



March 21, 2016

*Submitted via email to [kdych@eda.gov](mailto:kdych@eda.gov)*

Honorable Jay Williams  
Economic Development Administration  
U.S. Department of Commerce  
1401 Constitution Avenue, NW  
Suite 71014  
Washington, DC 20230

Re: Federal Flood Risk Management Standard Comments

Dear Administrator Williams:

The Natural Resources Defense Council (NRDC) is pleased to submit the following comments on EDA's proposed framework for implementing Executive Order 13690 (EO 13690) and the Federal Flood Risk Management Standard (FFRMS). NRDC is an international environmental advocacy organization, which on behalf of our more than 2 million members and online activists uses law, policy and science to protect the planet's wildlife and wild places, and to ensure a safe and healthy environment for all living things.

In the face of increased flood risk due to climate change, the FFRMS is a crucial and necessary update to federal flood risk mitigation practices. The FFRMS will better protect people and property, and will more effectively guide the federal government away from making risky investments in the nation's floodplains. As EDA is a significant funder of public infrastructure projects, how the agency chooses to implement the FFRMS will greatly influence the longevity of our Nation's public works.

Thus, NRDC applauds EDA for considering selection of the 0.2-percent annual-chance flood elevation (also known as the 500-year flood elevation) approach to define the floodplain for both critical and non-critical actions. The 500-year flood elevation provides a known and tested approach to flood risk mitigation, and its adoption will make EDA an early leader in increasing our Nation's resilience to the growing risk of flooding. However, we recommend that the agency use the Climate-Informed Science Approach in coastal zones to delineate the floodplain as sea level rise will drastically alter the 500-year flood elevation in the coming decades.

Additionally, as EDA begins to implement the FFRMS, NRDC recommends the following actions be taken:

- Establish the substantial improvement/damage threshold at 50% or less of the total value of the structure;

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- Narrowly define what constitutes an emergency action;
- Evaluate flood risks even if building behind structural flood risk management systems, including the risk of flooding should the structure fail or be breached; and
- Incorporate the FFRMS into agency regulations and operating procedures before the end of the calendar year.

Over the long-term, Executive Order 13690 and the FFRMS will significantly reduce the costs of post-flood recovery and promote sound investment of taxpayer dollars. A robust incorporation of Executive Order 13690 and the FFRMS by the EDA into its regulations and operating procedures is paramount.

### *The Increasing Risk of Flooding*

Climate change is exacerbating our nation's susceptibility to disastrous flood events. The United States Global Change Research Program has reported that the impacts and costliness of weather disasters, like flooding, are increasing; events considered "rare" today will become more common in the future due to climate change.<sup>1</sup> And damages from flooding are already considerable. From 1998 to 2014, \$48.6 billion in FEMA Public Assistance Grants were spent in the wake of floods each year.<sup>2</sup> The repairing or replacing of public buildings (\$12.6 billion), public utilities (\$7.4 billion), roads and bridges (\$5.5 billion), and water-control facilities like levees, dams, and pumps (\$1 billion) was the predominant use of these grants.<sup>3</sup> The Public Assistance Program represents only a small portion of the amount spent on rebuilding after a flood-related natural disaster. As climate change raises sea levels and alters precipitation patterns, coastal areas and riverine communities will become increasingly susceptible to flooding,<sup>4</sup> potentially magnifying the cost to repair public infrastructure.

Riverine communities throughout the country are entering a future in which flood events will not only become more frequent, but more severe. Flood frequency has already started to increase for many regions. A recent study, *The Changing Nature of Flooding across the central United States*, by researchers from the University of Iowa found that the frequency of floods in the Midwest is already on the rise.<sup>5</sup> The study examined data from hundreds of stream monitoring

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<sup>1</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *Extreme Weather Events*, <http://www.globalchange.gov/explore/extreme-events> (last visited Dec. 15, 2015).

<sup>2</sup> *The Need for Flood Protection Standards*, NRDC, <http://www.nrdc.org/water/fema-assistance-grants.asp> (last visited Dec. 15, 2015).

<sup>3</sup> *Id.*

<sup>4</sup> See generally AECOM, *THE IMPACT OF CLIMATE CHANGE AND POPULATION GROWTH ON THE NATIONAL FLOOD INSURANCE PROGRAM THROUGH 2100* (June 2013) (assessing climate change and population growth impact on floodplains throughout the United States).

