

May 5, 2015

The Honorable William Craig Fugate
Federal Emergency Management Agency
500 C Street S.W.
Washington, D.C. 20472

Regulatory Affairs Division,
Office of Chief Counsel, Federal Emergency Management Agency,
8NE, 500 C Street, SW, Washington, DC 20472-3100

Docket ID FEMA-2015-0006

Comments re: Proposed “Revised Guidelines for Implementing Executive Order 11988, Floodplain Management” published in the Federal Register on February 5, 2015 (80 FR 6530)

Cc: Mitigation Framework Leadership Group (MitFLG)

Dear Administrator Fugate,

On behalf of the Union of Concerned Scientist’s 450,000 members and supporters, I am writing in support of Executive Order 13690, *Establishing a Federal Flood Risk Management Standard (FFRMS) and a Process for Further Soliciting and Considering Stakeholder Input*. We also welcome the proposed “*Revised Guidelines for Implementing Executive Order 11988, Floodplain Management*” which give guidance to agencies on the implementation of the Executive Order (EO). Below we provide some comments outlining areas of support and opportunities for improvement.

We applaud the transparent and robust process of stakeholder engagement outlined in EO 13690. We further ask that the Federal Emergency Management Agency (FEMA) and other federal agencies that are part of the Mitigation Framework Leadership Group (MitFLG), working with the Federal Interagency Floodplain Management Task Force, the Water Resources Council and the Council on Environmental Quality, implement the standard, at the level of protective stringency outlined in the EO, as soon as possible.

The FFRMS is a commonsense standard that will help make communities more resilient to flooding from sea level rise and other factors, and help ensure taxpayer dollars are spent wisely. Until now, the standard had not been substantially changed in 37 years, since 1978. During roughly that time period, Norfolk, VA, has seen level rise by more than 8 inches while

Charleston, SC, and Atlantic City, NJ, have seen a 5-fold increase in days with tidal flooding.¹ Our use of taxpayer dollars must be made in light of these ongoing changes.

Flood losses in the United States have increased and will likely continue to get worse with climate change, which is increasing flooding risks by contributing to higher seas and more severe storm surge along our coasts, and also heavier rains in some parts of the country. At the same time, more development in coastal areas is putting more people and property at risk. The revised standard moves in the direction of ensuring that we not only take into account current flood risks but anticipate these future changes.

As a result of these climatic and demographic changes, the American public faces growing threats to health and safety, as well as rising economic costs. Investing in preparedness and resilience is imperative, and implementing a strong FFRMS is critical to that effort.

Warming climate, rising seas, and development in floodplains contribute to growing flood risks

According to the 2014 Third National Climate Assessment, climate change and other factors may increase the risks of flooding in many U.S. regions.² For example, the report says that “The risks from future floods are significant, given expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and human-induced climate change.” And “...human-induced warming increases heavy downpours, causes more extensive storm surges due to sea level rise, and leads to more rapid spring snowmelt.”

Global sea level rose roughly eight inches from 1880 to 2009, with global warming as the main driver.³ Rising air temperatures are causing the oceans to warm and expand, as well melting glaciers and land-based ice sheets.⁴ Sea level rise is also accelerating, nearly doubling in recent years.⁵ The East and Gulf coasts of the U.S. are experiencing some of the highest and fastest

¹ Sweet, W.V. and J. Park. 2015. From the extreme to the mean: Acceleration and tipping points of coastal inundation from sea level rise. Online at <http://onlinelibrary.wiley.com/doi/10.1002/2014EF000272/full>; Spanger-Siegfried E., M. Fitzpatrick and K. Dahl. 2014. Encroaching Tides: How Sea Level Rise and Tidal Flooding Threaten U.S. East and Gulf Coast Communities over the Next 30 Years. Online at www.ucsusa.org/encroachingtides

² Melillo, J.M., T.C. Richmond, and G.W. Yohe (eds.) 2014. Climate change impacts in the United States: The Third National Climate Assessment. Washington, DC: U.S. Global Change Research Program. Online at <http://nca2014.globalchange.gov/>

³ Church, J.A., and N.J. White. 2011. Sea-level rise from the late 19th to early 21st century. *Surveys in Geophysics* doi:10.1007/s10712-011-9119-1; Church, J.A., N.J. White, L.F. Konikow, C.M. Domingues, J.G. Cogley, E. Rignot, J.M. Gregory, M.R. van den Broeke, A.J. Monaghan, and I. Velocogna. 2011. Revisiting the earth’s sea-level and energy budgets from 1961 to 2008. *Geophysical Research Letters* 38; doi:10.1029/2011GL048794.

⁴ Cazenave, A., and W. Llovel. 2010. Contemporary sea level rise. *Annual Review of Marine Science* 2:145–173; Lombard, A., A. Cazenave, P.-Y. Le Traon, and M. Ishii. 2005. Contribution of thermal expansion to present-day sea level change revisited. *Global and Planetary Change* 47(1):1–16.

