



Ms. Deanne Criswell
Administrator
Federal Emergency Management Agency
500 C Street, NW
Washington, DC 20024

Cc: Robert J. Fenton

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Submitted electronically on [regulations.gov](https://www.regulations.gov)

RE: Request for Information on FEMA Programs, Regulations, and Policies (86 FR 21325, Docket ID: FEMA-2021-0011)

Dear Administrator Criswell,

On behalf of our over 2.5 million members and supporters, Environmental Defense Fund (EDF) appreciates the opportunity to provide comments on FEMA's Request for Information on FEMA Programs, Regulations, and Policies. EDF is a leading international, nonpartisan, nonprofit organization dedicated to protecting human health and the environment by effectively applying science, economics, law, and innovative private-sector partnerships. FEMA provides critical support to communities and individuals across the nation to prepare for, respond to, and recover from disasters, as well as implement natural hazard mitigation and build resilience and disaster readiness. The role FEMA plays in the lives of millions of Americans nationwide cannot be underestimated, providing a critical safety net of support and resources when communities face catastrophic disaster damages. However, long-standing policies and programs have actively exacerbated the natural hazard and socioeconomic vulnerability of underserved communities¹, as noted in recent analyses of unequal outcomes of post-disaster FEMA assistance along racial lines.

The Biden Administration has directed FEMA to equitably serve and build present and future climate resilience for all individuals and communities, especially those who have been historically marginalized, underserved, and denied a full opportunity to participate in aspects of economic, social, and civic life. In order to meet this directive, FEMA must build inclusive processes and

¹ Underserved communities defined by [Executive Order 13985](#) are communities that have been denied equitable, consistent and systematic fair, just, and impartial treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

partnerships, and seek active participation with communities; in addition, FEMA must remove and reform policies, practices, and actions that reinforce or fail to eliminate differential outcomes by race or income.

EDF appreciates that the Biden Administration and FEMA are taking steps to effectively address the harmful impacts of inequitable policies and program delivery for underserved communities, as well as the much-needed integration of robust climate change considerations and resilience investments in communities across the country. EDF supports FEMA's efforts to invest in data as well as preparedness and mitigation projects and activities that avoid or lessen the impact of natural disasters, enhance socioeconomic security, and improve the disaster readiness and resilience of individuals and communities. The following comments are based on our ongoing work in states and localities across the Atlantic and Gulf coast to support coastal and watershed restoration and resilience to multiple hazards, and the challenges we see these governments facing in accessing FEMA resources, technical assistance such as grant application support, and federal funding more broadly. We encourage FEMA to incorporate stakeholder feedback to produce more equitable processes and outcomes for underserved individuals and communities and to strengthen efforts to specifically prioritize projects that address long-term threats from climate change, like sea level rise, and that deploy natural infrastructure solutions for reducing risks.

Responses to Areas of Inquiry

EDF's response to this inquiry will focus on the Building Resilient Infrastructure and Communities (BRIC) program administered by FEMA. BRIC is a pre-disaster hazard mitigation program that supports states, local communities, tribes and territories as they undertake hazard mitigation projects, thereby reducing the risks they face from disasters and natural hazards. BRIC replaced the Pre-Disaster Mitigation (PDM) program. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. In the following sections, EDF responds to FEMA's General Questions 1 through 4.²

1. *Are there FEMA programs, regulations, and/or policies that perpetuate systemic barriers to opportunities and benefits for people of color and/or other underserved groups as defined in Executive Order 13985 and, if so, what are they? How can those programs, regulations, and/or policies be modified, expanded, streamlined, or repealed to deliver resources and benefits more equitably?*

Underserved communities face unknown and significant barriers to applying to the BRIC program. Underserved communities need to be partners with FEMA in both identifying the relevant barriers and the development of potential solutions to enable equity in both process and outcome. The relevant barriers can only be learned from outreach and listening to underserved communities. A possible, but non-exhaustive, list of barriers and potential solutions are as follows:

² General Question 1 and 3 are combined as flooding and provision of flood protection is an equity and environmental justice concern; responses to General Question 4 occur throughout our comments.

1.1. The current definition of small and impoverished may not encompass all underserved communities.

FEMA defines a “small and impoverished community” as a community of 3,000 or fewer individuals and is economically disadvantaged, as determined by the State in which the community is located and based on criteria established by the President. However, FEMA’s definition of small and impoverished community is problematic and overly restrictive. Overall, the definition encompasses a very limited number of communities and leaves many underserved communities out. More specifically, this definition is problematic as it excludes impoverished communities in more highly populated urban centers, precluding them from additional assistance through FEMA’s BRIC program; this poses additional barriers for underserved urban coastal communities facing flooding due to sea level rise and more intense storms, as well as underserved urban Western communities facing increasing drought, heat, and wildfires. Similarly, tribes are often grouped as one tribal population, even when individual towns or subsets of populations are geographically very rural and separated. Aggregation of communities can hide underserved communities. The definition for small and impoverished communities in the BRIC program differs widely from definitions for underserved communities used by other federal agencies, and requires reexamination to ensure it is serving its intended populations.

