

Executive Summary

for

School Infrastructure Recovery and Resiliency

Programmatic Environmental Assessment

Introduction

The mission of the Federal Emergency Management Agency (FEMA) is to help people before, during, and after disasters. Since 2017, the President signed multiple disaster declarations for Puerto Rico in response to various disaster events. These disaster events included Hurricane Irma and Hurricane Maria, both of which affected Puerto Rico in September 2017, and the increased seismic activity Puerto Rico experienced between 2019 and 2020. These disasters caused varying degrees of damage to schools across Puerto Rico.

The declarations authorized federal public assistance to affected communities and certain non-profit organizations per FEMA, and in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, (42 U.S.C. §§ 5121-5207); the Sandy Recovery Improvement Act of 2013; and the Bipartisan Budget Act of 2018 (Pub. L. 115-123). The Puerto Rico Central Office of Recovery, Reconstruction and Resiliency is the recipient for FEMA grants, and multiple entities within Puerto Rico may be subrecipient for specific projects.

This Programmatic Environmental Assessment (PEA) is prepared in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended; and the regulations for implementation of NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508). Recent changes to the President's Council on Environmental Quality regulations implementing NEPA became effective on September 14, 2020 (85 Fed. R. 43304-76 (July 16, 2020)). As stated in 40 CFR § 1506.13, the new regulations apply to any NEPA process begun after September 14, 2020. This PEA substantively commenced prior to that date; therefore, this PEA conforms to the Council on Environmental Quality NEPA implementing regulations that were in place prior to September 14, 2020, and procedures adopted pursuant to Department of Homeland Security Directive 023-01, Rev. 01, and FEMA Directive 108-1. In accordance with above referenced regulations, directive, and instruction, FEMA evaluates and considers the environmental consequences of major federal actions it funds or undertakes.

This PEA considers the potential environmental impacts of potential project alternatives, including a no action alternative, to repair or relocate schools in Puerto Rico and to determine whether to revise the PEA, prepare a finding of no significant impact, or initiate an environmental impact statement.

If a proposed project meets the scope, impacts, and mitigation described in this PEA, FEMA will then conduct any remaining project-specific reviews and consultations with federal regulatory partners. The subrecipient for such proposals will conduct consultation and permitting with municipal and Puerto Rican agencies prior to construction. Projects that exceed the thresholds or have impacts greater than considered in this PEA may result in a project-specific tiered environmental assessment (EA) or stand-alone project-specific EA. Appendix A of the PEA includes conditions under which FEMA may tier an EA from this PEA. Project proposals that

FEMA determines cannot meet a Finding of No Significant Impact will require an EIS, or FEMA may choose to not fund such a project.

Purpose and Need

Wind, rain, and floodwater from hurricanes Irma and Maria caused widespread damage to schools throughout Puerto Rico. Subsequent increases in seismic activity further exacerbated the physical condition of Puerto Rico's Pre-Kindergarten through 12th grade schools (PreK-12). The purpose of the programmatic actions considered herein is to restore the capacity of Puerto Rico's PreK-12 schools to meet the post-disaster needs of the subrecipients and increase the resiliency of their facilities in response to future disaster events. Under the Stafford Act, FEMA is authorized to provide grant funding to eligible subrecipients for cost-effective actions with the purpose of reducing or eliminating risks to life, property, and the environment. FEMA's programs of Public Assistance Alternate Procedures, Sections 404 and 406 Hazard Mitigation under the Stafford Act, and the Bipartisan Budget Act of 2018, each encourage flexibility in disaster recovery.

Following hurricanes Maria and Irma in 2017 and the earthquake events of 2019 and 2020, over 1,000 schools reported damages to their facilities. As a result, some schools were forced to close and have not yet reopened. The need for action is to equitably re-establish and restore disaster-impacted schools to current codes and standards, reopen facilities closed as a result of disaster events, and provide hazard mitigation to increase resiliency in response to future disaster events. In doing so, schools will be able to serve as resilient functional community centers during times of crisis as well as be able to resume in-person learning sooner, following disaster events. If, instead of implementing one of the alternatives covered under this PEA for a disaster-impacted school, a new action is proposed, then it would undergo a separate NEPA evaluation.

Project background

Following hurricanes Maria and Irma and earthquake events for Puerto Rico, FEMA prepared this PEA to address affected PreK-12 schools. Puerto Rico divides the school system into pre-kindergarten schools, kindergarten through 12th grade high school, and higher education colleges and universities. The individual schools may be part of the preK-12 public schools, private non-profit (PNP), and Montessori style preK-12 schools, PNP colleges and universities, or part of the public University of Puerto Rico system. Religious organizations staff and administer many of the PNP schools. This PEA covers PreK-12 public and PNP schools.