<sup>5</sup> Iman Mallakpour & Gabriele Villarini, *The Changing Nature of Flooding Across the Central United States*, 5 NATURE CLIMATE CHANGE 250, 250 (2015).

stations throughout the Midwest and found that floods were becoming more frequent in a band stretching from North Dakota south to Iowa and Missouri and through Illinois, Indiana and Ohio. Additionally, flood prone areas along the nation's rivers could increase by 45% on average.<sup>6</sup> This enlargement of the floodplain is attributed to changing precipitation patterns, and varies widely on a regional basis; areas like the Great Lakes and the Northeast are forecasted to have a major expansion, whereas areas like the Southwest, a smaller expansion.<sup>7</sup>

Coastal communities face the added complication of sea-level rise, particularly on the East and Gulf Coasts. Since 1880, global sea level rose roughly eight inches due to global warming.<sup>8</sup> Within the next century that number will increase exponentially based on climate change models that incorporate warmer ocean temperatures and melting land-based ice. By 2100, sea levels may increase by as much as six feet,<sup>9</sup> which could inundate the homes of 5 million people in the United States alone.<sup>10</sup> Post-2100, sea levels will continue to rise between 12-15 feet even if we limit warming to 2 degrees Celsius due to the timespan in which carbon dioxide remains in the atmosphere.<sup>11</sup>

In addition, sea level rise will compound the problem of tidal flooding as high tides will be able to reach farther inland. According to the Union of Concerned Scientists, long-term trends show that tidal flooding went from occurring every one to five years in the 1950s to occurring once every three months by 2012.<sup>12</sup> This trend is accelerating, and by 2045, numerous communities along the East and Gulf Coasts may see tidal flooding occur roughly 180 times a year.<sup>13</sup> When these events are combined with a coastal storm, the risk of flooding becomes severe.

The underlying trend is a negative one: riverine and coastal floodplains are expanding due to climate change, coastal storms will increase in their intensity, and sea-level rise will inundate large sections of the Eastern and Gulf Coasts. Executive Order 13690 and the Federal Flood Risk Management Standard encourage agencies to account for these future risks when funding infrastructure in a floodplain.

### *EDA influences the development of public infrastructure*

EDA contributes significantly to the development of public infrastructure throughout the Nation. Through the Public Works Program and others, such as the Economic Adjustment Assistance

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<sup>6</sup> AECOM, *supra* note 4, at ES-6.

<sup>7</sup> Id.

<sup>8</sup> ERIKA SPANGER-SIEGFREID, MELANIE FITZPATRICK, AND KRISTINA DAHL, ENCROACHING TIDES: HOW SEA LEVEL RISE AND TIDAL FLOODING THREATEN U.S. EAST AND GULF COAST COMMUNITIES OVER THE NEXT 30 YEARS 1 (2014).

<sup>9</sup> Id. at A-4.

<sup>10</sup> *Surging Seas*, CLIMATE CENTRAL, <http://sealevel.climatecentral.org/> (last visited Dec. 15, 2015).

<sup>11</sup> Benjamin H. Strauss, Scott Kulp, & Anders Levermann, *Carbon Choices Determine US Cities Committed to Futures Below Sea Level*, 112.44 PNAS 13508, 13508 - 509 (2015).

<sup>12</sup> See Spanger-Siegfried, *supra* note 8, at 11.

<sup>13</sup> Id. at 52.

Program, EDA provides a wide range of infrastructure assistance to help distressed communities and regions.

Under the Public Works Program, investments have included traditional public works projects, such as water and sewer systems improvements, industrial parks, business incubator facilities, expansion of port and harbor facilities, skill-training facilities, and brownfields redevelopment. EDA has also funded public infrastructure such as technology-based facilities; research and development commercialization centers; facilities for workforce development; wet labs; multi-tenant manufacturing facilities; research, business and science parks with fiber optic cable; and telecommunications facilities. The Economic Adjustment Assistance program provides funding to be used for hard and soft infrastructure, as well.

In the Fiscal Year 2017 Congressional Budget Request, EDA has requested \$85 million for the Public Works Program and \$50 million for the Economic Adjustment Assistance Program for a total of \$135 million that could potentially be spent on public infrastructure projects. This funding must be subject to Executive Order 13690 and the FFRMS. To do otherwise, would contradict the intentions of the executive order — to better protect people and property.

