

# Coastal Flood Resilience Project

## WHITE PAPER

### Response to the Federal Emergency Management Agency Request for Comment on the Local Floodplain Management Standards of the National Flood Insurance Program 1.24.2022

The [Coastal Flood Resilience Project](#) is a coalition of organizations and individuals working for stronger programs to prepare for coastal storm flooding and rising sea level in the United States.

This *White Paper* provides background information and recommendations in response to the Federal Emergency Management Agency's (FEMA's) [request](#) for input on “revising the National Flood Insurance Program's (NFIP) floodplain management standards for land management and use regulations to better align with the current understanding of flood risk and flood risk reduction approaches” and “floodplain management standards that communities should adopt to result in safer, stronger, and more resilient communities.”

## **Introduction**

The American coastline is in trouble. More severe storms driven by a warming climate push storm surge flooding further inland than ever before. More importantly, sea level is rising at an accelerating rate and may rise several feet by 2050 and 3 – 4 feet or more by 2100. Rising sea levels are a threat to hundreds of coastal communities and millions of people. The value of property at risk is in the trillions of dollars. Coastal ecosystems – beaches, marshes, and wetlands – will be forced to migrate landward where they are not blocked by geographic feature or human development. Critical infrastructure, ranging from sewer, to drinking water, power production, transportation, and national defense will need to relocate to higher ground or invest in expensive protection structures.

None of these climate change drive threats to the coast were recognized when regulations describing requirement for communities participating in the National Flood Insurance Program (NFIP) were promulgated in 1979. The regulations generally call on communities to adopt ordinances to address the risks posed by temporary flooding resulting from storms that cause rivers to overflow and ocean waves and waters to surge up and over low-lying coastal areas. They do not speak to the very different threat of permanent inundation of coastal communities, ecosystems, and infrastructure presented by rising seas.

**The top priority in revising NFIP regulations for local ordinances is to adapt these ordinances to the existential threat posed to communities by rising sea level.** Revised regulations for NFIP local ordinances can be a wake-up call for coastal communities to attend to the risks of rising sea levels. This white paper recommends identifying NFIP communities facing sea level rise risks and adding to regulations new requirements related to new construction, protection of natural areas, and public information about sea level risks.

In addition to directly addressing sea level rise risk in NFIP local ordinances, FEMA should amend regulations to update and strengthen these ordinances more generally. For example, well proven provisions of the voluntary Community Rating System should be shifted to be mandatory elements of local ordinances. In addition, FEMA needs to review national and international building codes to identify and adopt the most current standards and narrow the extensive variance authorities.

FEMA should commit to engaging and supporting NFIP communities as it works to strengthen the NFIP to improve implementation of local ordinances, including significantly expanding technical and financial assistance. For example, FEMA needs to improve mapping supporting the local ordinances, improve compliance and compliance assessment, and encourage cooperation among adjacent communities in developing and implementing NFIP ordinances. Small and disadvantaged communities especially need FEMA and other federal agencies to provide meaningful assistance, including expanded financial resources.

Finally, FEMA also needs to commit to an expeditious schedule for issuing proposed and final regulations on this topic by early 2023.

Updated regulations that focus on sea level rise threats to local communities and improve NFIP local ordinances will not be sufficient by themselves to prepare communities for the dramatic changes that rising sea level will bring in the near future. Additional authority and funding for development of response strategies and financial assistance to implement the strategies will also be needed. Some of this new authority and funding will need to come from Congress. The *Coastal Flood Resilience Project* has described a [broad policy agenda](#) for improving coastal flood resilience and outlined additional actions FEMA should take in the following white papers:

- describing needed [changes to the Community Rating System](#);
- outlining recommended [changes to the NFIP](#); and
- responding to FEMA's request for [input on program](#) management.

Appendix 1 includes a one-page summary of recommendations. Appendix 2 responds directly to the 18 questions posed by FEMA in the current notice.

## **Problem Statement: Coastal Flooding and Sea Level Rise**

The Atlantic, Gulf of Mexico, and Pacific coasts are home to over [100 million Americans](#). The population living right along the coast (i.e., at elevations of 33 feet and lower) is expected to [double by 2060](#) to about 44 million. Climate change poses a significant risk to the coast through the combined impacts of more severe storms bringing temporary flooding and permanent inundation by rising seas.

**More Severe Coastal Storms:** Coastal storms are a major risk to life and property and a warming climate is causing an [increase in the number of the strongest storms](#). These storms bring more extensive coastal flooding, higher storm surges, and increased rainfall. Research indicates that intense storms are [slowing down and thus](#) raining on a given place for longer. Even as storms move more slowly, they [intensifying more rapidly](#), making their landfall harder to predict and more likely to result in major damage and loss of life.

**Steadily Rising Sea Level:** Sea level rise around the globe is likely to be [3 to 4 feet by 2100](#) but may be as high as 6 to 8 feet if efforts to control emissions of greenhouse gases falter. Sea level rise along parts of the American coast will be as much as [30 percent greater](#) than the global average due to factors such as ocean currents and land subsidence. Unfortunately, past and continuing releases of greenhouse gases will cause sea level to rise long after 2100. The National Oceanic and Atmospheric Administration [projects](#) global mean sea level rise of 10.1 feet by 2150 and 16.7 feet by 2200 under its “intermediate high” scenario.

**Impacts of More Severe Storms and Rising Seas on Communities:** More severe storms and rising seas will bring economic, environmental, and social disruption to coastal communities on an unprecedented scale.

In the short term, coastal communities can expect more [“sunny day flooding”](#) during high tides and larger surges and greater flooding during storms. In the longer-term, all or parts of [hundreds of coastal communities](#) face far more extensive flooding than they currently experience. The combination of more severe storms and rising seas is projected to result in potential losses of coastal property running into [trillions of dollars](#). These loss estimates, however, are based on the existing population along the coast are likely to rise as population along the coast increases.

