(TITLE PAGE: EXHIBIT A – EXECUTIVE SUMMARY)

EXECUTIVE SUMMARY

The District of Columbia is unique among American cities. The District is simultaneously a place to call home for 650,000 residents as well as the axis of the regional economy and the seat of our nation's government. It is an agglomeration of small neighborhoods, local churches, and farmer's markets while also serving as the nation's ceremonial front yard and the primary employment center for the federal government. Complex legal authorities associated with these unique roles challenge resiliency planning but also present an enormous opportunity: A resilient District is not just another resilient community—it is also a resilient region with certain implications on international affairs, equating to a more durable nation.

The District's application is based on the **Resilien-Seeds** approach, which institutionalizes resilience philosophies throughout the fabric of the urban environment from the ground up. The number-one predictor of how quickly neighborhoods in New York and New Jersey would rebound from Hurricane Sandy was community cohesiveness. By focusing our efforts on building adaptive capacity on a microscale—city blocks and neighborhoods—we believe the entire city, and therefore the federal government, will be more resilient to disasters. Resilien-Seeds will also provide an avenue for examining potential secondary benefits of program actions, which could include expanded access to clean energy and enhanced water quality and habitat.

This application demonstrates the District has embraced resiliency planning to strengthen its neighborhoods and institutions, reinforce infrastructure for long-term sustainability, and improve readiness for routine and catastrophic shocks.

Our densely urbanized city, located on two tidal waterways, is vulnerable to extreme weather such as violent storms, extreme heat, and recurring flooding from precipitation, storm surge, and rising sea level. In the National Oceanic and Atmospheric Association report, *Sea Level Rise and Nuisance Flooding Frequency Changes around the United States* (see Attachment B), the District is identified as

one of three jurisdictions that have already surpassed the tipping point for nuisance flooding necessitating immediate action to address daily tidal flooding. As documented in this and numerous other climate change reports, it is expected that these disasters will increase in duration, severity, and frequency with climate change. Any of these extreme-weather events can impact our provision of utility, healthcare, and public health services; integrity of critical infrastructure, including transportation systems; and ability to maintain business operations and critical services needed to protect and stabilize the whole community—specifically vulnerable populations—following a disaster. The District is an eligible applicant for the National Disaster Resilience Competition, withfour presidentially declared major disasters—the 2011 earthquake, Hurricane Irene (2011), 2012 Derecho, and Hurricane Sandy (2012). These incidents resulted in:

> The goal of Resilien-Seeds is to support District communities to thrive—not just survive—when faced with a disaster.

- **$12.7+ million** in damages to District-owned infrastructure and emergency response costs (FEMA Public Assistance).
- **Hundreds of millions** of dollars in damages to other property owners and businesses within the District (U.S. General Services Administration [GSA], Smithsonian Institution, District of Columbia Water and Sewer Authority [DC Water], National Cathedral, and Potomac Electric Power Company [Pepco]) as well as economic impacts due to associated loss of function.
- **$1+ billion** of resiliency projects yet to be completed (see Factor 2: Demonstrating Unmet Recovery Needs for details).

Critical vulnerabilities associated with aging and over-capacity infrastructure exacerbate shocks and cascading stresses, presenting negative impacts on vulnerable populations such as the poor, elderly, and those with access and functional needs. Reliance upon imported power, food, water, and commodities across regional systems further amplifies the District's human susceptibilities. Although these threats are faced directly by the District and its residents, the impacts would be felt nationwide.

TITLE PAGE: EXHIBIT B – THRESHOLD REQUIREMENTS)

THRESHOLD NARRATIVE

Resilience is a continuous process incorporated throughout a comprehensive emergency management program. The District is therefore taking advantage of this unique grant opportunity to build upon its previous efforts and create a culture of resilience throughout the area. The District's approach to community engagement for disaster resilience focuses on empowerment of the community, which is central to achieving resilience over the long term.

Authorized as an applicant by the NDRC Notice of Funding Availability (NOFA), the District conducted an analysis to determine the "Most Impacted and Distressed" and "Unmet Needs" thresholds as defined in Attachment G of the NOFA. In *Exhibit D, Factor 2*, we demonstrate the area primarily benefiting from the proposed activities was most impacted and distressed due the effects of the 2012 Derecho (qualifying disaster) and has unmet recovery needs. *Exhibit D, Factor 2* also details how each CDBG-DR funded recovery activity proposed in this document can reasonably be expected to improve the most impacted and distressed area's resilience to current and future threats and hazards. The information in *Factor 2* further demonstrates the District's commitment to taking several permanent actions aimed at increasing resilience in the target area.