The Puerto Rico Department of Education (PRDE) and the Puerto Rico Education Council oversee PreK-12 public education within Puerto Rico. PRDE manages all public elementary and secondary schools; while the Puerto Rico Education Council oversees all academic standards and issues licenses to operate public schools and institutions within Puerto Rico. To manage Puerto Rico's public-school system more effectively, PRDE has established seven education regions: *Arecibo, Bayamon, Caguas, Humacao, Mayaguez, Ponce, and San Juan*. Public school facilities within Puerto Rico are owned by either the Puerto Rico Buildings Authority or the Puerto Rico Department of Transportation and Public Works. The Puerto Rico Buildings Authority is the legal custodian of all government owned real estate within Puerto Rico. In addition to public schools, there are a number of private schools operating within Puerto Rico. Private schools consist of both religious and non-religious institutions with the Catholic school system representing the most

prominent non-public school system in Puerto Rico. Catholic PreK-12 schools in Puerto Rico fall under the management of the Superintendent of Catholic Schools for Puerto Rico. PRDE currently manages 1,109 schools while there are approximately 123 PNP preK-12 schools, for a total of 1,232 preK-12 schools in Puerto Rico.

Between 2006 and 2018, the number of open schools declined by about 56%. Of the closings, 65% were in rural areas and 35% were in urban areas. Following Hurricane Maria, impacts to schools were widespread. PRDE closed all schools during the disaster except those utilized as shelters. One month after Hurricane Maria's landfall, PRDE had only reopened 9% of their schools for in-person learning. By early December 2017, 90% of PRDE's schools had reopened for classroom learning. Since Hurricane Maria, PRDE has classified 38 schools as irreparably damaged. Following the increase in seismic activity between December 2019 and January 2020, Puerto Rico closed many of its schools due to earthquake and aftershock related damage. The earthquakes caused damages which were primarily confined to the southwestern portion of the main island.

Since Hurricane Maria, Puerto Rico has experienced a decrease in the amount of money spent on schools as well as decreased student enrollment. Puerto Rico's decrease in education expenditures was greater proportionally than their decrease in enrollment, resulting in a 12.8% decrease in the amount of money Puerto Rico spends per public school pupil between 2017 and 2018.

In December 2015, the Every Student Succeeds Act (ESSA) replaced the No Child Left Behind Act as federal education law and reauthorized the 50-year-old Elementary and Secondary Education Act. The new law had a clear goal of ensuring that the public education system prepares every child to graduate from high school, ready to thrive in college and their careers. The ESSA includes provisions that promote equitable access to educational opportunities. These provisions include holding all students to high academic standards and ensuring that the public education system takes meaningful action to improve the lowest-performing schools and schools with underperforming student groups.

On January 17, 2018, the Governor of Puerto Rico and Puerto Rico's Secretary of Education approved the Puerto Rico Consolidated State Plan (CSP) prepared by PRDE. The CSP is a requirement of the 2015 ESSA and applies only to public schools, and not to PNPs. According to the CSP, Puerto Rico indicated school consolidation is necessary to reorganize and improve Puerto Rico's school system. Public outreach under the CSP occurred between 2016 and 2017 and involved consultation with educators, parent organizations, and elected officials. During PRDE's stakeholder engagement, student attendance rates, school climate, violent incident records, parent involvement, teacher preparation, and teacher attendance rates were identified as top priorities for addressing Puerto Rico's lagging public education system.

As part of PRDE's comprehensive restructuring outlined in the approved CSP, the agency's school improvement efforts under the 2015 ESSA were based on the following recommendations:

- Close low-performing schools; and
- Consolidate schools by sending students to higher-performing schools, schools with the capacity to achieve positive outcomes, and schools that have sufficient enrollment to support cost-effective implementation of new academic programs.

Following the signing of the CSP in 2018, PRDE reduced the number of schools that would be open for the 2018-2019 school year from 1,109 to approximately 844. All 1,232 PRDE and PNP-managed PreK-12 schools in Puerto Rico are covered by this PEA, regardless of whether they were closed due to disaster damage or for other reasons.

Description of Alternatives

FEMA developed the following alternatives based on anticipated project proposals to satisfy the purpose and need of this PEA. The Alternatives will assist the recipient and subrecipients in addressing schools impacted by hurricanes Irma and Maria, as well as the subsequent seismic activity. Within this PEA, “schools” are comprised of the buildings, roads, walkways, athletic facilities, landscaping, playgrounds, and all other infrastructure that together make up a school campus.

Implementation of action alternatives will support federally funded projects and mitigate future impacts from flooding, wind, and seismic events by increasing the resiliency of schools. The alternatives presented include a no action alternative, otherwise known as the “Future without Federal Protection Condition,” and three action alternatives. The action alternatives presented in this section are inclusive of all portions of project development, including planning and design, engineering, repair, demolition, construction, and regulatory compliance.