Many disadvantaged communities are among those [in harm’s way](#). These communities are [disproportionately affected](#) by climate change including sea level rise, flooding, and extreme coastal weather events, and often lack the resources to respond to these risks. A definition of disadvantaged communities is provided in this [memorandum](#) implementing the Biden administration Justice40 Initiative.

**Impacts of Storms and Rising Sea Level on Infrastructure and Ecosystems:** Storm and sea level rise risks to critical coastal infrastructure, such as transportation, water, and energy, [are well documented. Thousands of miles of roads](#), railroads, ports, and airports are at risk. [Sewage treatment plants](#) and drinking water treatment facilities will be inundated. [Energy facilities](#), especially along the Gulf coast, are endangered. [Major defense installations](#), such as Naval Station Norfolk, need to prepare for more severe storms and rising seas.

Coastal beaches and wetlands have already been harmed by coastal storms and rising seas and these losses will increase in the future. Some researchers estimate loss of [30 percent of Gulf of Mexico wetlands](#) by 2050 and over [60 percent of California beaches](#) by 2100. Some of these ecosystems may be able to migrate to upland areas if geography is favorable and if the needs of communities and infrastructure do not take priority. The fortunes of [coastal tourism](#) and [fishing sectors](#) are tied to the health of these ecosystems.

## I) **Recommended Revisions to Local Ordinance Regulations: Sea Level Rise**

- 1. Create Sea Level Rise Supplemental Requirements to NFIP Local Ordinances:** The existing regulations establishing NFIP local ordinances include supplemental requirements for those communities at risk of mudslides and erosion (44 CFR 60.4 and 60.5). These additional requirements address the special challenges facing those communities with mudslide and erosion risks.

Rising sea level is emerging as a crucial risk to coastal communities (see Problem Statement). FEMA should require that communities participating in the NFIP include in local ordinances mandatory measures focused directly on meeting sea level rise risks that are in addition to the core measures required of NFIP communities more generally.

It is important to recognize that the requirements of 44 CFR 60.3(e), applying to coastal high hazard areas, were intended to address risks associated with coastal storm surges and resulting temporary flooding. **A new section addressing sea level rise risks, modeled on sections 60.4 and 60.5, should specifically address the different risks of permanent inundation from rising seas.** Some responses to temporary storm flooding (e.g., building elevation or redesign) may not be appropriate responses to permanent inundation by rising seas.

Supplemental measures for communities facing sea level rise risks that should be adopted into NFIP ordinances by communities at risk of rising seas are described below.

- A. Identify NFIP Communities Facing Sea Level Rise Risk:** NFIP communities covered by supplemental sea level rise related requirements (i.e., a new section 60.6 of the current regulations) should be defined by regulations (44 CFR 59) as those communities where NFIP insured property is located in an area expected to be inundated by rising seas. More specifically, FEMA should define this Sea Level Rise

Risk Area as land projected to be permanently inundated by rising seas based on the localized Intermediate High Scenario for the year 2100 in the most recent National Climate Assessment or NOAA Sea Level Rise Scenarios report.

For these communities facing sea level rise risk, the regulatory definition of Special Flood Hazard Area (SFHA) should be amended to include any Sea Level Rise Risk Areas where such areas extend beyond the SFHA. This regulatory change recognizes that current SFHAs reflect historical flood data from storms and inland flooding but do not account for future sea level rise expanding storm flood impact areas (e.g., storm drain backflow) or permanently inundating areas not within SFHAs. See response to question 4 in Appendix 2 for more information.

FEMA should publish electronic maps of all Sea Level Rise Risk Areas as soon as possible and then add these areas, and any expanded SFHAs, to maps of SFHAs as those maps are updated. FEMA should also publish electronic map layers showing for informational purposes the area of a community projected to be inundated by sea level rise by 2050 and 2150, based on the localized Intermediate High Scenario for the year 2100 in the most recent National Climate Assessment or NOAA Sea Level Rise Scenarios report

- B. Maintain Coastal Storm Surge Elements of Local Ordinances:** Local ordinance elements addressing sea level rise should be built on and include the existing requirements for coastal communities facing storm surge risks in 44 CFR 60.3(e).
- C. Add Permit Conditions for New Construction in Sea Level Rise Risk Areas:** Existing regulations require permits for development within SFHAs. Local ordinances in communities with Sea Level Rise Risk Areas should discourage new development and substantial renovation in these areas using several measures as conditions of permits.
- **Setbacks:** For any new development or substantial renovation, permits should require new development to be setback from the shoreline to the maximum extent practicable. For example, in the case of a site partially in a Sea Level Rise Risk Area and partially on higher ground outside the area, a permit should require that new construction or substantial renovation be sited outside the risk area. In the case of a site wholly within a Sea Level Rise Risk Area, the permit should require that a covered project be sited on ground that is the highest natural elevation of the site. To prevent subdivision of property to avoid this condition, ordinances should deny permits for proposed projects on sites subdivided within the past five years.
  - **Removal Bonds for Major Projects:** For major new construction or substantial renovation projects (i.e., a project valued at greater than 50 percent of the property being renovated) in a Sea Level Rise Risk Area, permits should require

posting a bond sufficient to reimburse the municipal government for estimated future costs of removing and safely decommissioning the permitted structure when it becomes unsafe due to rising seas. Major construction should be defined as a project with an estimated construction cost above \$1 million. To facilitate implementation of a bond requirement, FEMA should publish guidelines for estimating appropriate amounts of bonds.

- **Flood Insurance Veto:** The availability of flood insurance for new development in areas at risk of sea level rise provides a financial incentive for development in these areas by making flood insurance available to homeowners from a public program and securing mortgage company investments. Some NFIP communities may find that permits to build in areas at risk of permanent sea level rise will increase flood impacts to other parts of the community. Some communities are also likely to face challenging and costly problems providing roads, utilities, and emergency services to new development in Sea Level Rise Risk Areas and removing structures later abandoned to rising seas. To minimize this incentive and allow communities to minimize future flood impacts and costs, FEMA regulations should authorize participating communities to issue permits with a condition prohibiting issuance of federal flood insurance for the project.