In *Exhibit D, Factor 2: Demonstrating Distressed Threshold* and *Exhibit E, Factor 3: Idea and Co-Benefits,* we demonstrate that at least 50 percent of the funds requested will support activities focusing on District Wards 7 and 8 (see Figure 1) to provide sufficient benefit to low- and moderate-income persons in the form of services, area improvements, housing, or jobs to meet the national objective of overall benefit to low- and moderate-income persons.

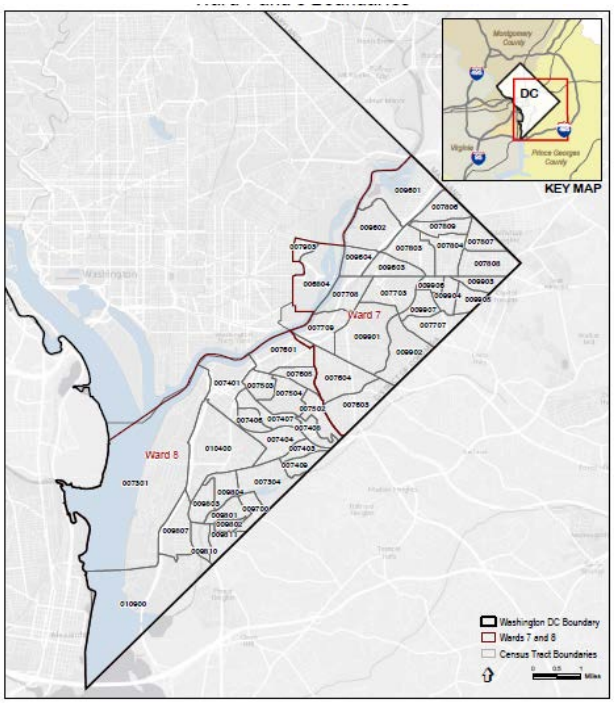


Figure 1: DC Wards 7 and 8 boundaries

77 **(TITLE PAGE: EXHIBIT C – CAPACITY)**

FACTOR 1: CAPACITY

General management

In order to manage and implement the Resilien-Seeds program, the District will create a Resilience program management office (PMO) to oversee resilience measures implemented District-wide (see Figure 2 and Attachment B). The PMO will be led by the District Resilience Officer, who will have direct access to elected leadership as well as the Senior Advisory Group, composed of member agencies that participated in the completion of the Phase I NDRC application. The District Homeland Security and Emergency Management Agency (HSEMA) will oversee all elements of the PMO architecture, employing proven program and project management expertise to manage the PMO in a systematic, integrated, and resource-efficient manner. The creation and management of this PMO will be similar to the approach the District successfully used to create the District Preparedness System and the governing bodies of this system—District Emergency Preparedness Council and District of Columbia Emergency Response System Committee—which supports District departments and agencies in coordinating, developing,

