, which could serve as a deterrent to developing coastal structures. Regardless, this policy could serve to remove older and damaged coastal structures. In reality though, this program would be limited, as it would likely only remove uninhabited or financially worthless structures and would allow currently inhabited coastal structures to remain, all while permitting new development. In fact, a "1-for-1" policy could even *encourage* coastal development. For example, coastal developers could be eager to remove older and less aesthetically pleasing structures in attempt to increase the values of their new developments. Overall, this proposed policy has flaws that would need to be ironed out by the State Legislature and relevant experts such as economists, ecologists, and environmentalists before it could realistically be implemented.

Finally, new coastal structures could be limited by conditioning that new projects require structures to be specific distances from the coastline, include structural integrity techniques, and be limited to a list of pre-approved future uses. Such restrictions could include mandates that structures be removed after a certain period of time or be located far above the anticipated sea level rise line. Moreover, similar to the Treasure Island case study, structures could be required to be built on elevated lands. However, these policies are flawed in that they would face a vast amount of opposition from local politicians, private landowners, and developers.

Although these proposed policies seem radical, California must recognize the radical threats and destruction that sea level rise could bring to the State's environment and economy. As such, the State must work to adopt policies that allow for stronger State control in the realm of planning for sea level rise. However, it must be stressed that these radical laws and policy changes will not come without resistance from developers, local governments, and beachfront property owners. Local cities and counties that heavily rely on their coastal economies are also likely to oppose such strong State control, in the name of preserving local power and economic benefits for their constituents. Nevertheless, without stronger land use regulations from the State that mandate precautionary practices in coastal land use planning, the State's booming coastal economies could be completely wiped out and destroyed. Although adopting and implementing such laws would be demanding, the benefits of such programs

would allow the State to maintain a strong and direct approach to combatting the adverse impacts of sea level rise. Such laws would reaffirm California's role as a global leader in the realm of climate change policies.

IV. HOW OTHER NATIONS ADDRESS THE THREAT OF SEA LEVEL RISE.

Although California's State and local governments may clash on how to combat sea level rise and related strategies, nations across the globe have adopted their own approaches tailored to their particular economies and landscapes. This section will explore those approaches and examine whether such strategies could be realistically and successfully adopted by California's localities. As mentioned below, California cities are likely unable to adopt similar strategies due to backlash from coastal property owners and local politics. However, this section will also provide recommendations on how the State could push itself towards adopting such policies. Thus, these cases studies illustrate how the adoption of radical approaches to addressing sea level rise are not impossible.

A. The Dutch's Adaptive Approach.

As a waterlogged country that sits mostly below sea level, the Netherlands recognizes the importance of adaptation strategies when it comes to facing the imminent threat of sea level rise.[82] Dutch scientists believe that building barriers, such as seawalls and levees, to keep out rising water levels, is not a permanent solution to the threats faced by sea level rise. [83] Instead, they believe localities must focus their land use planning to *allow for* the invasion of water.[84] The Dutch have not always thought about adaptation though.[85] A series of floods in the 1990s forced scientists to rethink their land use strategies and approaches to dealing with sea level rise, resulting in "resilience planning," which altered the Dutch's way of life.[86] As part of this new land management strategy, local planners have "devise[d] lakes, garages, parks and plazas that are a boon to daily life but also double as enormous reservoirs for when the seas and rivers spill over."[87] These new strategies allow water to naturally and foreseeably invade the land, without causing any destruction to existing structures or development.[88] Although the Dutch's land management techniques seem futuristic, the Dutch have incorporated them with ample public support and involvement.[89] Backed by citizens who recognize the imminent threat of sea level rise, the Netherlands

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[82] Michael Kimmelman, *The Dutch Have Solutions to Rising Seas. The World is Watching*, N.Y. TIMES: EUR. (June 15, 2017), https://www.nytimes.com/interactive/2017/06/15/world/europe/climate-change-rotterdam.html.

[83] *Id.*

[84] *Id.*

[85] *Id.*

[86] *Id.*

[87] *Id.*

[88] *See id.*

[89] *See id.*

government has been able to adopt lifestyle changes and management approaches that truly adapt to the changing environment, rather than attempting to control it.

1. Whether California Could Adopt the Dutch's Approach.

California will have a difficult time adopting similar lifestyle-altering approaches. Seawalls and other barriers have been the primary method for protecting coastal structures in California.[90] Californians would have to change their mindset and accept the idea of allowing their beloved coastal lands to flood. Without public support, the Dutch's approach to sea level rise will not succeed in California. The most obvious opponents to these policies, coastal property owners who own coastal homes and businesses worth millions, would surely put up a fight to such adaptive strategies.