#### *EDA's Proposed Framework*

NRDC recommends EDA proceed with selecting the 500-year flood elevation to define the FFRMS floodplain for both critical and non-critical actions. As mentioned above, the 500-year flood elevation provides a known and tested approach to flood risk mitigation. Flood Insurance Rate Maps already depict the 500-year flood zone, providing EDA and applicants a readily available and trusted source of information for which to identify the FFRMS floodplain.

Additionally, the benefit of selecting the 500-year floodplain is that it expands the horizontal floodplain area beyond the foot print of the traditional Special Flood Hazard Area (SFHA). A larger floodplain footprint ensures that the uncertainties associated with climate change and other future conditions are adequately accounted for in federal agency planning. Future flooding will be influenced by factors such as altered precipitation patterns and land use decisions. By solely adding a higher elevation standard to the current understanding of the SFHA means infrastructure located at the fringes will remain susceptible. Thus, the footprint of the 500-year flood ensures that future conditions, in particular the effects of climate change, are accounted for when federal agencies are carrying out actions that will affect a floodplain.

Further, the 500-year flood elevation has long been established as the level to which critical infrastructure must be built due to the extra margin of safety it provides above the 1 percent annual base flood elevation. Under the original version of Executive Order 11988, the greater of the 500-year flood event or the historically highest flood was the standard to which critical infrastructure had to be built. NRDC recommends that for critical infrastructure, the practice of choosing between the greater of the 500-year flood event or the level of the historically highest flood continue.

However, when making decisions about projects in coastal environments that have decades-long design lives, the agency must utilize the Climate-Informed Science Approach<sup>14</sup> to delineate the vertical elevation and the corresponding horizontal floodplain. The climate-informed science approach will ensure that agencies fully assess the range of sea level rise projections and how the risk of flooding due to wave action and storm surge will change over the proposed project's lifetime. Failure to evaluate sea level rise over the next several decades would be an egregious oversight when deciding what to build, where to build, and how to build in coastal environments. This concern is amplified by the shortcomings of the 500-year flood elevation approach in coastal areas. While FEMA maps the 500-year floodplain, these data sets do not include local wave action or storm-induced erosion in the computation of BFEs. Utilizing the CISA in coastal zones will negate this problem.

### *Additional Recommendations*

The requirements of Executive Order 13690 and the recommendations of the Final Guidelines must be incorporated into EDA's regulations and operating procedures in a manner that maximizes the protection of federal investments and the preservation of our floodplains. Below are recommendations we urge the agency to undertake to achieve this goal.

- (1) ***The threshold for what constitutes substantial improvement/damage should be 50% or less of the total value of the structure.<sup>15</sup> A cumulative approach to calculate substantial improvement/damage over projects' lifetimes should be utilized.*** We urge that great care is taken in implementing these provisions to ensure that the 50% threshold is not manipulated to avoid compliance. Implementing the determination of substantial damage/improvement on a cumulative basis is key for tracking flood damages to public infrastructure, identifying infrastructure that is increasingly vulnerable to flooding, and ensuring that it is relocated or upgraded and its risk to future floods reduced.
- (2) ***The agency must comply with state, tribal, territorial, or local government flood risk standards, when such standards are more protective than the Federal Flood Risk Management Standard.*** Many communities across the nation have adopted local floodplain management codes and standards that are more protective than those set forth in the FFRMS. Given that the intention of the FFRMS and Executive Order 13690 is to increase the nation's resilience, federal agencies must adhere to more protective local standards to ensure that these communities are not put at additional risk or that their flood protection efforts are not undermined by the federal government.

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<sup>14</sup> Exec. Order No. 13690, 80 FR 6425 (2015).

<sup>15</sup> WATER RESOURCES COUNCIL, GUIDELINES FOR IMPLEMENTING EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT AND EXECUTIVE ORDER 13690, ESTABLISHING A FEDERAL FLOOD RISK MANAGEMENT STANDARD AND A PROCESS FOR FURTHER SOLICITING AND CONSIDERING STAKEHOLDER INPUT 31 (2015).