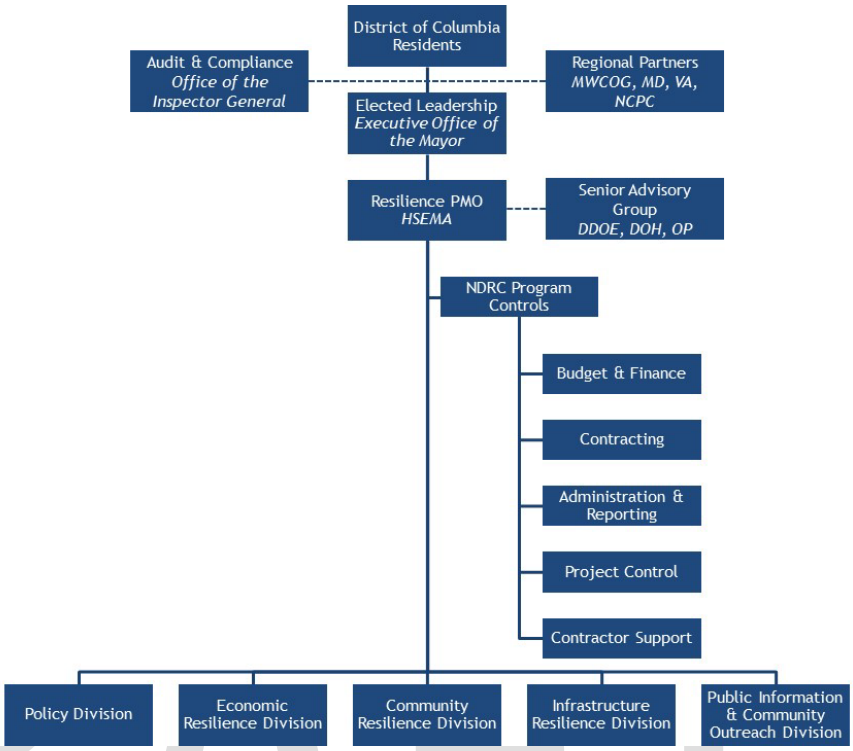


Figure 2. District Resilience PMO organizational structure

> Unlike many other jurisdictions that are currently managing federal disaster recovery and resiliency funds and need to incorporate NDRC funding into existing management structures, the District's HSEMA has the capacity to create and devote the Resilience PMO to Resilien-Seeds program management.

refining, and expanding the District's prevention and protection, mitigation, response, and recovery capabilities.

The District possesses the relevant project management, quality assurance, financial and procurement, and internal control capacities to quickly launch and implement major projects. For this competition, HSEMA will fill the role of grant manager; an initial management task will include reaching out to partner agencies to determine implementation actions for each project. As the coordinating agency for all disaster-related actions and grant funding, HSEMA has significant previous experience working with and coordinating partners (including contractors, funders, sub-recipients, community stakeholders, and other government agencies) for projects similar in scope and scale to the proposed activities. A highlight of the District's grant management expertise is included in Attachment B.

For example, HSEMA serves as the State Administrative Agency (SAA) for the National Capital Region (NCR) Urban Area Security Initiative (UASI) and also coordinates and administers all District and NCR Homeland Security Grant Program (HSGP) funds. As the SAA, HSEMA is responsible for monitoring activities of grant recipients to confirm reasonable assurance to FEMA's National Preparedness Directorate that grant recipients are administering the HSGP in compliance with federal and state requirements. In fiscal year 2014, the District administered more than $60 million in HSGP and Emergency Management Performance Grants funding.

The District's current bond ratings (S&P: AAA/AA; Moody's: Aa1/Aa2; Fitch: AA+/AA) reflect our commitment to sound financial management. http://cfo.dc.gov/service/credit-ratings-dc-municipal-bonds)

Cross-disciplinary technical capacity

The District understands that stakeholder and partner engagement is critical to sound planning processes. When developing our Phase I approach, the District established an NDRC Collaborative Planning Team of key Whole Community stakeholders (in this application, the use of Whole

Community is in the spirit of FEMA's approach to emergency management principles, which provides a national framework for community involvement in enhancing resiliency). To ensure a well-rounded, inclusive approach, the Collaborative Planning Team brought together District partners with a diverse range of knowledge including data analysis, community planning, affordable housing, climate change, and engineering. This team consists of members of the Core Planning Team—HSEMA, District Department of the Environment (DDOE), DC Office of Planning (OP), and Department of Health (DOH)—as well as representatives from the Whole Community including the Executive Office of the Mayor, Office of the City Administrator, District Department of Transportation, Office on Aging, Office of Advisory Neighborhood Commissions, Joint Forces Headquarters-NCR, DC Water, Serve DC, Washington Metropolitan Area Transit Authority (WMATA), and Pepco. For a more detailed list of participants, see Attachment E for planning meeting minutes. The collective knowledge and experience of the Collaborative Planning Team is invaluable and essential to successfully implementing Resilien-Seeds, and members of the team have previously partnered on numerous District and NCR initiatives as well as collaborated on the development and refinement of the Resilien-Seeds concept.

The District's cross-disciplinary project implementation capacity is demonstrated by the level of resources devoted to better understanding our significant vulnerabilities to human-caused and natural disasters. We have developed and annually update a Threat and Hazard Identification and Risk Assessment (THIRA) to identify and prioritize the District's most significant hazards and their impacts, an initiative that requires significant coordination and cooperation with regional partners. Recently DOH, along with public health, healthcare, and emergency management stakeholders, also completed a Public Health Risk Assessment and Hazard Vulnerability Analysis to identify and mitigate risks to District (and regional) public health and healthcare systems.