In a flood protection context, FEMA should define underserved communities to be broad enough to identify all communities at risk of flooding that also may face significant barriers to providing flood protection infrastructure; this should/could follow for other natural hazard threats such as wildfire. This definition of underserved communities needs to be developed with those who it aims to serve. A possible revised definition would be to define an underserved community as a community in a special flood hazard zone that has 3,000 or fewer individuals; or any census block group in which:

- a. 30 percent or more of the population are individuals with an annual household income equal to, or
- b. less than, the greater of:
 - i. an amount equal to 80 percent of the median income of the area in which the household is located, as reported by the Department of Housing and Urban Development, and
 - ii. 200 percent of the Federal poverty line.

This expanded definition would allow FEMA to support larger, economically disadvantaged communities that also lack the financial resources needed to build resilience to large-scale climate risks and natural hazards impacted by climate change. Additionally, a more inclusive definition would enable FEMA to address well-documented racial disparities in its grantmaking as well as the legacy of discriminatory housing and land-use policies, like redlining, that have left predominately Black as well as other communities of color in areas of greater risk to flooding, urban heat, drought, and other natural hazards.

1.2. Underserved communities are applying for BRIC funding in exceptionally small numbers relative to the number of underserved communities, and even fewer are considered.³

Utilizing the small and impoverished definition used by FEMA's BRIC program, we classified Census places from the Census Bureau using American Community Survey data on population and per capita income. Of the 28,756 census places, 41% (11,933 places) are defined as small and impoverished. Of those small and impoverished communities, 44% (5,275 places) have at least one structure in a special flood hazard zone. Of those defined as small and impoverished facing flood risk, 57% (2,996 places) have 10 or more structures in a special flood hazard zone.⁴ Of these small and impoverished communities at risk, 29% (870 places) are unincorporated.⁵ Unincorporated places account for 65% (155,657 of 241,144 structures) of all structures at risk of flooding in small and impoverished communities. Incorporated cities, towns, villages, and boroughs are self-governed and have legally prescribed limits, powers, and functions and are able to levy taxes to provide public goods and services; unincorporated areas lack a governing body and this may limit these underserved communities from applying for BRIC funding.

For the FY 2020 application period, 993 subapplications requested over \$3.5 billion in FEMA support.⁶ Of these, 10% (98 applications) were from small and impoverished communities. This is less than 1% of all small and impoverished communities. Of these applications, 40 applications were from tribal governments, which compete amongst each other for the \$20 million in the tribal set-aside. After review, 90% (36 of the 40 applications) were suggested for further view. Of the remaining 58 applications from small and impoverished communities, 63% (37 applications) were competitive, and only 5% (2 applications) were identified for further review.

This exceptionally low rate of applications by small and impoverished communities received by the BRIC program is itself evidence that underserved communities face unknown and significant barriers to applying to the BRIC program. FEMA needs to develop outreach strategies to engage unincorporated communities and aid them in applying for BRIC funding. Furthermore, the result of nearly all small and impoverished community funding under consideration going to two communities is highly inequitable and suggests a need for improvement in the process.

1.3. Pre-award costs of preparing an application are only reimbursed for successful applications, and this may be a barrier to application for underserved communities.

BRIC does provide reimbursement for pre-award costs that are directly related to developing the BRIC grant application or subapplication, and pre-award costs must be identified and labeled in the cost estimate of the subapplication. Examples of pre-award

³ The existing definition of [small and impoverished communities](#) can be found here.

⁴ Special flood hazard zones taken from FEMA Flood Insurance Rate Maps (FIRM).

⁵ [Census designated place definition](#).

⁶ [FEMA BRIC website](#)

costs include gathering National Environmental Policy Act (NEPA) data, developing a Benefit-Cost Analysis (BCA), preparing design specifications, or conducting workshops related to development and submission of subapplications. However, applicants and subapplicants who are not granted awards or subawards will not receive reimbursement for the corresponding pre-award costs.

Reimbursement of pre-award costs are uncertain and if underserved communities are capital constrained and perceive the likelihood of winning the award as being low, they may not even submit an application. FEMA should investigate through a survey of underserved communities if pre-award cost uncertainty is a primary reason for not applying for BRIC funding. FEMA could provide partial or full pre-award cost reimbursement to underserved communities regardless of whether the BRIC application is selected for funding. These could be structured as pre-award set-asides for underserved communities.