For actions at existing facilities, FEMA is considering expansion of location, capacity, and density up to 20%, aligning with Department of Housing and Urban Development standards in 24 CFR Parts 50 and 58. FEMA is considering ground disturbance up to five acres in urban areas and up to two acres in rural areas. The five-acre threshold aligns with categorical exclusions of other agencies, determining that, in the absence of extraordinary circumstances, do not have a significant impact to the human environment by themselves. FEMA is selecting a more conservative two-acre threshold to minimize impacts to undisturbed areas and for scale of actions that may warrant a closer look. These thresholds are inclusive of ground disturbing activity, such as establishing staging areas, temporary construction activities, site access, and site construction.

Alternative 1: No Action Alternative

Under the no action alternative, FEMA will not provide grant funding for permanent work including reconstruction, relocation, and/or hazard mitigation of schools in Puerto Rico. Due to budgetary constraints within Puerto Rico, FEMA anticipates these projects may go unfunded or deferred indefinitely. Under the no action alternative, the governments of Puerto Rico and their respective agencies will be responsible for funding any necessary school repairs and hazard mitigation efforts. Any schools with temporary, emergency measures in place following disaster events are likely to remain in their current physical condition. During the 2020-2021 school year, PRDE opened 844 of their 1,109 schools. The remaining schools are vacant because of consolidation and/or damages. Under the no action alternative, schools damaged and not in use will remain a hazard to their community or unable to fulfill their intended use until subrecipients are able to identify funding solutions.

Alternative 2: Repair of Schools with added Resiliency Measures

The activities satisfied by Alternative 2 will involve repairing schools to their pre-disaster function, as well as, improving their resiliency in response to future disaster events. Schools, under Alternative 2, will remain in their same location; however, this Alternative allows for expansion of schools up to 20%, except for those in the floodway or coastal high-hazard area. Expansion of schools is not allowed in the floodway or coastal high-hazard area.

This alternative includes demolition and rebuilding of schools on the same property, except when the site is in the coastal high-hazard area or the floodway. Title 44 CFR § 9.11(d)(1) prohibits FEMA from rebuilding a school in the floodway or coastal high-hazard area.

Under this alternative, the subrecipient could repair schools that have minor damages and are within the 100-year floodplain. However, the subrecipient could be required to relocate schools that have substantial damages and are within the 100-year floodplain, unless no practicable alternate location exists. This also applies to schools within the 500-year floodplain if the school meets the definition of a critical action, such as those serving as emergency shelters. Relocation of schools is discussed further under the impact analysis for Alternative 3.

Common Actions: The following are common actions that may be associated with repair of schools with added resiliency measures.

- Mobilization of construction equipment and materials to project sites, establishment of staging areas, demolition of existing structures, performance of concrete and asphalt work, and post-construction site restoration.
- The upgrade of school facilities to the current building codes and standards which provide minimum requirements to safeguard public health, as well as the safety and general welfare of building occupants.
- Compliance with the Americans with Disabilities Act.
- Engineering design services, such as Hydrologic and Hydraulic (H&H) studies, seismicity surveys, geotechnical subsurface explorations, topographical surveys, life-cycle cost analyses, energy efficiency studies, and feasibility analyses.
- Site work may include surface grading, conduit replacements, trenching, concrete applications, cutting and resurfacing of pavement or curb and gutter, and hardware placement.

Construction or Installation of Additional Facilities: This may include construction of additional classrooms, administrative offices, or operational infrastructure. In addition to facilities constructed in-place, Alternative 2 includes the installation of prefabricated modular classrooms or offices. Associated actions will include the installation of all mechanical, electrical, and plumbing necessary to operate a modern school.

Upgrade of Utilities and Stormwater Management Systems: Principal activities will involve replacing or hardening existing utility networks. Alternative 2 actions will likely involve tying

into existing offsite networks operated by municipal and Puerto Rico-wide providers. Under this PEA, utility networks include telecommunication systems, power, backup power, potable and wastewater systems, stormwater management systems, and heating, ventilation, and air conditioning systems. Upgrades to telecommunication networks, potable water, wastewater, and stormwater systems could involve open cut trenching and replacement of existing pipes with right-sized piping that meets current codes and standards. Associated activities may involve establishment of staging areas; removal of piping and pumps; installation of piping and pumps; and the disposal of old piping, broken pavements, and old pumps. New stormwater systems will include conduits, water overflow ponds, trenches, and gutters, manholes, grates, and appurtenances.

Installation of Microgrids: Alternative 2 includes microgrid installation to provide more resilient, continuous power for schools when the larger power grid is unavailable. This would reduce learning disruptions from extended power outages. Microgrid systems may include installation of solar panels, wind turbines, or other renewable energy sources and can provide grid resilience, mitigate disturbances caused by natural disasters, and allow for faster system response and recovery. Microgrid systems could include solar panels, battery storage, feeder automation control systems, load control equipment, and other renewable energy sources. The subrecipient would protect any batteries, inverters, and associated equipment for microgrid systems from impact from flooding appropriate to the site.