To better prepare the public for disasters, the District is committed to continual comprehensive assessments of threats and impacts, and recently received Pre-Disaster Mitigation Grant funding to

conduct enhanced HAZUS loss estimation analyses. The District has also established mitigation support functions (MSF) and will be developing a Mitigation Operational Plan that will include a risk analysis and vulnerability assessment MSF annex and a loss avoidance and resilience analysis MSF annex. These annexes will determine roles and responsibilities, define District standards, and establish a cyclical process for executing recurring assessments and analyses.

The District currently is identifying and assessing science-based information on existing and future risks from climate change in its Climate Change Adaptation and Preparedness Plan that will be finalized soon. DDOE, the lead agency on climate change planning for the District, is also undertaking a climate change vulnerability assessment and adaptation planning process that will be finalized later this year. The agency is leveraging existing and new scientific analyses of the current and future effects of climate change including downscale projections of extreme temperature and precipitation events. As part of this effort, DDOE completed the development of *Climate Change Projections for the District of Columbia* and *Methodology for Future Design Storms* in March 2015 (see Attachment B) which included planning scenarios for climate risk and vulnerability assessments. The next steps of DDOE's Climate Change Adaptation and Preparedness Plan is comprehensive modeling of sea level rise and storm surge, providing the District (and the abutting region) with a more realistic assessment of joint probability events and possible implications. The agency will partner with the District to address possible climate-related and other environmental benefits and outcomes of District resilience initiatives over the project lifetimes.

The Mayor's designated office for land-use planning in the District, OP incorporates community engagement with technical expertise to guide the District's development while preserving and revitalizing its neighborhoods. OP's range of services directly support District resilience initiatives, including the development of small area (neighborhood) plans with residents and stakeholders citywide (22 completed and approved by the District Council since 2000); planning initiatives in areas such as affordable housing, retail, transportation, urban design, and sustainability; facilities planning for other

District agencies; historic preservation; development review; and management of the District's 20-year Comprehensive Plan. OP houses its own GIS division and the State Data Center, which is the District's official liaison with the U.S. Census Bureau.

Utilizing predictive modeling technology and statistical data, the District has the ability to project future conditions for the nation's capital and the region. Leveraging our municipal GIS capacity and other District resources, we have the ability to identify, collect, and analyze science-based information on flood, surge, and other climate change risks with tools and studies that have been developed by local professionals, educators, and government agencies, such as the StormCaster tool and surge and inundation models.

Several partners (Office on Aging and the Department of Housing and Community Development) have experience addressing civil rights and fair housing issues and analyzing data for racial and economic disparities. Additionally, the District has extensive experience working across neighborhoods, various levels of government, regional jurisdictions, and public and private sectors to achieve shared goals. Successful examples of comprehensive, collaborative planning processes that have led to policy change and actionable results in support of resilience include:

- ***Resilient DC***—an initiative that convened healthcare, emergency management, cultural and faith-based social services, and communications stakeholders to implement neighborhood emergency response and recovery programs that benefit vulnerable populations such as the elderly, those with access and functional needs, and groups receiving constant medical care.
- ***Power Line Undergrounding Task Force***—engaged city and federal agencies, utilities, energy providers, and local businesses to develop (and now implement) a strategic plan to reduce power disruption with a $1 billion retrofit plan.
- ***National Security Special Events***—coordination and planning for frequent events that engage District and federal health, medical, transportation, and emergency planners; security and military forces; and communication experts.

- ***DC Silver Jackets***—ongoing (since 2012) team engagement of multiple District, federal, and regional agencies as well as academia to address infrastructure risks such as flood, storm surges, interior flooding, sea level rise, and community awareness and resilience,
- ***Metropolitan Washington Council of Governments (MWCOG)***—active engagement on regional coordination for homeland security, emergency management, transportation, water quality and supply, public safety, land use, energy, and climate.
- ***Sustainable DC***—an initiative that began in 2011 and is the cornerstone for community engagement and resilience training in the future. This program engages District agencies, businesses, civic leaders, community organizations, and residents to achieve ambitious sustainability goals developed through extensive public input.
- ***Emergency Management Accreditation Program (EMAP)***—builds safe communities with measurable standards of excellence for emergency management programs. EMAP fosters excellence and accountability in emergency management and homeland security programs by establishing credible standards applied in a peer-review accreditation process. The District is an EMAP-accredited jurisdiction—an achievement that was accomplished through strong multidisciplinary stakeholder partnerships and required demonstrated coordination and collaboration with public and private sector partners in the District, region, and nationwide.