FEMA could also implement a low-cost letter of intent process before the application period to gauge need and desire for assistance. This would only require a short description of the project, a rough cost estimate, and the geography. FEMA and BRIC reviewers could respond to these letters of intent with a signal to signify the likelihood of an application being successful. Another option is to separate the funding into two application periods with one cycle specifically designed for underserved communities in order to remove them from having to compete for funds against better-resourced communities.

1.4. Cost-share requirements are lower for underserved communities but may still be too high.

The BRIC program does have a differential cost-share based on the size and economic status of a community with a 90% federal cost share and 10% non-federal cost share for small and impoverished communities. However, low application rates suggest this differential cost-share is not enough to overcome the barriers applicants face. In addition, if a community does not have increased match funding, they are negatively impacted in the scoring matrix of the application. Therefore, an underserved community with limited funds is automatically at a disadvantage to more competitive applications. FEMA should investigate through a survey of underserved communities to determine if cost-share requirements are a primary reason for not applying for BRIC funding and how to appropriately score the availability of match funding. Based on findings from this survey, FEMA may need to revisit cost-sharing requirements, and reduce non-federal share.

1.5. Using historical structural and contents damages in benefit-cost analysis is not equitable for underserved communities.

FEMA has made a considerable effort to provide the means to conduct a benefit-cost analysis (BCA), the BCA Toolkit 6.0, technical assistance, and extensive documentation on how to conduct a BCA. The benefits in a hazard mitigation BCA varies with the type of mitigation project, but common categories include structure damages, content damages, displacement costs for temporary quarters if a building is damaged, the economic impacts of lost service from a damaged facility, and casualties. To simplify the calculation of benefits,

FEMA provides the Depth-Frequency Assessment (DFA) in the BCA Toolkit 6.0. This tool produces annualized damages with and without the flood protection activity using historical National Flood Insurance Program (NFIP) claims from BureauNet, a web-based database that contains information on all NFIP policies and claims since 1971.

The primary issue here is that historical and current property values and damages from NFIP claims are lower in underserved communities, largely due to the long-running impacts of segregation and redlining, particularly between Black and white communities, discriminatory lending practices, and discrimination in the workplace. The result is that those in underserved communities most vulnerable to losing their wealth and livelihoods in floods are less likely to pass a BCA than a similarly sized, affluent, mostly white community. Historic NFIP property and content damage claims enshrine these inequities and their continued use perpetuate it. Ignoring this will only widen the wealth and income gap for underserved communities.

Notable economists with deep experience with BCA are in agreement that federal agencies should not be bound by strict benefit-cost tests, and that a good analysis also identifies important distributional consequences.⁷ However, there is no consensus among economists on how to incorporate equity into a BCA methodology.⁸

We appreciate that FEMA is in the process of undertaking a more comprehensive assessment of its approach to its agency-specific BCA toolkit, including the equity implications of the existing toolkit metrics and its adaptability for projects which utilize nature-based solutions as a hazard mitigation technique. A potential but non-comprehensive list of alternatives to the current BCA methodology is as follows:

- a. Equity-weight a BCA using previously existing or recent advancements in economics (e.g. weights based on marginal utility of income⁹ or inverse optimum weights).¹⁰
- b. Rank flood exposure distributions generated by different portfolios of projects prior to selection by FEMA in the BRIC context.¹¹ This approach, or one similar, would allow for policymakers to choose a portfolio utilizing both efficiency and equity criteria.
- c. Waive a BCR requirement, use alternative criteria based on need, and create a set-aside for underserved communities to avoid the bias from using property values and allow underserved communities in flood hazard zones to apply for and receive federal flood protection.

⁷ Arrow, Kenneth J., Maureen L. Cropper, George C. Eads, Robert W. Hahn, Lester B. Lave, Roger G. Noll, Paul R. Portney et al. "[Is there a role for benefit-cost analysis in environmental, health, and safety regulation?](#)" *Science* 272, no. 5259 (1996): 221-222.

⁸ Revesz, Richard L., and Robert N. Stavins. "Environmental law." *Handbook of Law and Economics* (2007): 499-589.

⁹ Atkinson, Giles, and Susana Mourato. "Cost-benefit analysis and the environment." (2015).

¹⁰ Hendren, Nathaniel. "[Measuring economic efficiency using inverse-optimum weights.](#)" *Journal of Public Economics* 187 (2020): 104198.

¹¹ Mansur, Erin T., and Glenn Sheriff. "[On the measurement of environmental inequality: Ranking emissions distributions generated by different policy instruments.](#)" *Journal of the Association of Environmental and Resource Economists* 8, no. 4 (2021): 721-758.