Elevation of Schools: Alternative 2 actions involve the elevation of facilities and associated infrastructure above the current Base Flood Elevation when no practicable alternate location exists outside of the floodplain. Examples of operational infrastructure include buildings, backup power equipment, elevators, and utilities. For Scopes of Work (SOW) involving elevating school facilities, subrecipients may need to install new foundations or structural pilings. Projects involving elevating school facilities may include the following activities:

- Elevating school facilities may include the elevation of slab-on-grade buildings. The subrecipient's engineer will be responsible for inspecting the structural integrity of all buildings to determine whether the slab is sufficient to support the elevated structure without the continuous support of the underlying soil.
- The separation of frame, masonry veneer, and masonry buildings and facilities from their foundations; and use of heavy equipment and hydraulic jacks for the purpose of elevating facilities to their required height above the Base Flood Elevation.
- The installation of a temporary support system that will hold a structure in place while the subrecipient's contractor installs a new or extended foundation below. The new support system may consist of continuous walls or separate piers, posts, columns, or piles.
- Additional actions under this category may include removing a roof and raising a building's operational space, either by extending the walls of the building and raising the floor or by abandoning the lower level and moving the operational space to an existing or newly constructed upper floor.

Non-residential wind retrofit of School Facilities: For wind retrofit projects satisfied by Alternative 2, each SOW must include retrofit measures to address roof retrofits, openings

protection, and load path improvements. Additional SOW under this class of actions will involve mitigating constructed steel frames, concrete, and reinforced masonry construction.

Earthquake retrofit of Schools Facilities: Actions under Alternative 2 may include the application of structural supports to existing school facilities. Some common retrofitting improvements may include foundation stabilization, foundation anchoring, continuous load path integration, and improvements to structural systems.

Installation of Flood Protection Measures: Actions under Alternative 2 may include flood mitigation measures such as the installation of floodwalls, floodproofing, and temporary barriers. The subrecipient's engineer will be responsible for the design of flood protection measures and coordinate with the Puerto Rico Planning Board (PRPB) to ensure compliance with National Flood Insurance Program. The installation of perimeter flood walls may be comprised of either wire mesh-lined flood barriers or concrete walls. Typical construction activities associated with flood protection measures will include excavation, foundation preparation, access road installation, and site boundary establishment.

Installation of Safe Room or Tsunami Refuge: Actions under Alternative 2 may include constructing a safe room or hardening of existing facilities in whole or in part following FEMA design guidance. Actions may also include the construction of tsunami refuge to serve as a safe haven until the most imminent danger has passed. Construction of either would include any associated utility connections for emergency and redundant power, communications, water, wastewater, and any other essential support for the use of the safe room or refuge for the intended populations.

Alternative 3: Relocation of Schools

Alternative 3 allows for moving the function of a school to a new property which could include consolidation of one or more schools into an existing one, physical relocation of a whole facility to a new site, or selection of a new site for new construction. Consolidation of schools to an existing site is subject to the 20% expansion of the existing location, capacity, or density. Relocation of school functions could be to an existing school or to an existing developed site not currently used as a school and would include associated build-out of the site. Construction of new schools at a new location would be subject to the acreage limits based on rural and urban area. Construction of a new school within the floodway or coastal high-hazard area is not allowed under this alternative. Relocation of a school into the floodplain would only occur if there were no practicable location that met the needs of the community.

Common Actions: The following are common actions that may be associated with either the relocation of school operations to an existing facility, relocation of an existing structure, or new school construction:

- Engineering design services, such as H&H studies, seismicity surveys, geotechnical subsurface explorations, topographical surveys, life-cycle cost analyses, energy efficiency studies, and feasibility analyses.

- Mobilization of construction equipment and materials to project sites, establish staging areas, conduct demolition of existing structures, perform concrete and asphalt work, and post-construction site restoration.
- Site work may include surface grading, excavation, conduit replacements, trenching, concrete applications, cutting and resurfacing of pavement or curb and gutter, and hardware placement.
- Alternative 3 actions may require the acquisition of land or structures for the relocation of an entire school or a component of a school facility. Any acquisition of land will adhere to federal, territorial, and local regulations for the acquisition of lands.
- Under Alternative 3, subrecipients that choose to abandon a facility must render the original site safe and secure to ensure that it does not present a threat to public health and safety. Such activities could include, but are not limited to, fencing, boarding windows and doors, securing utilities, providing adequate ventilation, removing potential hazards to public health, structural stabilization, and maintenance and monitoring plans. Any future use or transfer of property must adhere to applicable federal, Puerto Rico, and local regulations.
- Actions associated with the demolition of facilities will likely involve the removal of aboveground structures, removal of associated facilities, filling in of basements, removal or capping of utilities and septic tanks, and removal and disposal of asbestos or similar hazardous building materials. Demolition activities under Alternative 3 will likely include the use of heavy machinery for construction and demolition activities.
- Construction and demolition debris generated by Alternative 3 actions will be disposed of at Puerto Rico Department of Natural and Environmental Resources (PRDNER)/Puerto Rico Environmental Quality Board (PREQB) permitted disposal staging areas, landfills, and associated recycling facilities.