- (3) ***While we support the provision in EO 13690 that exempts emergency action<sup>16</sup> from the Federal Flood Risk Management Standard, we urge the agency to narrowly define what constitutes an emergency action.*** The purpose of the executive order is to create flood-resilient communities, which necessitates that it be broadly applied. While rebuilding quickly post-disaster is vital to community well-being, it should not come at the expense of making that community more resilient to the next disaster. For example, EDA's issuance of disaster relief funds that are used to repair, rebuild, or replace substantially damaged infrastructure should not be classified as an emergency action. To do so would hinder adaptive rebuilding that must be pursued in the face of climate change.
- (4) ***Structural flood risk management systems are intended to reduce flood risk— not eliminate flood risk. As such, the agency should evaluate flood risks if building behind such structures, including the risk of flooding should the structure fail or be breached.*** The agency should not fail to engage in the eight-step process<sup>17</sup> for a federally-funded project merely because it will be constructed behind a flood control structure. For federally-funded projects, the agency must complete step one and determine the FFRMS floodplain. This step will require agencies to look beyond the Flood Insurance Rate Map (FIRM). Climate change, development, land use patterns, and the condition of the structural flood risk management system all negatively affect the accuracy of a FIRM. In order to fully understand the flooding risks for a project, agencies must evaluate the current and future condition of the structure, including its capability to respond to future floods influenced by climate change.
- (5) ***Finally, the Federal Flood Risk Management Standard should be incorporated into agency regulations and procedures by the end of the calendar year.*** As discussed above, climate change is exacerbating the exposure of our nation's infrastructure to flood risk. Over the long-term, the Executive Order 13690 and the FFRMS will significantly reduce the costs of post-flood recovery and promote sound investment of taxpayer dollars. Thus, its implementation should not be delayed.

#### *EDA Positioned to Incentivize Resilience*

The frequency and severity of floods is increasing in many regions of the United States, and with it, so are the costs to repair, rebuild, or replace our public infrastructure. EDA, as a significant funder of public works nation-wide, is in a position to better protect people and property by incentivizing resilience. EDA should proceed with selecting the 500-year flood elevation

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<sup>16</sup> Exec. Order No. 13690 80 FR 6425 (2015)(Referencing section 2(i)(2)).

<sup>17</sup> WATER RESOURCES COUNCIL, GUIDELINES FOR IMPLEMENTING EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT AND EXECUTIVE ORDER 13690, ESTABLISHING A FEDERAL FLOOD RISK MANAGEMENT STANDARD AND A PROCESS FOR FURTHER SOLICITING AND CONSIDERING STAKEHOLDER INPUT 41-80 (2015).

approach to delineate the FFRMS floodplain to achieve this goal. Over the long-term, the Executive Order 13690 and the FFRMS, if implemented faithfully by EDA, will significantly reduce the costs of post-flood recovery and promote sound investment of taxpayer dollars. We appreciate the opportunity to offer these comments and request EDA take the attached questions into consideration as the agency moves forward with implementing the executive order.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Scata". The signature is fluid and cursive, with the first name "Joel" and last name "Scata" clearly distinguishable.

Joel Scata  
Water Policy Advocate, NRDC

## Questions

1. Will EDA implement the proposed framework through rule-making? If no, how will EDA implement the proposed framework?
2. Higher elevation standards are only as good as the enforcement process that supports them. How will EDA ensure applicants to the Public Works Program and other EDA programs that fund infrastructure development comply with the FFRMS?
3. On average, how much money does EDA spend annually on infrastructure construction projects? How will EDA apply the FFRMS to this funding?
4. How many EDA funded construction projects have been built in a floodplain, which did not comply with the original Executive Order 11988? How will EDA avoid non-compliance issues moving forward?
5. In the past five years, how much EDA disaster relief funding went to repair public infrastructure in the wake of a flood? What impact will the EDA's proposed framework have on reducing this amount?
6. Concerning disaster-relief funding, how will EDA determine whether the substantial damage threshold has been reached, thereby requiring compliance with the FFRMS for pre-existing facilities, buildings, and infrastructure?
7. As part of its implementation of the FFRMS, will EDA adopt a cumulative standard for "substantial damage" calculations
8. When multiple agencies are connected to a construction project, how often is EDA the lead agency? The supporting agency?
9. When multiple agencies are involved on a project, how will EDA and the other agencies select a FFRMS approach for delineating the floodplain? Will EDA insist on the 500-year floodplain, if it provides the highest level of protection in comparison to the other options?
10. What actions, if any, will EDA exempt from application of the FFRMS? Why?