1.6. Update BRIC technical and qualitative criteria.

FEMA should update its grant-making evaluation criteria to prioritize applications that address risks in the most socioeconomically vulnerable communities. In its FY20 BRIC application criteria, FEMA included one technical criterion for projects that benefitted a small and impoverished community under Technical Criterion 8 (5 points). FEMA is not statutorily required to limit its technical criteria to small and impoverished communities (as it is with matching funds) and could address racial and socioeconomic disparities by expanding Technical Criterion 8 to award points to projects that address risks in the most economically disadvantaged and vulnerable areas. For example, FEMA could use tools like the National Risk Index or EJSCREEN to prioritize projects in areas with the greatest socioeconomic vulnerability and that face environmental justice and pollution challenges that greatly exacerbate risks from natural disasters.

These disparities in scoring are reflected in the applicants that were awarded funding through the 2020 BRIC national competition, where a majority of the funding (~90%, \$446 million) was made available to only 22 projects selected for further review to potentially be awarded grants. These projects were located in just 10 states, almost exclusively on east and west coasts, with just three high-wealth states receiving a majority of the competitive grant funding available (~54%, \$268.8 million). Lower-wealth states with high vulnerability and exposure to impacts from natural hazards only received a small percentage of funding, most of which came from the \$600,000 directly allocated to each state. Only one non-coastal state was selected for a competitive grant (KY), and no states from the Gulf Coast, US Territories, Alaska or Hawaii were chosen from the competitive grant pool. Additionally, the largest single competitive BRIC grant of \$50 million was awarded to Menlo Park, CA for a flood protection project in an affluent stretch of Silicon Valley along the San Francisco Bay with a median household income of \$160,784. The second-largest competitive grant award was \$39 million for wildfire mitigation to Sonoma County, CA, where the median household income is \$81,018.

Additionally, FEMA only awarded two competitive grants to small and impoverished communities out of a total of 98 applications meeting the definition. Of these 98 applications, 32 met FEMA's program requirements but were denied based upon the technical and qualitative evaluation, and six were denied for failing to meet the eligibility requirements. Additionally, of the applications meeting the small and impoverished definition, 75% were from communities with majority white populations (greater than 80%). These statistics show that FEMA is failing to address racial disparities in the allocation of its funding and failing to direct funding to the communities that face the greatest threats from natural hazards and climate impacts on the basis of socioeconomic vulnerability. FEMA's scoring criteria, and the points awarded through the BRIC national competition, should be closely evaluated to determine whether these are unfairly favoring higher wealth communities with more resources.

In order to meet President Biden's Justice40 commitment to deliver 40% of the overall benefits of relevant federal investments to disadvantaged communities, FEMA must amend its BRIC scoring criteria to further prioritize and drive additional funding to projects benefiting underserved communities, particularly communities of color and frontline

communities facing the first and worst impacts of climate change. Scoring criteria should award points to projects that benefit underserved communities that face the greatest threats from natural hazards and not be limited to small and impoverished communities that receive lowered match requirements under the Stafford Act. FEMA should also address the imbalance created by other technical criteria that weigh in favor of higher-wealth states and localities with greater staff capacity and resources. Presently, the additional points available under the Technical Criteria for small and impoverished communities (5pts) is essentially negated by many other categories which are typically not achievable or able to be met by small and impoverished communities, such as increased cost-share (5 points), building codes requirements (35 points), and where an application is generated by a previous Hazard Mitigation Assistance grant (10 points). Although we understand the desire to incentivize better building codes and to advance projects where FEMA has funded early stages of design and feasibility analysis, these points reward communities that have resources, staffing and technical capacity and directly disadvantage underserved communities, including urban, small and impoverished communities. Therefore, FEMA should re-evaluate whether criteria related to building codes, additional match, and previous HMA applications unfairly favor higher-wealth, higher-resourced communities, and revise its scoring criteria to both incentivize good mitigation practices while also directing resources to the communities with the greatest risk and need.

2. *Are there FEMA programs, regulations, and/or policies that do not bolster resilience to impacts of climate change, particularly for those disproportionately impacted by climate change, and, if so, what are they? How can those programs, regulations, and/or policies be modified, expanded, streamlined, or repealed to bolster resilience to the impacts of climate change?*

2.1. Update 7% discount rate set by OMB to advance climate-resilient natural infrastructure.

Natural infrastructure, also referred to as natural- and nature-based solutions, remains an underutilized hazard mitigation technique by FEMA and other federal agencies such as USACE, despite the many benefits to natural hazard risk-reduction, ecosystem services, cost-effectiveness, and the growing stakeholder demand for FEMA to support funding of natural infrastructure projects.^{12 13} Natural infrastructure solutions have the potential to offer direct flood and other natural hazard risk-reduction benefits as well as co-benefits to underserved communities, such as improved air and water quality, ecosystems services, and recreation. Many of FEMA's funding eligibility decision processes are subject to cost-effectiveness review guided by OMB Circular A-94, and its related discount rate of 7%.