Relocation to an Existing Facility: The following activities are associated with the relocation of school operations to an existing school or an existing non-school site:

- **Upgrade of Utilities and Stormwater Management Systems:** These activities would be the same as Alternative 2.
- **Installation of Microgrids:** These activities would be the same as Alternative 2.
- **Expansion of Existing Facilities for School Relocation:** Alternative 3 allows for the expansion of existing facilities. This may include construction of additional classrooms or administrative offices as well as, support infrastructure for schools. Alternative 3 actions include both facilities constructed in-place as well as, prefabricated modular classrooms or offices. Construction activities will likely require minor to moderate excavations, installation of temporary and permanent access roads, and placement of concrete footers and pads or fill material. Associated actions will include the installation of mechanical, electrical, and plumbing infrastructure needed to ensure that schools meet current building codes and standards.

- **Installation of Flood Protection Measures:** These activities would be the same as Alternative 2.
- **Installation of Safe Room or Tsunami Refuge:** These activities would be the same as Alternative 2.

Physical Relocation of an Existing Structure: This option involves heavy equipment to move existing structures to a new site. Other than transportation of the structure, these actions will be the same as elevation of structures under Alternative 2. The subrecipient's engineer will design a new foundation sufficient to support the structure to be relocated and will coordinate with all local requirements for use of oversize vehicles. The following activities are associated with relocating structures to a new site:

- **Upgrade of Utilities and Stormwater Management Systems:** Activities will be the same as relocation to an existing school facility.
- **Expansion of Existing Facilities:** Activities will be the same as relocation to an existing school site with associated build-out of the facility to serve school functions.
- **Installation of Flood Protection Measures:** Activities will be the same as relocation to an existing school facility.
- **Installation of Safe Room or Tsunami Refuge:** These activities would be the same as Alternative 2.

New School Construction: Under Alternative 3 the subrecipient, may construct schools at a new, previously unused site that meets current building codes and standards. New school construction may include both facilities constructed in-place, as well as the installation of prefabricated modular classrooms or offices. The new school construction may also include safe rooms or tsunami refuge. The following activities are associated with constructing new schools.

- To confirm the applicability of a new location, this action alternative will include all necessary architectural and engineering design studies needed to ensure that a new school building is resilient to future disaster events. Such studies may include H&H studies, seismicity surveys, geotechnical subsurface explorations, topographical surveys, life-cycle costs analyses, energy efficiency studies, and feasibility analyses.
- Associated actions will include the construction of all surface and subsurface elements necessary to operate and manage a modern school. FEMA anticipates that new construction will involve the installation of all mechanical, electrical, and plumbing systems. Associated actions will likely include backup power generation, construction of parking structures, and connections to adjacent roadways.
- Similar to relocation of operations, facility relocation and new facility construction might include SOW that include land acquisition and the abandonment, stabilization, or demolition of existing damaged buildings.

Alternative 4: A Combination of Alternatives 2 Through 4

FEMA prefers Alternative 4 to best fulfill the purpose and need of this PEA. This Alternative is inclusive of SOW presented for Alternatives 2 through 3 allowing the subrecipient the ability to select actions that are applicable to addressing the wide range of school facilities within Puerto Rico. Additionally, it provides the subrecipients the greatest flexibility in how they increase the resiliency of Puerto Rico's Prek-12 schools.

Potential Impacts and Resources Evaluated

FEMA evaluated the physical, biological, cultural, and human use setting in which the proposed activities will occur, including restorative actions. This PEA presents a qualitative evaluation of potential impacts to the affected environment. The qualitative evaluation relies upon a scale that describes the intensity and duration of a potential impact. FEMA evaluated the following resources as part of this PEA:

Geology, Topography, and Soils; Air Quality; Water Quality; Wetlands; Floodplains; Coastal Resources; Threatened and Endangered Species; Cultural Resources; Socioeconomic and Environmental Justice; Land Use and Planning; Noise; Transportation; Public Services and Utilities; and Hazardous Materials.

Resources eliminated from review within this PEA include Safe Drinking Water Act, Wild and Scenic River System, Bald and Golden Eagles, Fish and Wildlife Coordination Act, Essential Fish Habitat, and Vegetation. FEMA omitted these resource topics from further evaluation under this PEA because they do not apply to the projects or locations considered in this NEPA document.