⁵ Church and White 2011 (*ibid*); Ablain, M., A. Cazanave, G. Valladeau, and S. Guinehut. 2009. A new assessment of the error budget of global mean sea level rate estimated by satellite altimetry over 1993–2008. *Ocean Science*

rates of relative sea level rise globally, in part due to additional local factors like land subsidence, groundwater withdrawals and changing ocean currents.⁶

Flooding during high tides, especially during the Spring and Fall, is now common in some places on the East and Gulf coasts of the U.S. Tidal flooding is expected grow to the point that sections of coastal cities will flood so often they'll become unusable in the near future, without major investment, according to a 2014 study by the Union of Concerned Scientists.⁷ Most of the 52 coastal towns studied in the report could see a tripling in annual tidal floods in 15 years and a tenfold increase in 30 years. In places familiar with tidal flooding today, this means they could see more than 100 tidal floods each year in just 15 years' time, and that a portion of those floods would be increasingly large and damaging. The federal government makes substantial investments in many coastal cities, and must do so in light of the science at hand.

Research from NOAA also shows that many locations along the East, Gulf and West coasts of the U.S. will surpass a tipping point of 30 days per year of flooding by 2050.⁸ This study introduced the concept of a *tipping point* to describe the point at which “impacts from future coastal inundation when critical elevation thresholds for various public works or coastal ecosystem habitats may become increasingly compromised by increasingly severe tidal flooding.” As one example, the City of Miami Beach is spending \$100 million per year for the next 5 years to provide temporary relief from this problem by installing stormwater pumps and upgrading drainage infrastructure.⁹

In addition to high-tide flooding, rising seas are also contributing to worsening flood risks and damage from storm surge, and increasing coastal erosion. Hurricane Sandy showed how devastating storm surge can be. It is estimated that the storm caused \$165 billion in damages and 159 deaths, damaged 650,000 homes and left 8.5 million customers without power.¹⁰ Two and half years later some communities are still recovering from its impact. We have learned important lessons from that experience, many of which were captured in the report of the Hurricane Sandy Rebuilding Taskforce.

Among the Taskforce's many recommendations were two that relate directly to the new FFRMS:

5:193–201.; Leuliette, E.W., R.S. Nerem, and G.T. Mitchum. 2004. Calibration of TOPEX/Poseidon and Jason altimeter data to construct a continuous record of mean sea level change. *Marine Geodesy* 27:79–94; doi:10.1080/01490410490465193.

⁶ Ezer et al. 2013; Boon 2012; Sallenger, Doran, and Howd 2012.

⁷ Spanger-Siegfried E., M. Fitzpatrick and K. Dahl. 2014. *Encroaching Tides: How Sea Level Rise and Tidal Flooding Threaten U.S. East and Gulf Coast Communities over the Next 30 Years*. Online at www.ucsusa.org/encroachingtides

⁸ Sweet, W.V. and J. Park. 2015. From the extreme to the mean: Acceleration and tipping points of coastal inundation from sea level rise. Online at <http://onlinelibrary.wiley.com/doi/10.1002/2014EF000272/full>

⁹ Flechas, J. 'King tide' will be first test for Miami Beach's new pumps. Online at: <http://www.miamiherald.com/news/local/community/miami-dade/miami-beach/article2541332.html#storylink=cpyhttp://www.miamiherald.com/news/local/community/miami-dade/miami-beach/article2541332.html>

¹⁰ Hurricane Sandy Rebuilding Taskforce. 2013. *Hurricane Sandy Rebuilding Strategy: Stronger Communities, A Resilient Region*. Online at <http://portal.hud.gov/hudportal/documents/huddoc?id=HSRebuildingStrategy.pdf>

1. Facilitate the incorporation of future risk assessment, such as sea level rise, into rebuilding efforts with the development of a sea level rise tool.
2. Develop a minimum flood risk reduction standard for major Federal investment that takes into account data on current and future flood risk.

Further, the President's State, Local and Tribal Task Force on Climate Preparedness and Resilience also recommended that the federal government play a leadership role in developing and encouraging standards for building resilience. In particular, the report recommended that:

Federal agencies should adjust their practices in and around floodplains to ensure that Federal assets will be resilient to the effects of climate change, including sea level rise, more frequent and severe storms, and increasing river flood risks, as called for in the President's Climate Action Plan. Projects that receive Federal funding should be sited and designed with the best-available climate data and include margins of safety, such as freeboard and setbacks, to account for uncertainties and reduce costs and disruption from future hazards.

We commend the actions discussed below that are being taken now, in response to EO 13690, which will help to make tangible progress toward implementing these important recommendations.