Natural infrastructure solutions are different from traditional grey infrastructure as they often become more effective after initial growth periods with their ability to reduce natural

¹² See Reguero B.G., Beck M.W., Bresch D.N., Calil J., Meliane I. Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States (2018). PLoS ONE 13(4): e0192132. <https://doi.org/10.1371/journal.pone.0192132>

¹³ See FEMA, Federal Insurance and Mitigation Administration (FIMA) Summary of Stakeholder Feedback Building Resilient Infrastructure and Communities (BRIC) (2020). https://www.fema.gov/sites/default/files/2020-06/fema_bric-summary-of-stakeholder-feedback-report.pdf

hazard threats, like flooding and storm surge, actually increasing over time. For example, features like oyster reefs and wetlands grow physically over time, increasing their efficacy to attenuate wave energy or store floodwater. Since these projects have immediate benefits with additional benefits that continue to accrue years into the future, they are disadvantaged by a 7% discount rate selection, underpinning the need to have an appropriate lower discount rate and cost-effectiveness evaluation for nature-based solutions. However, as FEMA BCA methodology is required to use the 7% discount rate set by OMB Circular A-94, even substantial benefits in the medium to long run do not enter meaningfully into the BCA.

Natural infrastructure also provides many co-benefits to human health and recreation opportunities, creation of fish and wildlife habitat, water and air quality improvement, and community recreational benefits which are not accurately accounted for under FEMA's current benefit valuation. The limited benefits which are counted are quickly artificially discounted under the current 7% discount rate directed by Circular A-94. Nature-based projects also act as carbon sequestration sites, performing climate regulation services that will greatly benefit future generations – another benefit that is not adequately represented with application of the current discount rate. Not fully accounting for these benefits with an appropriate and tailored cost-effectiveness methodology, including an appropriate lower discount rate, results in an incomplete and distorted cost-effectiveness estimate. Re-evaluating the policies applied to these nature-based projects is critically important as communities vulnerable to natural hazards are looking for adaptive, multi-beneficial solutions to build climate resilience.

Notably, Circular A-94 has not been updated since 1992, nearly 30 years ago. Much has changed in the last 30 years, including our understanding of economic analyses and the economy overall – including dramatically reduced (near zero) interest rates. Therefore, FEMA should work with OMB to reevaluate and update OMB Circular A-94, and in particular the discount rate that it contains, to improve outcomes for nature-based mitigation activities and equitably value resilience projects in disadvantaged and low-income communities. The water planning discount rate is currently 2.5%,¹⁴ and there is theoretical justification in economics to set a lower discount rate the longer the lifespan of a project.¹⁵ This action would be in line with recent Administration EOs, and would support FEMA's overall mission of equitable federal investment in a climate-resilient nation.

In 2019, FEMA's National Advisory Council, composed of senior officials from major disaster recovery efforts, specifically cited the outdated 7% discount rate as a major barrier to truly cost-effective and beneficial mitigation projects. They recommended development of a reassessed benefit-cost analysis methodology with a lower discount rate of 1% to 3% be considered by FEMA for mitigation projects.¹⁶ Under the Obama Administration, the President's State, Local, and Tribal Leaders Task Force on Climate Preparedness and

¹⁴ See [Change in Discount Rate for Water Planning](#), 2020. Reclamation Bureau.

¹⁵ See Weitzman, M. L. (1998). Why the far-distant future should be discounted at its lowest possible rate. *Journal of environmental economics and management*, 36(3), 201-208.

¹⁶ See National Advisory Council, Report to the FEMA Administrator (2019). https://www.fema.gov/sites/default/files/2020-08/fema_nac-report_11-2019.pdf

Resilience report recommends consideration of lowered discount rates for long-term investments where benefits are expected to accrue over a large period of time, particularly those like natural infrastructure that result in longer-term climate resilience.¹⁷ Leading economists have also provided theoretical justification for lower discount rates for projects with long lifespans when discount rates are uncertain.¹⁸ ¹⁹ Additionally, many other groups, including the Association of State Floodplain Management, Georgetown Climate Center, and even the Congressional Research Service, have raised concerns over the current applicability of the long standing outdated 7% discount rate to long-term investments, particularly for resilience projects which are effective at reducing future risk due to climate change and climate-exacerbated natural hazards.²⁰ ²¹ ²²