**D. Protect Natural Areas and Migration Pathways:** The existing regulations applying to coastal communities facing storm risks require that local ordinances “Prohibit man-made alteration of sand dunes and mangrove stands within Zones V1-30, VE, and V on the community's FIRM which would increase potential flood damage” (see [section 60.3\(e\)\(7\)](#)).

This provision protecting existing natural features that reduce flood damage is a useful policy for reducing storm impacts but should be expanded to include stronger measures that will better prepare communities for rising sea level. A new sea level rise focused provision should prohibit alteration of a wider range of natural features (e.g., wetlands, marshes, dunes, and beaches) that have flood and sea level rise risk mitigation benefits or support habitat for threatened or endangered species. FEMA regulations should include a generic definition of natural features with such benefits and any appropriate existing maps of such resources. NFIP participating coastal communities should consult these maps, or make their own finding, of natural areas where alternations are prohibited as they consider individual permits.

In addition, these natural resources will need to migrate landward as sea level rises. FEMA regulations should include a generic definition of Migration Pathways that will facilitate landward migration of these resources based on local sea level rise by 2100 consistent with the Intermediate High Scenario of the most recent National Climate Assessment or NOAA Sea Level rise Scenarios report. FEMA regulations should require NFIP communities to determine if a proposed project is in a natural resource migration area.

FEMA regulations on local ordinances should require that, when a community finds that a project is in a Migration Pathway, a permit should require a higher level of protection than would apply to Sea Level Rise Risk Areas but not identified as Migration Pathways. Additional permit conditions for Migration Pathways should include:

- posting a bond to pay for removal of permitted structures should apply to all permitted projects, not just major projects;
- prohibiting siting of development in a Migration Pathway in any case where the site includes areas outside of the pathway where the development could be located; and
- V zone design and construction standards (e.g., prohibition on use of fill for structural support of buildings; see 44 CFR 60.3 (6)).

**2. Strengthen Sea Level Rise Risk Reporting and Public Information:** Strengthening NFIP local ordinances to focus on sea level rise will improve preparedness for these risks but these ordinances will have stronger local support if further changes to NFIP regulations require communities improve public understanding of sea level rise risk and responses.

**A. Require Community Report on Local Sea Level Rise Risk and Response:** FEMA should amend NFIP regulations at 44 CFR 59.22(a)(9) to require communities that include Sea Level Rise Risk Areas to commit to publish a public report on sea level rise challenges, impacts, and response measures every five years. The report should describe:

- the portions of the community at risk of rising sea levels and any changes over time;
- sea level rise risks to the community and any changes to these risks;
- any damage or other impacts to the community related to sea level rise;
- measures taken by the community to respond to sea level rise risk, including disclosure of risk at time of sale and bonds for new construction, including measures affecting the score of the community under the FEMA Community Rating System;
- individual or general permits under section 404 of the Clean Water Act issued to private parties for shoreline stabilization or living shorelines issued within the jurisdiction of the community by the Army Corps of Engineers over the past five years;
- any other measures considered or implemented by the community in response to sea level rise risks, including development of plans or implementation of projects, policies, or programs; and
- expected future risks to the community as a result of projected future sea level rise.

Regulations should provide a template for the report and require that communities provide for public review and comment on a draft report, include a summary of public comment in the final report, and publish each five-year report on the community's website.

- B. Require Sea Level Rise Risk Disclosure at Time of Sale:** In addition to expanded flood risk disclosure requirements of basic NFIP local ordinances (see recommendation 3.A), communities facing sea level rise risk should also be required to mandate disclosure of future sea level rise risk at time of sale. Disclosure requirements should apply to those properties in the mapped Sea Level Rise Risk Area (see Recommendation 1. A) and should be modeled on the flood hazard risk disclosure requirements.
- C. Require Direct Public Notice of Sea Level Rise Risk:** Building awareness and understanding of sea level rise risk is essential to improving individual decision-making about needed responses and building public support for community actions to address the risks. Today, public understanding of sea level rise risk is limited. Most property owners at risk of rising seas have not been directly advised by local governments of the degree or timing of sea level rise threats to their property.

A related consideration is that, as sea level rise damages mount, some communities may need to use eminent domain to acquire property at fair market value when it can no longer be safely serviced by roads, emergency vehicles, sewer and water, and electric power. These acquisitions, however, might be challenged as a "taking" of private property.

In considering "takings" cases, one factor that courts assess is the knowledge that the private party had of risks (i.e., did the property owner have a "reasonable investment-backed expectation" in acquiring the property?). In general, the more risk information the government has provided to private parties and the further ahead of the acquisition the information was provided, the more likely the eminent domain action is to be upheld. Direct notice of expected future sea level rise risk will help to sustain future eminent domain actions.

FEMA should amend NFIP regulations (i.e., 59.22(a)(9)) to require participating communities to commit to providing property owners within the mapped Sea Level Rise Risk Area of the community with information about the risk of flooding by both storm surges and permanent inundation by rising seas. This notice should indicate that the property is in a Sea Level Rise Risk Area along with supporting information and be provided directly to property owners by mail. Notice should be provided periodically and at least once every five years.



## II) Recommended Revisions to Strengthen NFIP Local Ordinance Regulations

- 3. Shift Proven Community Rating System Practices to NFIP Local Ordinances:** The Community Rating System (CRS) includes diverse practices that have been determined by FEMA to strengthen local floodplain management and, in many cases, have been demonstrated to be effective through voluntary implementation by communities participating in the Community Rating System (see [CRS Manual](#)). FEMA should comprehensively review these CRS practices to identify those that are broadly applicable and have the greatest potential to improve floodplain management (e.g., freeboard requirements) and adopt those practices as part of mandatory local ordinances.