Commonsense flood risk management standards

UCS supports the protective stringency of this standard and recommends that it remain strong, and tied to science and common sense in decision making, as it is implemented by the relevant federal agencies. It is critical that the standard not be weakened as it goes through the stakeholder and implementation process.

Under the new standard, when federal agencies build or rebuild in flood-prone areas, they must use more protective design standards to guard against flood risks.

Agencies will have the flexibility to choose among three approaches:

- Use the best-available climate science.
- Build two feet above the 100-year (1 percent annual chance) flood elevation for standard projects and three feet above for critical buildings like hospitals and evacuation centers.
- Build to the 500-year (0.2 percent annual chance) flood elevation.

All three approaches anticipate the fact that, with rising seas, flood risks are worsening in many places and new areas will be exposed to flood risks. If anything, the sea level rise anticipated this

century by the U.S. scientific community – between 4 and 6 feet by 2100¹¹ – could justify a strengthening of these standards, but should certainly discourage their weakening.

We need to take steps to help prepare and protect communities from those growing risks, both in existing flood zones and in places that will soon face flooding. Many communities already recognize the risks of sea level rise and are taking steps to protect themselves with local standards that meet or exceed the new FFRMS. These include the designation of Adaptation Action Areas as part of the State of Florida’s response, and protective standards adopted by a number of coastal communities in New Jersey.^{12,13} According to the Association of State Floodplain Managers, at least 42 cities, towns and counties have adopted a standard of 3 feet of freeboard, at least 190 have adopted a 2-foot freeboard standard and about 300 have adopted a freeboard standard consistent with the FFRMS.¹⁴

We also support the provision in the guidelines that gives preference to the climate science approach when actionable information is available.

While the other two approaches do provide important protection, adhering to the best available climate science information, when possible, is the most effective way to ensure that the standards remain protective as flood risks increase over time as a result of sea level rise and other factors. This is especially true for any long-lived infrastructure. As such, more information and guidance on data and best practices should be provided for agencies adopting this approach.

Federal actions subject to the new flood risk management standards

For the FFRMS to be truly protective, it should apply to as comprehensive a range of federal government agencies and actions related to flood risks as practicable.

The federal government acts through a broad range of agencies and policies in playing a key role in helping our nation prepare for and protect itself from a variety of threats. Sea level rise and storm surge are one of these threats, and pose significant and growing risks for coastal communities.

¹¹ These projections, from the National Climate Assessment (2014), exclude the “intermediate low” scenario, which does not factor in observed rates of land-based ice melt. Parris, A., P. Bromirski, V. Burkett, D. Cayan, M. Culver, J. Hall, R. Horton, K. Knuuti, R. Moss, J. Obeysekera, A. Sallenger, and J. Weiss. 2012. Global sea level rise scenarios for the National Climate Assessment. Online at: http://cpo.noaa.gov/sites/cpo/Reports/2012/NOAA_SLR_r3.pdf

¹² Section 163.3164(1), Florida Statutes.

¹³ Examples of New Jersey communities with a standard of two feet of freeboard are: Margate (in the V zone); Somers Point, Ventnor, Cape May City, N. Wildwood City, Ocean City (residential), Stone Harbor (residential), and Old Bridge. Examples of communities with a 3-foot freeboard standard are Avalon, Hoboken (V zone) and Monmouth Beach. Little Silver (residential) has a +4 foot freeboard standard.

¹⁴ Association of State Floodplain Managers. 2015. [Federal Flood Risk Management Standard & EO 13690-Analysis](#)

The EO clearly anticipates a comprehensive coverage of agencies and actions, and we support the guidance that:

Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

The inter-agency process that has informed the development of the draft implementation guidelines, and will continue to inform the implementation process, is an important strength. Each affected agency will have to develop an implementation process specific to its mandate; however, the overarching principles, informed by the best available actionable climate science should apply to all. Harmonization of our nation's response to climate change across agencies and jurisdictions, and in accordance with the best available science, is crucial to the effectiveness of resilience-building initiatives.

We support the provisions in the guidelines that any new structure or facility, or structure or facility undergoing major improvement (defined as 50 percent of the market value of the structure or facility) must adhere to the EO. We urge that great care be taken in implementing these provisions that the "50 percent" threshold is not manipulated to become a loophole that allows existing structures to avoid the intent of this Executive Order.

We support the provisions in the guidelines that require agencies to consider flood hazards, prior to issuing licenses, permits, loans or grants.

These hazards could include potential monetary impacts, human health and well-being impacts, impacts on third parties and impacts on the floodplain itself. This provision is particularly important since it gives agencies wide latitude to consider current and future flood risk in a wide range of contexts, policies and actions, and offers support for agencies to be science-based and forward-thinking in their actions.