Although FEMA determined that adverse temporary, short-term, and long-term impacts to each evaluated resource may occur from either the No Action or Action Alternatives, all foreseeable impacts are likely to be between the level of negligible and moderate. FEMA anticipates that requiring subrecipients adhere to the action thresholds and the Permits and Requirements under the PEA will be sufficient to prevent adverse impacts from reaching the level of major.

FEMA will review potential scopes of work under the PEA in accordance with the Clean Air Act. FEMA anticipates that construction emissions will be below threshold levels. The subrecipients will adhere to work hours, use of Tier 4 rated equipment and ultra-low sulfur fuel, as well as the use of best management practices during construction to minimize noise, dust, and potential traffic disruptions. For all applicable projects located in non-attainment and maintenance areas, the subrecipient will be responsible for performing a General Conformity applicability analysis.

If a proposed project is likely to impact Waters of the U.S., the subrecipient will be responsible for obtaining appropriate permits prior to the beginning of work, and implementing all requirements of the permits, including pre-construction notification. Staging areas and access roads must be located outside the jurisdictional boundaries of Waters of the U.S. The implementation mitigation measures, and erosion controls will minimize water quality impacts by limiting sediment escapement and retaining turbid waters within project areas.

If potential actions that may affect or are within a floodplain, under requirements established under 44 CFR § 60.3 and 44 CFR § 9.11, FEMA will conduct the 8-Step Decision-Making Process in

accordance with Executive Orders (EO) 11988 and 11990, as well as 44 CFR Part 9. FEMA anticipates actions undertaken under this PEA will have a positive effect on floodplains as they will improve the hydraulic flow and protect development from flooding. Mitigation and resiliency measures may include raising structures above flood levels, relocation, or otherwise minimizing their effect on floodplain or wetlands. Avoidance and mitigation measures will minimize adverse impacts to floodplains and wetlands.

FEMA does not expect the actions under this PEA to adversely affect Endangered Species Act (ESA) listed or proposed species or their designated critical habitat. This PEA does not include any actions that will create a level of impact beyond a “*not likely to adversely affect*” determination for federally listed species or have an *adverse modification* to designated critical habitat. Any such action that will cause an impact beyond not likely to adversely affect will require FEMA to perform additional NEPA compliance. Actions under this PEA may temporarily displace local wildlife and fish during construction; however, landscape and water quality restoration will restore wildlife and fish habitat following completion of public facility actions.

Proposed actions in the Puerto Rico-defined coastal zone are subject to review in accordance with the Coastal Zone Management Act and Puerto Rico Coastal Zone Management Program. Pursuant to Federal Consistency Regulations at 15 CFR § 930, FEMA and the Puerto Rico Planning Board signed a Federal Consistency Certificate (Resolution) for Category C through G work dated October 3, 2018 and signed by FEMA and PRPB October 5, 2018 (Resolution JP-2018-324). FEMA will submit Federal Coastal Zone Consistency Determinations for scopes of work not included in the resolution to the Puerto Rico Planning Board for concurrence. The Resolution is set for a five-year term, where if it expires or does not undergo renewal, SOW involving actions within CZMA would undergo consultation with the PRPB. FEMA will review SOW to determine the need for consultation with the PRPB as required under the Puerto Rico Coastal Zone Management Program. Proposed actions that comply with any consultations or fall under the Federal Consistency Certificate will aid in minimizing impacts to coastal resources.

FEMA will review all scopes of work to determine compliance with Section 106 of the NHPA and the programmatic agreement in accordance with the amended *Programmatic Agreement Among the Federal Emergency Management Agency, the Puerto Rico State Historic Preservation Officer, and the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency* and any project-specific programmatic agreement that may be executed for the undertaking pursuant to Stipulation II.C.6(c) of the amended Programmatic Agreement and in accordance with 36 CFR § 800.14(b). The subrecipient will be responsible for coordination with the Puerto Rico Institute for Culture for compliance with historic preservation and archaeological requirements. FEMA anticipates complying with the programmatic agreement and adhering to measures within and in accordance with any consultations with the SHPO will minimize impacts to cultural resources.

Proposed actions will undergo review to determine any potential impacts to communities with environmental justice (EJ) concerns in accordance with Executive Order (EO) 12898. The subrecipient will be responsible for involving the local minority and low-income populations and community when impacts from public facility project construction may occur. Integrating public participation will aid in determining and minimizing potential impacts within the communities with EJ concerns.

