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Coastal Adaptation Policy Brief

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Elevation of Structures

Introduction

"Elevating structures" is an engineered coastal adaptation strategy where a structure is raised in response to a current or expected flooding hazard. This strategy employs stilts, columns, or piles to move the living area of a dwelling above a base flood elevation (BFE). Additional buffer requirements above the BFE is called "freeboard." The primary way that this strategy functions in the long-term coastal adaptation planning context is through amendments to zoning ordinances and building codes that require new or rebuilt structures to be elevated to a height that includes a buffer freeboard elevation that reflects the anticipated sea level rise over a predetermined duration.[1]

Elevating existing structures can be an attractive short-term solution for developed areas seeking to accommodate sea level rise for some duration. Moreover, it might be a particularly useful strategy for coastal dependent structures or critical infrastructure that cannot be moved according to a short-term retreat adaptation plan. The decision to elevate should be made after all the relevant environmental and regulatory requirements have been considered. Finally, property owners should consult certified engineers to assist with such a project and hire qualified contractors to perform the construction.[2]

Tradeoffs

Elevating structures provides a flexible solution for certain existing development prioritized for remaining in the same place while planning for a potential managed retreat plan in the future. Specifically, this strategy provides a way to "accommodate" sea level rise in the interim. This strategy might also be useful for properties where "takings" concerns are the most challenging.[3] Similarly, elevation might provide relief in locations where the local constituents are most opposed to short-term retreat from the coastline.

This strategy also has several practical advantages, such as bringing previously non-complying existing buildings into compliance with National Flood Insurance Program requirements, reducing flood insurance premiums, and not requiring the additional land that protective structures would require.[4] Further, individuals elevating structures might qualify for financial assistance to do so.[5] Finally, elevating structures saves money and provides a favorable return on investment for programs providing grants to mitigate flooding events.[6]

Despite its practical application and proven effectiveness to date, this strategy has certain drawbacks. For instance, elevating existing structures is not a long-term solution. Instead it merely delays removing structures from increasingly perilous coastal locations. It is also not applicable everywhere, because some buildings cannot be elevated or would be impractical to elevate.[7] This strategy might also be cost-prohibitive, despite possible

1 Homeowners can also voluntarily elevate existing structures, either through the federal hazard mitigation program, or merely to reduce their flood insurance premiums.

2 Maine's Sea Grant has compiled a list of steps for homeowners considering elevating their structures. *Move up by Elevating Structures*, Maine SeaGrant, https://www.seagrant.umaine.edu/coastal-hazards-guide/coastal-wetlands/elevate-structures (last visited Sept. 26, 2017).

3 *See, e.g.*, Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978) (explaining that one of the factors for determining whether a taking has occurred is "[t]he economic impact of the regulation on the claimant and, particularly, the extent to which the regulation has interfered with distinct investment-backed expectations.").

4 FEMA's Coastal Construction Manual features a list of advantages and disadvantages of elevation. FEMA P-55, Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas, 4th Edition 15-9 (2011).

5 42 U.S.C. § 5170c.

6 Loss Avoidance Study: Sonoma County California Structure Elevation Mitigation (2017), *available at* https://www.fema.gov/media-library-data/1492193978634-8b228ed3251229b6a86dac730e56e925/FEMA_Factsheet_Sonoma_County_LAS_508.pdf.

7 *See* FEMA, Reducing Flood Risk to Residential Buildings That Cannot Be Elevated (2015).

grant assistance.[8] Furthermore, elevating structures might affect access to the building, possibly violating Americans with Disabilities Act accessibility requirements.[9]

Elevating structures instead of removing them also has potentially damaging effects on ecosystem and surrounding properties. Similar to protective shoreline structures such as seawalls, elevated structures can impede longshore drift along a shoreline and increase erosion. The California Coastal Commission has identified several possible negative impacts to coastal resources caused by elevating structures, including blocking coastal views and affecting community character.[10]

Legal Considerations

There are several legal considerations for local communities and coastal landowners who elevate existing structures. First, elevated structures should be elevated to the heights established by local law, usually in their building codes. While the Federal Emergency Management Agency's National Flood Insurance Program standards are usually considered the minimum height that a structure should be raised, local ordinances can require elevating to a height above this minimum.[11]

A landowner who elevates an existing property in a jurisdiction with a "view ordinance" might be challenged for blocking a neighbor's view of the coastline.[12] Furthermore, elevating structures might conflict with certain provisions of a local community's Local Coastal Program (LCP),[13] particularly those implementing the visual resources section of the Coastal Act.[14]

Other potential legal considerations include possible additional requirements under the California Environmental Quality Act, especially where cultural or archaeological resources are present.[15] Elevating a structure might trigger coastal development permit requirements, unless the construction falls into an exception.[16] Similarly, elevating structures listed on the National Register of Historic Places—or eligible for listing—are subject to requirements under the National Historic Preservation Act of 1966.[17] Finally, elevated structures that cause neighboring properties to erode could face nuisance claims.

Examples

Currently, this strategy is typically used in coastal regions to meet requirements under FEMA's BFE minimums. In California, Marin County attempted to prompt the use of this strategy through updates to its local coastal program.[18] There are many ad hoc examples of this strategy in California and elsewhere, usually prompted by FEMA requirements.[19]

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8 Grants to elevate homes are available through FEMA's Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) Program, and the Flood Mitigation Assistance (FMA) Program. As the names suggest, they encompass both preventative "pre-disaster" grants, as well as grants in the wake of disasters. *See, e.g.*, FEMA, Homeowner's Guide to the Hazard Mitigation Grant Program, *available at* https://www.fema.gov/media-library-data/1478272128411-2eca27a89d418bb73e817edfb702cc15/HMA_HO_Brochure_508.pdf ("Generally, FEMA pays up to 75 percent for hazard mitigation projects. The remaining 25 percent is the responsibility of the homeowner, unless the subapplicant has identified an alternative payment method.").

9 42 U.S.C. §§ 12101 *et seq.*

10 California Coastal Commission, Sea Level Rise Policy Guidance 124 (2015).

11 Homes secured by federally funded mortgages must be insured under the National Flood Insurance Program. Participation in this program requires elevation to FEMA BFE heights.

12 *See, e.g.*, San Francisco City Public Works Code §§ 820-29.

13 For instance, public view and community character provisions of an LCP might conflict with adaptation policies advocating elevation. LCPs will typically feature provisions for how to resolve such conflicts, usually under the priorities set forth by the Coastal Act. *See, e.g.*, Santa Barbara County Coastal Land Use Plan 14 (1982).

14 Cal. Pub. Res. Code § 30251.

15 Cal. Pub. Res. Code §§ 21000 *et seq.*; Cal. Pub. Res. Code § 30244.

16 *See, e.g.*, Cal. Pub. Res. Code § 30610 (the Coastal Act's "repair and maintenance" exception).

17 54 U.S.C. §§ 300101 *et seq.*

18 Marin County proposed requiring three feet of freeboard, but later withdrew this policy from its proposed LCP amendments after receiving comments from the Coastal Commission. *Amendment 5: Specific Chapters and Sections of the Marin County Development Code comprising a portion of the IPA for the LUPA Environmental Hazards Chapter*, Marin County, *available at* https://www.marincounty.org/~/media/files/departments/cd/planning/local-coastal/letters/2016/attachment-5_16-4-6_final_eh_ipa.pdf?la=en.

19 *See, e.g.*, Loss Avoidance Study: Sonoma County California Structure Elevation Mitigation, *supra* note 6.

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