We also support the provision in EO 13690 that exempts emergency assistance from the EO:

"Nothing in this Order shall apply to assistance provided for emergency work essential to save lives and protect property and public health and safety, performed pursuant to Sections 403 and 502 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (42 U.S.C. 5170b and 5192).".

Consistency with FEMA guidelines

We do not support the provision in the implementation guidelines that requires consistency with the standards in the National Flood Insurance Program or the requirement to follow FEMA regulations.

The guidelines say: “agency procedures are intended to be consistent with the standards in the National Flood Insurance Program. For this reason, agencies are required to consult with FEMA before issuing their procedures, and agencies with control over federal property are required to follow the standards in FEMA’s regulations unless they are demonstrably inappropriate.”

While the flood risk maps which inform the National Flood Insurance Program do help communicate flood risks, they suffer from serious drawbacks. Specifically, even recently updated maps do not yet include projections of sea level rise and therefore do not adequately help communities understand changing risks of flooding. A Technical Mapping Advisory Council (TMAC) has been established (via the 2012 Biggert-Waters Reform Act) with a mandate to provide recommendations to FEMA and produce a report on the impacts of climate sciences and future conditions and how they may be incorporated into the mapping program.¹⁵ However, at this point FEMA’s maps do not adequately incorporate future flood risks and therefore are not a good basis for interpreting EO 13690. Instead, agencies should adopt one of the three approaches outlined in the EO unless they are demonstrably inappropriate to a given structure.

Separately, the guidelines do say that: “Thus, an agency's application of the NFIP requirements to proposed actions does not comprise full compliance with the minimization responsibilities of the Order.” This interpretation is more in keeping with the intent of the EO and should be elevated more clearly.

Using nature-based approaches to limit flood risks

UCS supports the directive in the EO that agencies use natural and nature-based systems, where possible, in developing strategies to limit flood risks.

"Where possible, an agency shall use natural systems, ecosystem processes, and nature-based approaches when developing alternatives for consideration."

As the guidelines point out:

“The use of nature-based approaches, combined with the preservation and restoration of natural systems and ecosystem processes where appropriate, provide numerous benefits and support a system-wide, watershed approach to flood risk management that considers the interdependencies of natural systems.”

¹⁵ <https://www.fema.gov/technical-mapping-advisory-council>

Features like wetlands, dunes and barrier islands can help provide defense against waves, coastal storms and flooding.^{16, 17} Many of these natural systems are under stress as a result of development in floodplains.

We strongly encourage the development and sharing of best practices across agencies to incorporate nature-based approaches where practicable, in conjunction with other approaches as needed.

Attention to equity considerations

We recommend that special attention be paid to equity considerations in the implementation of the EO. In particular, the implementation should not result in any undue burden on communities of color or low-income communities and should prioritize funding for building resilience in these communities.

Implementation timeline

The science around sea level rise and flooding make clear that the U.S. coast has seen rapid increases in flooding, faces accelerating rates of sea level rise, and should expect flood risks to become increasingly dangerous, with the potential to transform coastal communities. It may ultimately take decades to make these communities more resilient to rising sea levels, but each investment we make that is absent consideration of sea level rise science undermines our ability to shift toward resilience as swiftly as possible. We must ensure that the stakeholder process is inclusive and rigorous yet streamlined so that improved decision-making can begin. Communities are already facing risks and delay is costly.

Building Resilient Communities

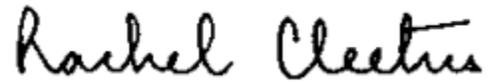
It is bad policy to rebuild in ways that perpetuate our risk of flooding and to sink taxpayer dollars into risky rebuilding efforts. Federal funds should instead be spent on making coastal communities more resilient to sea level rise and coastal flooding.

¹⁶ Moser, S.C., M.A. Davidson, P. Kirshen, P. Mulvaney, J.F. Murley, J.E. Neumann, L. Petes, and D. Reed. 2014. Coastal zone development and ecosystems. In *Climate change impacts in the United States: The Third National Climate Assessment*, edited by J.M. Melillo, T.C. Richmond, and G.W. Yohe. Washington, DC: U.S. Global Change Research Program, 670–706.

¹⁷ USACE. 2013. Coastal Risk Reduction and Resilience. CWTS 2013-3. U.S. Army Corps of Engineers, Washington, D.C. Online at http://www.corpsclimate.us/docs/USACE_Coastal_Risk_Reduction_final_CWTS_2013-3.pdf

Thank you for taking our comments into consideration.

Sincerely,

A handwritten signature in black ink that reads "Rachel Cleetus". The script is cursive and fluid.

Rachel Cleetus
Lead Economist and Climate Policy Manager
Climate and Energy Program
Union of Concerned Scientists

Attachments

<http://www.ucsusa.org/sites/default/files/attach/2014/10/encroaching-tides-full-report.pdf>

http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/Causes-of-Sea-Level-Rise.pdf