Cumulative Impacts

FEMA anticipates action alternatives analyzed throughout this PEA will not result in major cumulative impacts. FEMA is funding actions involving the repair, replacement, or rehabilitation and associated hazard mitigation measures of projects similar in function, size, and locality to the existing infrastructure. Therefore, most cumulative impacts from the initial installation and temporary emergency measures of the projects have already occurred prior to and after recent disaster events. FEMA anticipates the detailed and extended grant approval process for projects under this PEA or tiered from this PEA will further limit cumulative impacts to environmental, socioeconomic, and historic properties throughout Puerto Rico. The process of implementing projects over an extended period will likely ensure that resource overburdening does not occur at any given time with the implementation of federally financed projects.

- The combined effects of concurrent construction projects would have a long-term adverse impact on air quality. Although each project would be temporary, the number of projects for completion would be continuous; therefore, the projects would result in long-term emissions of air pollutants, including fugitive dust, from construction equipment. The impacts are expected to be minor because these projects would be spread across the Puerto Rico and would occur over multiple years. There would be a long-term beneficial cumulative impact on air quality from the increased number of renewable energy projects and from the enhancement or improvement of electrical power systems across the Puerto Rico.
- For circumstances where multiple projects are under construction within the same watershed and at the same time, a cumulative impact to geology, topography, soils, water quality, vegetation and wildlife could occur. Although adverse, FEMA anticipates that cumulative impacts from public facility recovery projects under this PEA will be short-term and negligible to moderate.
- Construction of multiple projects within the Special Flood Hazard Area would result in an increase of new structures and impervious surfaces which could in turn result in an increase in upgradient flooding. However, EO 11988 directs federal agencies to avoid siting projects within a floodplain if there is a practicable alternative. If one is not available, then projects must minimize impacts and include resiliency measures to protect the structures within the floodplain. FEMA would not provide grant funding for new projects or project expansion within the floodway or the velocity zone, so there would be no adverse cumulative impacts to those areas. Based on these minimization and protection requirements, the combined effects of concurrent construction projects would have long-term, minor adverse impacts on floodplains.
- The potential for combined impacts of concurrent construction projects could have a long-term moderate cumulative impact on traffic delays, reroutes, congestion, construction noise, and social services. The subrecipient will be responsible for coordinating construction activities with local agencies, public utility departments, and environmental permitting agencies.
- The combined effects of concurrent construction projects could have a long-term negligible to major adverse impact on historic properties, including archaeological resources. Concurrent construction project impacts would have no adverse effect to historic properties

when repairs are carried out in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties 2017 (Secretary's Standards)* as outlined in the amended Programmatic Agreement. Demolition of historic properties would have a long-term major effect, reducing the number of historic properties representing the history and culture of the Puerto Rico. The amended Programmatic Agreement identifies particular mitigation measures to compensate for the demolition of historic properties. Documentation of the historic property before its demolition may reduce the impact to less than major. The BMP for known archaeological resources is avoidance. Avoidance would result in negligible impacts to archaeological resources. If archaeological resources cannot be avoided, the amended Programmatic Agreement outlines the process for data recovery and documentation. Data recovery of archaeological resources may reduce the impact to less than major, however data recovery by definition also adversely affects archaeological resources. For project sites with no known archaeological resources, a survey of the project site prior to construction may be required to identify the likelihood of any potential resources and determine if additional studies are appropriate. In the event archaeological resources are discovered during construction, the discovery provisions in the amended Programmatic Agreement (Stipulation III.B) define the process to be followed. In order to prevent the cumulative loss of Puerto Rico's historic school buildings due to demolition or the disposition as a result of relocation, FEMA will establish an internal process to track FEMA-funded projects for historic preK-12 public and PNP schools.

- The combined effects of concurrent construction projects could have long-term moderate cumulative impact on traffic delays and congestion, noise, and public services. The subrecipient will be responsible for coordinating project schedule with local agencies, public utility departments, and environmental permitting agencies.
- The combined effects of concurrent construction projects would have a long-term beneficial impact on the resiliency of buildings and infrastructure across the Puerto Rico. Structures and infrastructure upgraded by the subrecipient would have additional resiliency measures and would better withstand future disasters.

Permits and Requirements

The subrecipient is responsible for obtaining all applicable federal, Puerto Rico, and local permits and other authorizations for project implementation prior to construction and must adhere to all permit conditions. Any substantive change to the approved SOW will require re-evaluations by FEMA for compliance with NEPA, the ESA, Section 106 of the NHPA, and other relevant laws and EOs. The subrecipient must also adhere to the following permit requirements during project implementation.

1. **Stormwater, Soils, and Erosion and Sediment Control:** Under EPA National Pollutant Discharge Elimination System (NPDES), any project disturbing equal to or greater than one acre in size requires an EPA Construction General Permit, an NPDES Permit, and a Storm Water Pollution Prevention Plan. The permits and plan require BMPs which serve to protect soils, in addition to stormwater. The subrecipient is required to manage any piles of soil or debris, minimize steep slope disturbance, preserve native topsoil unless infeasible, and minimize soil compaction and erosion. For each project, the subrecipient

will implement the BMPs and guidelines recommended in the Puerto Rico Erosion and Sediment Control Handbook for Developing Areas. The subrecipient will be responsible for obtaining all necessary permits such as an NPDES permit and implementing the associated erosion and sediment control plans (i.e., Storm Water Pollution Prevention Plan).