In reviewing existing CRS practices, FEMA should give special attention to those that respond to the most significant challenges that communities face and would make the biggest improvement from the current requirements. Selected key CRS practices that should be promoted to being required as part of local ordinances, or as community commitments in 44 CRF 59.22(a)(9) are described below.

- A. Require Hazard Disclosure (CRS Manual section 340):** Disclosure of flood risk at time of sale is a critical tool for informing buyers of property in a flood risk area of the potential for flood damage in the future. Transparency about flood risk at time of sale also builds public understanding of flood risk extent and timing and encourages public support for local flood risk reduction requirements. Some states have adopted different requirements for flood risk disclosure at the time of sale or lease of a property. The variation in requirements makes compliance with these disclosure requirements confusing and makes the results of disclosure inconsistent and, in some cases, of limited effectiveness.

FEMA should provide a template for a nationally consistent flood risk disclosure standard at the time of sale or lease of a property and require adoption of this standard disclosure as part of all NFIP local ordinances. More information on key elements of an effective flood risk disclosure requirement is provided in the *Coastal Flood Resilience Project* [white paper on needed changes to the National Flood Insurance Program](#).

- B. Adopt Higher Regulatory Standards (CRS Manual Section 430):** The CRS Manual describes regulatory standards that get credit under the CRS program but are not required to be part of local ordinances. Some examples of higher regulatory standards that FEMA should make required elements of local ordinances include:

- Development limitations (DL) (section 432.a) prohibiting fill, buildings, and/or storage of materials in the SFHA;

- Cumulative substantial improvements (CSI) (section 432.d) providing that waivers for compliance by existing buildings with new building standards no longer apply when the total value of all improvements or repairs permitted over time (not just one time) does not exceed 50% of the value of the structure;
- Enclosure limits (ENL) (section 432.g) limiting enclosures below the base flood elevation;
- Building code (BC) (section 432.h): adopting and enforcing the International Code Series; and
- Coastal A Zones (CAZ) (section 432.k): providing that coastal communities enforce V-Zone regulations in their coastal A Zones; and
- Coastal erosion hazard regulations (CER) (section 432.n): enforcing appropriate construction standards and setbacks in areas subject to significant coastal erosion.

As part of the revised regulations, FEMA should describe a process to allow NFIP communities now benefiting from CRS practices that are shifted to local ordinances to adopt additional CRS practices so that the CRS discount available to policyholders is maintained. FEMA should provide a transition period (e.g., five years) in which a community in the CRS would retain its CRS score while it considered and adopted CRS practices to replace those shifted to local ordinances.

FEMA should also expand the range of CRS credit activities to offset the shift of existing activities to local ordinances, increase credits for especially valuable activities (e.g., acquisition and relocation under CRS Manual section 520), and make other improvements to the CRS described in this [white paper](#).

- 4. Adopt New Requirements into NFIP Local Ordinances:** In addition to adding proven CRS practices as mandatory elements of NFIP local ordinances, FEMA should include in revised regulations new, mandatory elements not now part of the CRS menu of activities.

- A. Integrate Federal Flood Risk Management Standard into NFIP Local Ordinances:** FEMA has adopted the Federal Flood Risk Management Standard (FFRMS) to provide flood protection to new federal facilities and projects supported with federal funding. The FFRMS provides for assessment of potential sites and calls for location of new facilities in places outside flood risk areas whenever possible. Where projects must be located in risk areas, the FFRMS requires elevation of the facility two feet above base flood elevation, or three feet above base flood elevation in the case of critical infrastructure (i.e., increased “freeboard”).

The FFRMS provides for reasonable and prudent steps to reduce flood risk associated with new development and FEMA should require that local ordinances apply the core elements of the FFRMS (i.e., site development outside of risk areas

whenever possible and apply freeboard where siting within a risk area can't be avoided) to all new development in flood risk areas.

- B. Coordinate NFIP Local Ordinances with National and International Standards:** The regulations establishing local ordinances were promulgated in 1976 and have not been updated. Since 1976, building codes, such as International Building Codes (I-Codes) and ASCE 24, have been updated but these updates have not been added to local ordinances. Differences between local ordinances and other codes are described in detail in an [analysis](#) by FEMA.

FEMA should evaluate the provisions of other codes and make the local ordinances equivalent to more recent codes, including both adopting more stringent standards or adopting elements of codes that are not now addressed in local ordinances. In addition, rather than adopting specific new code provisions, FEMA should consider including in regulations an automatic update provision that would automatically adopt into local ordinances changes to specific aspects of other codes. This would reduce the lag time between changes in codes and adopting in local ordinances.

- 5. Narrow Existing Variances:** The variance authority in the current regulations is very broad (44 CFR 60.6). This overly broad authority makes local NFIP ordinances complex to administer, hard to explain to the public, and subject to inconsistent administration. Variances also open opportunities for favorable treatment of wealthy individuals who have resources to pursue special treatment not available to people with more limited incomes.

FEMA should revise the regulations to significantly narrow the existing variances. For example, FEMA should reconsider variance authority for development below base flood elevation, for lots of larger than one half acre. The lack of definitions of “extreme hardship” and “showing of good and sufficient cause” as the basis for a variance is also problematic.

### III) Recommended Actions to Strengthen Regulation Implementation

- 6. Update and Strengthen Mapping of Flood Risk Areas:** A crucial complement to strengthening local NFIP ordinances is for FEMA to also significantly improve the flood maps that are the foundation of the ordinances. Accurate, up to date flood maps of SFHAs are an indispensable tool for building wider public appreciation of the serious risks of flooding and building recognition of the benefits that the NFIP provides to households in floodplains and to communities. Without up-to-date maps describing current hydrology, improved local ordinances will not reach their full potential to

reduce flood risk. FEMA should expedite updates to NFIP flood maps to reflect the most current hydrological and related information and continue updates in the future.