2.2. Potential modifications to BRIC Technical criteria on natural infrastructure.

EDF supports the requirement for FEMA mitigation project eligibility to demonstrate feasibility and effectiveness at reducing risk, which should continue to be one of the most important elements of an effective mitigation project application. This is also one of the largest point categories under the BRIC Qualitative evaluation and contributes significantly to the BRIC Technical evaluation. Nature-based solutions are somewhat novel in their direct application to hazard risk reduction, with limited quantitative long-term studies evaluating and documenting the demonstrated effectiveness against large scale natural hazards. All hazard mitigation projects must demonstrate feasibility and effectiveness through engineering designs from a registered Professional Engineer or be in compliance with accepted Building Codes and Standards. There are currently no codes or standards that apply to natural infrastructure, so demonstrating effectiveness for nature-based solutions typically entails a complicated and expensive Hydrology and Hydraulic modelling (H&H) to demonstrate effectiveness to FEMA – studies that are time consuming and inaccessible for many communities. Providing the documentation that natural infrastructure as proposed is technically feasible and effective at reducing risk under the specific designed scenario is currently one of the largest barriers to implementing nature-based solutions through FEMA programs.

FEMA should give explicit guidance on how to demonstrate effectiveness and feasibility specifically for natural infrastructure and non-structural projects, beyond stating that it should be demonstrated “through conformance with accepted engineering practices,

¹⁷ See President’s State, Local, and Tribal Task Force On Climate Preparedness and Resilience. Recommendations to the President Report (2014).

https://obamawhitehouse.archives.gov/sites/default/files/docs/task_force_report_o.pdf

¹⁸ See Weitzman, M. L. (1998). Why the far-distant future should be discounted at its lowest possible rate. *Journal of environmental economics and management*, 36(3), 201-208.

¹⁹ See Newell, R. G., & Pizer, W. A. (2003). Discounting the distant future: how much do uncertain rates increase valuations?. *Journal of environmental economics and management*, 46(1), 52-71.

²⁰ See Georgetown Climate Center. Preparing Our Communities for Climate Impacts (2014).

<https://www.georgetownclimate.org/files/report/GCC%20-%20Recommendations%20for%20Federal%20Action%20-%20September%202014.pdf>

²¹ See ASFPM, Discount Rate Position Paper (2008). https://asfpm-library.s3-us-west-2.amazonaws.com/ASFPM_Pubs/ASFPM_Discount_Rate_Whitepaper_2008.pdf

²² See Jane A. Leggett, CRS, Climate Change: Conceptual Approaches and Policy Tools. August 29, 2011 CRS No. R41973. <http://www.fas.org/sgp/crs/misc/R41973.pdf>

established codes, standards, modeling techniques, or best practices.”²³ Results and outcomes from feasibility and effectiveness studies on nature-based systems should also be used to inform future pre-calculated benefits and inform burden reduction efforts for applicants in the future. It should be noted that additional technical policy guidance can be difficult for inexperienced applicants and sub-applicants to translate into effective mitigation project applications and apply to real-life circumstances; additional technical assistance will likely be needed.

2.3. Establish a nature-based demonstration program within BRIC.

FEMA’s limited authority under the Stafford Act hinders its ability to provide grants and technical assistance to nonprofit and academic partners that can build a bigger bench of practitioners working hand in hand with communities to advance innovative resilience projects, including nature-based solutions. These types of partner organizations can add needed capacity and expertise to under-resourced local governments, particularly valuable for underserved communities, and can help in all stages of project development, including planning, technical feasibility and BCA, community engagement, matching funds, design, and construction. State emergency management agencies (EMAs) are typically less familiar, or not at all familiar, with nature-based solutions for hazard mitigation in comparison to grey mitigation techniques. Most state EMAs have less experience with nature-based techniques and may be reluctant to prioritize a nature-based mitigation project as a priority when pooling and ranking subapplication packages to submit for FEMA funds. Without state EMA support for and comfort with nature-based solutions, communities may be barred or receive low ranking from their state EMA when submitting nature-based proposals to FEMA’s national competition. Additionally, technical reviewers on FEMA’s panel evaluating the projects for awards may not have experience or expertise in reviewing and evaluating nature-based solutions. By increasing familiarity and the body of knowledge of nature-based solutions in the emergency management community and at FEMA, natural solutions will become a more commonly accepted technique to address resilience issues nationwide.