Despite the barriers of local politics and strong local resistance that cities might face, the State government technically has the ability to adopt some of the Dutch's adaptation policies through a strong-hand approach. By advancing the Coastal Commission's ability to deny LCPs and proposed coastal development projects, the State will force coastal communities to recognize that new development along the coast is no longer the norm amidst sea level rise. In addition, by mandating local jurisdictions to discuss and plan for sea level rise in their general plans and zoning ordinances, the public will begin to recognize the imminence of this threat. By continuing to push these policies, the State may eventually begin to change public perception on the norm of coastal development. Additionally, by amending the State's Planning and Zoning Law, the State could require existing structures and developments to adopt flood systems, such as parks and garages that double as reservoirs, like those found in the Netherlands.

Alternatively, such flood management systems could be encouraged by another useful State government tool – market-based incentive programs. One option is to provide tax breaks to those that adopt such flood management systems. Another option is to provide "relocation fees" to coastal property owners opting to tear down their coastal structures and relocate inland. Through such policies the State will be able to drive Californians and future development away from the receding coastline more quickly. This strong and direct State approach will ensure that uniform management systems are adopted along the State's coast, preventing isolated or incompatible systems among the various coastal cities. California may be far from adopting the public sentiment towards sea level adaptation measures found in the Netherlands. However, by adopting a more direct approach as discussed throughout this paper, the State government can shift public opinion on the realities of sea level rise and how to properly adapt to its devastating effects.

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[90] Anne C. Mulkern, *Beach disappearing in city where sea walls dominate*, E&E NEWS (Jul. 31, 2017), https://www.eenews.net/special_reports/california_crumbling_coast/stories/1060058130.

B. The Chinese's "Sponge City" Approach.

Similar to the Dutch, the Chinese's approach to sea level rise arose in the wake of devastating flooding.[91] As a result, coastal areas in China are now adopting a "sponge city initiative," using new engineering techniques to absorb and re-use rainwater that falls. [92] The "sponge city" approach is designed to "reduce the intensity of rainwater runoff by enhancing and distributing absorption capacities more evenly across targeted areas."[93] The approach aims to reduce flooding, enhance water supply security, and protect water quality by mimicking natural processes.[94] The approach includes "rooftops covered by plants, scenic wetlands for rainwater storage, and permeable pavements that store excess runoff water and allow evaporation for temperature moderation."[95] Essentially, this approach provides a short-term solution that alters the landscape to better handle increased rains and runoff. Such an approach could be applied to California's coastal communities and could be applied to similarly re-route any excess water in coastal areas that results from rising sea levels. However, although the idea of a "sponge city" sounds futuristic, this approach is not without flaws.

Thus far, the "sponge city" concept in China has proven ineffective – not due to poor engineering or lack of technical success, but rather, due to lack of funding and ineffective enforcement.[96] Without financial and enforcement forces, a policy like this one is bound to fail, or at least fail to live up to its potential. Additionally, while "sponge city" techniques provide protection from increasing freshwater floods, the threats of sea level rise are much more imminent and forceful. Sea level rise adaptation requires massive relocations away from the coastlines and denying future coastal development, not just engineering techniques that allow coastal lands to absorb increasing sea levels.

1. Whether California Could Adopt the Chinese's Approach.

As discussed, the "sponge city" concept is unlikely to properly combat sea level rise. However, the State could benefit from incorporating some of these "sponge city" tactics into its CAS recommendations or recommendations to local jurisdictions. Yet, overall, addressing the imminent threats of sea level rise depends on a strong and direct approach that requires local jurisdictions to take action. Therefore, California's strongest approach to rising sea levels stems from

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[91] Robert Muggah, *How China's sponge cities are preparing for sea-level rise*, WORLD ECONOMIC FORUM (June 28, 2019), https://www.weforum.org/agenda/2019/06/how-china-s-sponge-cities-are-preparing-for-sea-level-rise/.

[92] Asit K. Biswas & Kris Hartley, *China's "sponge cities" aim to re-use 70% of rainwater*, CNN(Oct. 15, 2018, 5:07 AM), https://www.cnn.com/2017/09/17/asia/china-sponge-cities/index.html.

[93] *Id.*

[94] *Id.*

[95] *Id.*

[96] *Id.*

directing local jurisdictions to adopt policies that encourage relocation and retreat and halt further coastal development.

V. CONCLUSION.

Throughout history, California's beautiful coastline has triggered rapid development of beachfront homes, restaurants, and commercial businesses. Today, however, threats associated with sea level rise have become imminent. Drastic changes in land use planning and regulation are necessary to adequately protect coastal communities and economies, despite resistance from beachfront property owners and established coastal communities. Local agencies have several options to address sea level rise within their jurisdictions. However, limitations on those powers and challenges created by local politics indicate that the State must directly and successfully lead local governments to respond to sea level rise. Additionally, sea level rise has the potential to diminish the habitability of land along the coast and to destroy California's coastal economy. Consequently, the State must take a more direct approach and mandate local agencies to adopt land use controls that protect the State's citizens and economy.

California, armed with the police power and the ability to adopt historic and proactive climate change laws, must act forcefully and quickly to change coastal development processes and help relocate existing coastal economies. Specifically, the State of California must step up and fight at the frontlines in order to properly respond to these climate-change-induced threats before the drastic impacts of sea level rise destroy the State's beloved coastal economy and ambiance.