In addition, climate change is causing today's hydrology to change rapidly in response to changes in precipitation intensity and amount. FEMA should evaluate the varying rates of change in hydrology around the country and commit to a schedule for updating SFHA maps that accounts for these changes and results in maps that reflect changing hydrology as closely as possible.

FEMA also needs to implement the recommendations of the mapping Technical Advisory Committee and develop supplementary mapping layers that inform government officials, homeowners, and other interested parties about future hydrologic conditions that are expected, including projected changes in the SFHA and other risk zones. FEMA should also develop maps relating to sea level rise as described in recommendation 1.A.

- 7. Improve Compliance Assessments and Compliance Rates:** Compliance with local ordinances is critical to reducing flood risk and necessary to sustain public confidence in the flood risk reduction value of the requirements. Improvements to local NFIP ordinances should be supported by expanded efforts to improve implementation of the ordinances. There is [evidence](#) of compliance rates in the range of 70 – 85 percent. Although FEMA recommends compliance audits every five years, a 2017 [study](#) found that only 23 percent of communities had been audited over an eight-year period.

FEMA should consider how compliance with any proposed changes to local ordinances will be determined and strive for local ordinances that can be effectively assessed (e.g., minimize variances). FEMA should also require local cooperation with FEMA assessments of compliance. As part of the regulation development process, FEMA should commit to compliance audits of local ordinances at least every five years and establish a minimum compliance standard. Regulations should provide that, where a local ordinance fails to meet the audit standard, or the ordinance is outside a five-year audit period, FEMA will suspend issuing NFIP policies for new development in the SFHA.

- 8. Provide for Cooperation Among Local Governments:** FEMA should revise the NFIP local ordinance regulations to allow for geographically adjacent local governments to work together to develop, adopt, and administer a single NFIP ordinance. Some of the benefits of a cooperative approach to local ordinances include:
  - Provide economies of scale to help small local governments, or local governments with limited financial resources, administer local ordinances successfully and adopt the practices described in the Community Rating System that translate into lower premiums for NFIP policyholders;

- Facilitate assessment and protection of natural features and ecosystems, including threatened and endangered species, on a large geographic scale and promote the coordinated preservation and protection of these vital flood mitigation resources across municipal boundaries (e.g., reduce habitat fragmentation that undermines integrity of ecosystems and health of species); and
- Promote full compliance with local ordinances by making assessment of compliance by FEMA easier (i.e., fewer individual programs to evaluate).

**9. Act Promptly to Revise NFIP Local Ordinance Regulations:** FEMA should consider input from the initial request for comments and promptly develop draft and final revisions of regulations applying to NFIP local ordinances. A schedule for this process should result in final regulation revisions well ahead of the next presidential election and outside the windows provided for review of final regulations by the Congressional Review Act (i.e., early 2023). FEMA senior leadership should take an active role in the rule development process and be prepared to resolve issues and address potential delays.

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The *Coastal Flood Resilience Project* is a coalition of organizations and individuals working for stronger programs to prepare for coastal storm flooding and rising sea level in the United States. The views expressed in this *White Paper* are those of the supporters listed below and do not represent the views or endorsement of their organizations. Recommended policies and programs to respond to coastal storm risks and rising seas are described in a *Policy Agenda* and supporting white papers on our website (<https://www.cfrp.info/>).

Supporters of this *White Paper* include:

- John Englander; Executive Director, Rising Seas Institute
- Harriet Festing; Anthropocene Alliance
- Grace Hansen; Middlebury Institute of International Studies
- Rich Innes; Association of National Estuary Programs
- Jeffrey Peterson; author of *A New Coast: Strategies for Responding to Devastating Storms and Rising Seas* and former Deputy Associate Director for Water, White House Council on Environmental Quality
- Susan Ruffo; United Nations Foundation and former Associate Director for Climate Preparedness and Resilience, White House Council on Environmental Quality
- Jason Scorse; Middlebury Center for the Blue Economy
- Mary Carson Stiff; Wetlands Watch
- Stefanie Sketch-Quinn; Surfrider Foundation
- Shana Udvardy; Union of Concerned Scientists

## APPENDIX 1

# Summary of Recommendations

### I) Recommended Revisions to Local Ordinance Regulations: Sea Level Rise

- 1. Create Sea Level Rise Supplemental Requirements to NFIP Local Ordinances**
  - A. Identify Communities Facing Sea Level Rise risk
  - B. Maintain Coastal Storm Surge Elements of Local Ordinances
  - C. Add Permit Conditions for New Construction in Sea Level Rise Risk Areas
  - D. Protect Natural Areas and Migration Pathways
- 2. Strengthen Sea Level Rise Risk Reporting and Public Information**
  - A. Require Community Report on Local Sea Level Rise Risk and Response
  - B. Require Sea Level Rise Risk Disclosure at Time of Sale
  - C. Require Direct Public Notice of Sea Level Rise Risk

### II) Recommended Revisions to Strengthen NFIP Local Ordinance Regulations

- 3. Shift Proven Community Rating System Practices to NFIP Local Ordinances**
  - A. Require Hazard Disclosure (CRS Manual section 340)
  - B. Adopt Higher Regulatory Standards (CRS Manual Section 430)
- 4. Adopt New Requirements into NFIP Local Ordinances**
  - A. Integrate Federal Flood Risk Management Standard into NFIP Local Ordinances
  - B. Coordinate NFIP Local Ordinances with National and International Standards
- 5. Narrow Existing Variances**

### III) Recommended Actions to Strengthen Regulation Implementation

- 6. Update and Strengthen Mapping of Flood Risk Areas**
- 7. Improve Compliance Assessments and Compliance Rates**
- 8. Provide for Cooperation Among Local Governments**
- 9. Act Promptly to Revise NFIP Local Ordinance Regulations**

## Appendix 2

### Responses to FEMA Questions

Questions posed in the FEMA notice are provided below along with responses (see yellow highlight) referring to recommendations in the letter and offering additional explanation.