FEMA should work with Congress to seek reforms to the Stafford Act that would enable it to support public-private partnerships that can bring technical expertise and capacity to help underserved communities advance nature-based resilience projects for funding. Specifically, Congress could authorize FEMA to set aside a portion of BRIC funding to be administered by the National Fish Wildlife Foundation (NFWF) as a multi-year demonstration grant program for nature-based solutions. This would bring NFWF’s unique expertise to efforts to promote nature-based mitigation projects, help develop a pipeline of “shovel-ready” projects that can be supported in future BRIC grant cycles, build capacity at all levels of government, and help to demonstrate the efficacy and multiple benefits delivered by these types of projects. NFWF has a history and the federal authority to partner with federal agencies to administer competitive grant programs, as well as long-demonstrated experience with nature-based solution projects. NFWF currently partners with agencies like NOAA, EPA, and DOD to administer the National Coastal Resilience

²³ See HMA Guidance Part II, Section D (2015). https://www.fema.gov/sites/default/files/2020-07/fy15_HMA_Guidance.pdf

Fund, as well as multiple other grants. NFWF also has a large network of private partners that typically provide a 1:1 match to federal dollars (higher than that required by FEMA). By monitoring the success of implemented projects through this program, NFWF could help advise FEMA on ways to ensure the application process, technical feasibility/effectiveness requirements, and economic metrics used to evaluate projects in the BCA and project review does not disadvantage nature-based projects, and instead incentivizes natural solutions where appropriate for hazard risk reduction.

Alternately, simply by setting aside a portion of BRIC funds exclusively for nature-based projects – a model used by other federal programs such as the Clean Water State Revolving Fund – FEMA could incentivize states to explore nature-based projects for risk reduction and help build the capacity of state, local and federal decision makers. These specific nature-based allocations could enable FEMA and the larger EMA community to build up a portfolio of natural-based project types, gain experience in review and implementation of these projects, and expand community trust and interest in nature-based solutions.

2.4. Pre-calculated benefits for ecosystem services provided by natural infrastructure.

It is important that FEMA prioritize credible and rigorous monetary estimates for ecosystem services provided by natural infrastructure solutions and elevate these estimates into BCAs. Including ecosystem services will allow for solutions involving natural infrastructure to be developed and their value recognized. We encourage FEMA to adopt science-based methods for calculating future benefits of natural infrastructure that take into account changing future conditions (e.g., see methods used in Watson, Ricketts, Galford, Polasky and O’Niel-Dunnec 2016). EDF applauds FEMA for implementing its Ecosystem Service Benefits in Benefit-Cost Analysis for FEMA’s Mitigation Programs Policy, FEMA Policy FP-108-024-02, an important change to FEMA’s BCA Toolkit that removed some hurdles for nature-based projects by allowing accrual of benefits through ecosystem-services from the start of calculations. However, even with FEMA’s recent policy change, multiple roadblocks remain to fully equitable consideration of nature-based solutions for FEMA-funded mitigation projects. Currently the BCA Version 6.0 toolkit only considers ecosystem services’ values for ‘green open space’, ‘riparian’, ‘wetlands’, ‘forest’, and ‘marine and estuary’ areas, limiting consideration of other options. FEMA should work with National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service (USFWS) to update ecosystem and social service values utilizing the best-available science, providing complete valuation of the multitude of benefits nature-based solutions provide to communities. In addition, FEMA’s ecosystem and social service benefit values should have the option to “write your own” values with proper documentation for regional specificity and additional project types, as is available for other elements of the BCA Toolkit.

The BRIC program BCA requires municipalities and states to estimate the value of ecosystem services. These calculations can be difficult and can require the expertise of expensive outside consultants. This could be a hurdle for underserved communities without funding or access to the necessary expertise to estimate potentially significant but

hard-to-quantify benefits. FEMA should provide scientifically sound, pre-calculated benefits for ecosystem services to include in BCA for BRIC flood control projects.

2.5. Increase guidance and technical assistance for natural infrastructure.

We applaud FEMA on the recent release of “Building Community Resilience with Nature-Based Solutions: A Guide for Local Officials,” a resource that provides useful background on the benefits of nature-based solutions.²⁴ However, we note that there are only three short paragraphs in the guide (pg. 26) that include information directly related to nature-based solution funding through HMA and Public Assistance programs, providing no details on application formulation for nature-based projects. Many communities may have the desire, knowledge, and ability to construct and implement effective nature-based solutions for risk reduction, but continue to struggle without sufficient guidance to assist them in writing applications for nature-based solution projects to submit to FEMA’s mitigation grant programs like BRIC.