2. **Clean Air Act:** The subrecipient is responsible for complying with all applicable EPA and PRDNER/PREQB requirements for fugitive dust suppression. The subrecipient will prepare a General Conformity applicability analysis for applicable projects satisfied by this PEA.
3. **Work Affecting Water:** For projects that involve Waters of the U.S., the subrecipient will be responsible for initiating the permitting process with the U.S. Army Corps of Engineers and PRDNER. The subrecipient will be responsible for obtaining appropriate permits prior to the beginning of work, and implementing all requirements of the permits, including pre-construction notification. Staging areas and access roads must be located outside the jurisdictional boundaries of Waters of the U.S.
4. **Floodplains:** For FEMA funded actions that may affect or are within a floodplain, under requirements established under 44 CFR § 60.3 and 44 CFR § 9.11, the subrecipient will ensure the project is in compliance with the local PRPB floodplain administrator and follow appropriate mitigation requirements for new construction or substantial improvement.
5. **ESA:** Projects will comply with and implement the ESA conditions found in applicable FEMA programmatic consultations or those conditions from a project-specific consultation.
6. **Invasive Species:** EO 13112, *Invasive Species*, directs federal agencies to prevent the introduction of invasive species, providing resources for their control, and decreases the economic, ecological, and human health impacts caused by their presence. The subrecipient is responsible for restoring disturbed soils with planting native, non-invasive species. Construction equipment should be power washed prior to initial transport to the construction site and prior to changing locations to prevent spread of noxious weeds.
7. **Historic Properties:** FEMA will review all SOWs to determine compliance with Section 106 of the National Historic Preservation Act (NHPA). FEMA will follow the compliance process defined in the amended *Programmatic Agreement Among the Federal Emergency Management Agency, the Puerto Rico State Historic Preservation Officer, and the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency* and any project-specific programmatic agreement that may be executed for the undertaking (action). The subrecipient will be responsible for coordination with the Puerto Rico Institute of Culture for compliance with historic preservation and archaeological requirements. In the event an unexpected discovery of archaeological materials or human remains or if it appears that the undertaking (action) has affected a previously unidentified historic property or a known property in an unanticipated manner, the subrecipient must stop work and contact FEMA. FEMA, in coordination with SHPO, will evaluate the discovery in accordance with any similar stipulation included in the amended programmatic agreement if one is executed for the undertaking (action).

8. **Communities with EJ Concerns:** In accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, the subrecipient will be responsible for engaging the public in local communities impacted by restoration or relocation of schools. The subrecipient will facilitate and encourage public participation in determining and minimizing potential impacts within communities with EJ concerns.
9. **Construction Material and Debris:** The subrecipient is responsible for obtaining any permits associated with the transportation and handling of construction material and debris. The subrecipient will identify, handle, transport, and dispose of hazardous materials and/or toxic waste in accordance with EPA and PRDNER/PREQB requirements. The subrecipient is responsible for determining the presence of asbestos or lead containing materials and obtaining applicable permits before beginning work. The subrecipient is responsible for ensuring that non-recyclable debris generated from restoration and demolition activities be deposited at a PRDNER/PREQB permitted landfill.
10. **Utility Clearance:** For all ground disturbing activities, the recipient is responsible for locating utilities. Occupational Safety and Health Administration mandates that if a utility provider cannot respond to a request to locate underground utility installations or cannot establish the exact location of these installations, the contractor may proceed provided they use detection equipment or other acceptable means to locate utility installations.
11. **Tree Cutting:** The subrecipient is responsible for complying with applicable PRDNER /PREQB of Puerto Rico requirements for planting, pruning, and trimming.

Agency Coordination and Public involvement

The PEA is available for agency and public review and comment for a period of 30 calendar days. The public information process will include a public notice in both English and Spanish with information about the proposed action in the *Primer Hora* and *El Nuevo Dia* newspapers. Additionally, FEMA targeted outreach to PRDE's local regions to request that each posts a physical copy of the PEA in a public building. Hard copies of the PEA will also be available at municipalities and state agencies. A Spanish translation of the PEA, Executive Summary, and Public Notice will also be posted on FEMA's and COR3's websites.

If FEMA receives no substantive comments from the public and/or agency reviewers, FEMA will adopt the PEA as final and will issue a FONSI. If FEMA receives substantive comments, it will evaluate and address comments in the FONSI or, revise and issue a Final PEA for further comment.