1) FEMA has addressed risk to existing or non-conforming construction (buildings not constructed to current minimum floodplain management standards) in the regulations through the “substantial improvement/substantial damage” requirements. These requirements have largely been tied to the definitions of “substantial improvement” and “substantial damage.” Is “substantial improvement/substantial damage” the best way to address risk for non-conforming buildings? If so, should FEMA consider the use of cumulative “substantial improvement” and/or “substantial damage” requirements over a given time period as a requirement? Should “substantial improvement” and/or “substantial damage” use an assessment cost value or a replacement cost value, or are there other valuation methods that may be more appropriate? Should the regulations provide more detail on how the “substantial improvement” and/or “substantial damage” determinations should be made?

See recommendation 3.B. See also response to question 5.

(2) The elevation of structures above expected base flood levels, called “freeboard,” is an important precept of floodplain management. “Freeboard” is usually expressed in feet above a base flood elevation for purposes of floodplain management. NFIP communities must require new, “substantially improved,” or “substantially damaged” structures in the SFHA to be elevated to the height of the one percent annual chance flood level, also referred to as the Base Flood Elevation or BFE. Some States and communities require newly constructed buildings to be built higher than the base flood elevation to further reduce the risk of flood damage with freeboard requirements set to a specific height to provide the additional margin of risk reduction above the BFE. The NFIP has strongly encouraged but not required higher elevation standards, such as those included in the I-Codes and ASCE 24. Should FEMA update flood elevation requirements for SFHAs by setting higher freeboard levels? If so, what should FEMA consider for the higher elevation levels for freeboard? What data exists to support higher elevation levels for freeboard or methods that provide a more consistent level of protection? Will freeboard elevation generally raise the market value of properties in SFHAs and if so how would the increase in market value compare to the cost of elevation? Are there other technology advancements or building standards in design and construction that should

be considered beyond freeboard levels? If so, do they address other floodplain management criteria (*e.g.*, reasonably safe from flooding; adequately anchored; methods and practices that minimize or are resistant to flood damage; water load values; wind load values; substantially impermeable)?

See recommendations 4.A and B.

(3) FEMA has not developed higher minimum floodplain management standards for structures and facilities that perform critical actions as defined in [44 CFR 9.4](#). These structures and facilities must currently comply with the same minimum requirements as non-critical structures and facilities except for structures and facilities that are covered by Executive Order (E.O.) 11988, Floodplain Management.<sup>[16]</sup> Should FEMA develop higher standards for these structures and facilities? If so, why? Should FEMA consider differences between certain structures and facilities, such as use, occupancy, operational size, or public and private operators in developing higher standards? Should FEMA consider differences such as use, occupancy, operational size, or public and private operators in developing higher standards for structures and facilities performing critical actions?

See recommendation 4.A.

(4) Recurring flooding events provide evidence that areas adjacent to the SFHA experience significant flooding and unacceptable levels of disaster suffering, yet the NFIP minimum floodplain management standards do not extend to these locations. How can the NFIP take a more risk-informed approach to defining flood hazard? Is there a need for FEMA's NFIP minimum floodplain management standards to be extended by establishing specific requirements for the areas immediately adjacent to the SFHA? If so, what specific floodplain management standards could be successful to reduce losses and hardship? What approaches would be effective for identifying these areas for communities to regulate? Would new zones or overlays depicted with the SFHA via the National Flood Hazard Layer (NFHL)<sup>[17]</sup> serve this need or are there other tools that could be more effective? Should FEMA expand the SFHA generally from the 1 percent annual chance flood area to a 0.2 percent or a 0.1 percent area, and what decision rule should FEMA use to choose the appropriate area? Should the SFHA be expanded from a certain percent annual chance area to the flood of record (or whichever is higher)? Similarly, what standards or restrictions should be considered for high risk flood areas that are within the SFHA (*e.g.*, flash flood, mudslide, erosion prone, high velocity)? Alternatively, should FEMA be aware of and/or use a different metric to identify flood risk?

See Recommendation 1 and 6.



Today, the SFHA is based on historical flood experience due to river flooding and storm surges and does not account for future changes in storms or precipitation or for rising sea levels. Given that recent sea level rise in most places has been less than a foot, areas now at risk of rising seas are likely within the SFHAs. As climate change drives more severe storms and rising seas, flood risk will extend to areas not identified as SFHAs based on the current definition and this failure to fully define flood and inundation risk areas will become more pronounced over time.

To address this problem, FEMA should amend the definition of SFHA to include areas expected to be inundated by rising seas by 2100 where such areas extend beyond the current SFHA. This amendment will apply NFIP permit and insurance purchase requirements to some areas that are not presently at risk of flooding but will be at risk in the future. Although there is a degree of uncertainty in this definition of Sea Level Rise Risk Area, it is roughly comparable to the uncertainty associated with the occurrence of a 100 year flood.

(5) In the past 30 years, 1 of every 6 dollars paid out in NFIP claims has gone to a building with a history of multiple floods.<sup>[18]</sup> What steps should FEMA take to reduce the disproportionate financial impact the multiple loss properties have on the NFIP? Should FEMA consider regulatory changes for properties that have repetitive losses? <sup>[19]</sup> If so, what should the minimum NFIP floodplain management standards be for those properties? Should these properties be targeted for managed retreat? How should the NFIP consider issues of equity when deciding how to address these properties?

Repetitive losses in coastal and non-coastal communities are different problems. In the case of non-coastal communities, there is a case for government investing in rebuilding and floodproofing structures to reduce future damage. But, in the case of coastal communities, most repetitive losses will be from property damaged by storm surge but also in an area likely to be permanently inundated by rising sea level. Investing government funds is a more questionable proposition in the case of rebuilding substantially damaged structures or investing in floodproofing that will bring only temporary benefits.