FEMA should provide applicants with a variety of example applications so that communities, especially those who are unfamiliar with FEMA’s grant application process, can see what a successful application entails. These examples should cover all common project types, including a variety of nature-based solutions, and provide explanations and resources (like those currently found in the BCA Toolkit) that show how and where the values in the application were obtained. FEMA should collaborate with other federal agencies, such as NOAA and USFWS, in formulating example nature-based solution project applications. Additionally, highlighting areas where successful applications gained points for the Technical and Qualitative Review through BRIC would be highly beneficial for applicants. These examples should come from a wide variety of types of communities including, rural, Tribal, low-income, unincorporated towns, and remote island territories. Some states currently provide examples to applicants through their state EMA; however, all states do not have the same resources to provide sub-applicants assistance, creating an advantage for sub-applications from states with robust technical assistance and capacity available through their state EMA.

2.6. Increase accessibility and frequency of technical assistance.

FEMA has a multitude of programs, each with different bureaucratic and technical requirements. This presents challenges for even the most well-equipped emergency managers, and certainly presents a major obstacle for individual citizens working to receive aid following a natural disaster. FEMA’s technical requirements for accessing grant programs, particularly hazard mitigation grants, are especially onerous and create unnecessary barriers to entry for underserved communities. For example, FEMA applicants require complicated analysis of the technical feasibility and cost effectiveness of the project, which can often require onerous data collection, detailed hydrology and hydraulics (H&H) modeling, and complicated benefit-cost analysis (BCA). Completing these tasks often requires hiring consultants with significant expertise in engineering and economic analysis, and these costs are out of reach for many communities – including

²⁴ See [Building Community Resilience with Nature-based Solutions: A Guide for Local Communities](#)v.

both smaller rural communities as well as larger, impoverished urban communities. These communities often do not have the staff or financial resources needed to complete the analysis required to show technical feasibility and cost effectiveness and to pull together a successful application for hazard mitigation funding. This barrier to entry was demonstrated by the sheer number of applications, particularly in lower wealth states, that were rejected for failing to meet technical requirements during the FY20 BRIC cycle. FEMA must address these barriers across all funding programs and with a particular focus on competitive grant programs like BRIC.

FEMA should not assume that one size fits all when it comes to aid, technical assistance, or training. Often community groups, faith leaders, and local organizations have a better grasp on what communities need. EDF encourages FEMA to continue and expand its work of listening to communities and letting them direct needs. FEMA should provide more robust pre-disaster preparedness and pre-disaster mitigation programs on the ground for municipalities' leadership and community members. These trainings will familiarize residents with what programs are available to them pre- and post-disaster. Currently, most of FEMA's training is online, which allows for little to no customization or opportunity to ask questions. Trainings located at the Emergency Management Institute may be inaccessible for many small and impoverished community members. Additionally, FEMA should focus direct technical assistance on underserved frontline communities that are most physically and socioeconomically vulnerable to natural hazards. This could also be achieved by providing multi-year grant resources to state or regional staff with better location and community-specific knowledge, to work directly with communities for multiple years to build more robust preparedness and mitigation grant capabilities and advance community and climate resilience.

FEMA should increase its capacity to offer technical assistance on a larger scale and more frequently. Expanding technical assistance would enable communities to frontload the analyses needed to evaluate a project's efficacy and costs and benefits, which often must be completed many months before an application cycle begins. Additionally, because the timelines between when a notice of funding opportunity is released and applications are due to FEMA are relatively short (and even shorter when accounting for earlier state deadlines), state and local applicants often must have fully formed project ideas ready to be able to advance a project that can be competitive for these grant programs. FEMA should offer technical assistance on a rolling basis, rather than in one-time offerings aligned with grant application cycles, to help applicants develop project ideas that can be advanced in future funding cycles. Additionally, FEMA should consider contracting with firms or nonprofit organizations able to support state and local governments with technical analyses and BCAs necessary to advance a competitive hazard mitigation or resilience project. These technical support services should prioritize underserved communities at the local level, particularly those who have faced systemic racism and impacts from redlining and chronic underinvestment.

FEMA should also work to reduce technical barriers to accessing FEMA funding by simplifying the technical feasibility analyses required to submit grant applications. FEMA could provide more funding to help communities undertake early design stages of work, including technical feasibility analyses, thereby developing a pipeline of projects ready for

future rounds of funding. As communities grapple with how to address increasing risks from natural hazards due to climate change, funding for early design phases and feasibility analyses will be particularly important to ensure localities can develop innovative resilience projects that meet their community needs and future climate risks. By requiring detailed feasibility analyses to even access FEMA funding, FEMA is creating barriers for underserved communities as well as discouraging innovative approaches for addressing climate risks such as nature-based solutions.

We appreciate the opportunity to provide input and thank you for tackling these important issues. EDF would welcome the opportunity to serve as a resource to FEMA in the critical and urgent work to build a more equitable and resilient nation.

Thank you for your consideration.

Sincerely,

Natalie Snider,
Senior Director, Coastal Resilience
Environmental Defense Fund