In general, for substantially damaged or repetitive loss properties in a Sea Level Rise Risk Area, a better investment for the government is to offer to buy the property. The government can't afford to buy all property at risk of rising seas, but it can focus resources on properties where a buyout is a good investment (i.e., a buyout saves future NFIP payments or disaster relief costs or property is located in a Migration Pathway). The government might also consider social justice in setting priorities for buyouts. FEMA should work with NFIP communities to establish a national registry (i.e., waiting list) of property owners interested in a buyout, with basic property and risk information

and use this list as a basis for setting the level of funding it seeks for buyout from Congress.

Today, the policy of covering repetitive losses and paying for upgrading structures to meet higher codes (i.e., Increased Cost of Compliance) is sustaining structures in areas expected to be inundated by rising seas (i.e., structures that will be bought out or abandoned) and dampening demand for buyouts. FEMA should consider limiting NFIP payments for repetitive losses and upgrades for properties in Sea Level Rise Risk Areas and termination of coverage for multiple losses. These decisions should be made in coordination with buyout programs (i.e., not pay for upgrades one year only to buy and tear down the property the next) giving priority for buyouts to high loss properties and properties where insurance has been terminated. FEMA should also consider premium adjustments for repetitive loss properties prior to termination. With these policies in place, more property owners in Sea Level Rise Risk Areas will accept a buyout offer and this will gradually “dedensify” the highest risk coastal areas, reduce loss of life and property, and limit long-term government financial exposure.

(6) FEMA must ensure that the implementation of the NFIP does not jeopardize T&E species and does not result in the destruction or adverse modification of their designated critical habitats. FEMA must also ensure the NFIP is effective in meeting its goals of providing flood insurance, mitigating flood loss, reducing flood risk, and encouraging responsible development. What additional considerations should FEMA incorporate into the NFIP minimum floodplain management standards to promote the protection and conservation of T&E species and their designated habitat? In what ways could the NFIP minimum floodplain management standards be amended to more explicitly or comprehensively protect the natural and beneficial functions of floodplains to recognize their intrinsic value and benefits to floodplain management, T&E species, and the environment generally? How do current Federal environmental requirements and standards work within NFIP participating State, local, Tribal, and territories to identify and address impacts to T&E species and their habitats? If there are State-specific environmental requirements and/or standards, how could changes to the NFIP support or interfere with the current State regulatory environment?

See recommendations 8 and 1.D.

In a general sense, the NFIP goal of providing flood insurance has the effect of offering a financial incentive to rebuild or build in coastal and riverine floodplains that may be critical habitat for threatened and endangered species and this development may put these species at risk. A first step for FEMA in considering revising regulations relating to NFIP local ordinances should be to consult with the Fish and Wildlife Service and the National Marine Fisheries Service on this regulatory action and possible measures to

include in proposed regulations to protect threatened and endangered species and their habitats. FEMA should include appropriate mitigation measures suggested by these agencies in its proposed regulations.

FEMA should also propose new authority for cooperation among adjacent communities to identify and protect ecosystems and natural features on a large scale and discourage fragmentation of habitat (recommendation 4). And, FEMA should propose that NFIP local ordinance be required to prohibit new development in natural areas and to limit development in areas expected to be pathways for landward migration as sea level rises.

(7) How could one or more of the following specific changes to the NFIP minimum floodplain management standards benefit T&E species and their habitats while furthering the goal of improving resilience to flooding? What would the potential impact be on the NFIP participating communities?:

- (a) Limiting construction in any identified riparian buffer zone;
- (b) Requiring compensatory storage to have no net increase in projected flooding levels for all development in the SFHA;
- (c) Requiring a more restrictive regulatory floodway standard; <sup>[20]</sup>
- (d) Requiring compensatory conservation credits/areas for all development in portions of the SFHA that provide natural and beneficial functions;
- (e) Requiring low impact development standards and/or permeable surfaces that may benefit T&E species and habitat; and/or
- (f) Prohibiting or limiting construction in any portion of the SFHA.

How should the suggested changes listed above be prioritized to best benefit T&E species while also furthering the goals of the NFIP? Are there additional changes that should be considered and if so, what are they and what is their prioritization in comparison to the changes listed?

See response to question 6 above.

(8) NFIP participating communities can also improve protection of T&E species and their critical habitats through their floodplain management activities. In what ways can

NFIP participating communities demonstrate to FEMA that permitted floodplain development does not adversely impact T&E species and their habitats? What changes are required to existing NFIP minimum floodplain management standards to allow NFIP participating communities to better demonstrate no adverse impact? What ways, such as technical assistance or other means, could FEMA assist NFIP participating communities to help protect T&E species and their habitats?

No comment.

(9) Local floodplain managers are often tasked with enforcement of NFIP minimum floodplain management standards. In what ways can FEMA strengthen the NFIP participation and increase enforcement of NFIP minimum floodplain management standards to build community resilience? How can FEMA better assist communities to mitigate flood loss and reduce risk? In what ways could FEMA better support local floodplain managers to effectively enforce the NFIP minimum floodplain management standards?

See recommendations 5, 7, 8.

(10) While the NFIP minimum floodplain management standards are broadly applicable nationwide and provide a sound basis from which communities can improve their floodplain management programs, there may be floodplain uses, occupancies, and flooding characteristics that call for more specific regulatory initiatives. Are there any NFIP minimum floodplain management standards that currently cause hardship, conflict, confusion or create an economic or financial burden? If so, what are they and how can they be modified to reduce the burdens while still meeting the objectives of mitigating flood loss and reducing risk? Some structures in a community may be exempted from the NFIP minimum floodplain management standards through a variance. Are there changes that can be made to variance requirements to help reduce the burdens while still meeting the objectives of mitigating flood loss and reducing risk? Are there specific types of development or uses that should be considered for exemption from NFIP minimum floodplain management standards or should different standards apply? If so, what are they, why should specific types of development or uses be considered for exemption, and what different standards should be applicable?

See recommendation 5.

(11) There have been recent proposals regarding disclosure of flood risk,<sup>[21]</sup> recommending development of an affirmative obligation on the part of sellers or lessors of residential properties to disclose information about flood risk to prospective

buyers or lessees. These proposals would require States and communities to establish flood risk reporting requirements for sellers and lessors as a condition of participation in the NFIP. Should States and/or local governments be required to establish minimum flood risk reporting requirements for sellers and lessors as a condition for participation in the NFIP? Should there be an affirmative obligation on the part of sellers and/or lessors of residential properties to disclose information about flood risk to prospective buyers or lessees? If so, what is the most effective way to require this disclosure? Should the process be modeled on requirements for sellers to disclose details on environmental hazards, such as lead-based paint hazards? What details should be included in the disclosure, such as knowledge of past floods and/or flood damage, a requirement to maintain flood insurance, knowledge the property is located in a SFHA at the time of offering, and the cost of existing flood insurance?

See recommendations 3.A and 2.B.

(12) The United States is experiencing increased flooding and flood risk from climate change.<sup>[22]</sup> Climate change may exacerbate the risk of flooding to homeowners. Should FEMA base any NFIP minimum floodplain management standard changes on future risk and specifically on projections of climate change and associated impacts, such as sea level rise? What equity considerations should be factored into such decisions if climate change disproportionately harms underserved and vulnerable areas? What other considerations should be factored into an analysis involving climate change? Should the NFIP better distinguish NFIP minimum floodplain management standards between riverine and coastal communities? Should the NFIP minimum floodplain management standards incorporate pluvial (surface/urban) flooding concerns? Are there specific measures and standards that should be taken to ensure structures can withstand the greater intensity, duration, frequency and geographic distribution of flooding events? If so, what are they and how can those measures and standards ensure structures and communities can readily adapt and increase resilience to the impacts of climate change?

See recommendation 1.

(13) The current NFIP minimum floodplain management standards can be found at [44 CFR part 60](#) subpart A—Requirements for Floodplain Management Regulations. As part of this Request for Information seeking input on new and even transformative reforms to the NFIP minimum floodplain management standards, FEMA also is exploring potential revisions to current regulatory provisions that are unnecessarily complicated, create unintended inequities or could be streamlined. Are there current regulatory provisions that create duplication, overlap, complexity, or inconsistent requirements or unintended inequities with other FEMA or other Federal programs? Are there current

regulatory provisions that present recurring difficulties for local and State officials implementing NFIP minimum floodplain management standards and if so, what improvements should be made?

No comment.

(14) Are there technological advances, building standards, or standards of practice that could help FEMA to modify, streamline, or improve existing NFIP minimum floodplain management standards? If so, what are they and how can FEMA leverage those technologies and standards to achieve the agency's statutory and regulatory objectives?

See recommendations 3.B, 4 and 1.

(15) FEMA recognizes the vital role that State, local, Tribal, and territorial governments play in floodplain management and that they may have innovative solutions to complex floodplain management challenges. What successful mitigation policies, building design standards, building construction standards, T&E species protections, and/or other floodplain management approaches to mitigate flood loss and reduce risk have been taken by State, local, Tribal, and territorial governments? In what ways do the current NFIP minimum floodplain management standards present barriers or opportunities to the successful implementation of those approaches? What capabilities and capacity impacts should FEMA address as it considers changes to the NFIP minimum floodplain management standards and to strengthen NFIP protection of T&E species and their habitats?

No comment.

(16) As FEMA undertakes an analysis of potential effects of the NFIP on T&E species, the agency must consider the NFIP's effect on floodplain development and the extent to which NFIP actions influence land development decisions. "Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures; mining; dredging; filling; grading; paving; excavation, or drilling operations; or storage of equipment or materials.<sup>[23]</sup> Is information available on the NFIP's influence on floodplain development? If so, provide or identify any data or materials identifying the NFIP's influence. How can FEMA measure the NFIP's effect on floodplain development? Are there specific NFIP regulations, policies and/or development standards that currently influence State, local, Tribal, and/or territorial governments in their development decisions that may have a positive or negative impact on T&E species and their habitats? If so, what are they and how do they influence development decisions that impact T&E species and their habitats? Are there changes to



those regulations, policies and/or standards that, if made, would have a positive impact on T&E species and their habitats? If so, what are those changes?

See recommendations 1, 3, 4, and 8.

(17) FEMA is developing a national programmatic framework for nationwide compliance with the ESA and is re-examining the extent to which NFIP actions may have adverse effects on T&E species and their habitats. Should FEMA reconsider its mapping practices, including the issuance of Letters of Map Revision based on Fill (LOMR-Fs)? Should the placement of fill material, defined as material used to raise a portion of a property to or above the Base Flood Elevation within the SFHA, be prohibited by NFIP minimum floodplain management standards? What would the impact of this change be on T&E species and NFIP participating communities?

Yes, placement of fill material to raise a property above base flood elevation should be prohibited.

(18) Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters, including floods. It begins with State, local, and Tribal governments identifying natural disaster risks and vulnerabilities that are common in the area and then developing long-term strategies for protecting people and property from similar events. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction. How should FEMA consider integrating mitigation planning with other Federal, State, or local mitigation planning such as community planning, economic planning, coastal zone planning, and other types of planning activities to improve the overall effectiveness of mitigation planning and floodplain management activities? Are there planning best practices, processes, or data that could better inform planning decision-making and the development and implementation of floodplain management standards?

Hazard mitigation plans are designed to address a range of disasters in addition to flooding. These plans should be generally consistent with NFIP local ordinances. The risks posed by rising seas have not been considered to be a “disaster” and are not commonly addressed in state or local hazard mitigation plans. Many coastal communities face unprecedented disruption as a result of rising sea levels in the decades ahead and need to start planning to manage these risks now. Because of the scale of sea level rise impacts, sea level response plans should be developed by local governments in cooperation with states and federal agencies and should be developed as freestanding plans rather than included within a broader hazard mitigation plan.