As demonstrated by the complex, multidisciplinary programs listed above, the District is confident in its capacity to quickly launch and implement major projects. The active and consistent collaboration within the District on major projects and the diversity of subject-matter experts able to concurrently provide suggestions and feedback eases the process of determining and ensuring excellent design quality for long-term resilience projects. This multi-perspective approach has proven to be effective for the District and its partners in achieving success in project quality and design.

The NDRC Collaborative Planning Team is dedicated to enhancing resilience within the District (see Attachment F for partner letters of commitment). As Resilien-Seeds projects are developed and

implemented, we recognize that partner involvement may wane. In the event that a team member discontinues support for project efforts, the Collaborative Planning Team will conduct an impact assessment of program efforts and, where necessary, work with District partners to identify replacement team members.

Project costs will be subject to rigorous, cost-benefit analysis to determine acceptability. Through FEMA's Hazard Mitigation Cost Effectiveness process, HSEMA has extensive experience conducting cost-benefit analyses on a daily basis. When prioritizing projects, the agency regularly pairs cost-benefit analysis with the STAPLE-E criteria suggested in FEMA's Hazard Mitigation Planning How-to Guide series, representing social, technical, administrative, political, legal, environmental, and economic feasibility questions. STAPLE-E ideology attempts to address project feasibility, cost-effectiveness, and environmental considerations and aligns with the objectives presented by this NDRC NOFA.

Community engagement capacity

Engagement with the Whole Community is the starting point for building disaster resilience—without it the District cannot achieve its long-term resilience goal. We must understand day-to-day community functions, following the impacts from previous disasters, and potential actions to improve the ability to withstand future disasters. The community must also have the capability and opportunity to provide feedback to inform the Resilien-Seeds program. As such, community engagement is the cornerstone to the District's approach for implementation, as outlined in Exhibit E. An empowered and active community is vital to the success of Resilien-Seeds.

While many emergency management agencies, including HSEMA, currently push out disaster response and recovery information and recommended protective actions to the community, the Resilien-Seeds initiative will incorporate processes to facilitate community feedback and leverage the

existing public comment adjudication processes to guide the District's development and investment efforts in resilience projects. As we develop Resilien-Seeds, the District will follow a model that details principles and approaches of community engagement in the emergency management context. The model draws on the internationally recognized International Association for Public Participation's Public Participation Spectrum (IAP2), which is a tool designed to assist community engagement practitioners in selecting the level of participation that defines the public's role in any community engagement program.

HSEMA previously conducted a ward-based hazard vulnerability assessment (HVA) that effectively communicated risks to residents and resulted in a prioritized list of facilities by ward and potential mitigation actions. After receiving this information, community members provided invaluable feedback to the Core Planning Team at an NDRC public meeting and through Resilient DC focus groups with community leaders. Based on this feedback, the District has become aware of the role Advisory Neighborhood Commissions (ANC) and civic groups can fill as community coordinators as well as the need to provide resilience education funds to these small organizations to facilitate knowledgeable community discussions on resilience. While not a traditional, physical infrastructure investment, investing in the District's civic infrastructure builds upon our resilience outreach activities to development community resiliency through empowerment.

The District will also leverage OP's expertise in community engagement. As the District's land use planning agency, OP conducts public engagement as a core component of its work, and assigns planners to each ward of the District in addition to its other planning staff. OP staff regularly collaborates with ANCs, citizen associations, residents, businesses, elected officials, agencies, and other stakeholders. OP uses a wide variety of engagement methods to provide multiple opportunities for community comments and feedback during all phases of plan development. In addition to public meetings, OP employs advisory committees, focus groups, neighborhood "office hours" and tours, its website, social media, and online crowd-sourcing. These public engagement strategies will assist the

District's implementation of Resilien-Seeds and help implement a new community-driven model of emergency planning in the District.

Regional or multi-governmental capacity

The Washington, DC, metropolitan area has a long history of cooperation, coordination, and joint planning initiatives. The National Capital Planning Act of 1952 established the NCR as a non-operational network comprising the District; Montgomery and Prince George's Counties in Maryland; Arlington, Fairfax, Loudon, and Prince William Counties in Virginia; and all cities and other units of government within the geographic areas of those counties and the District (see Figure 3). This was later reinforced and defined in Title 10, U.S. Code § 2674(f)(2)(A-D).

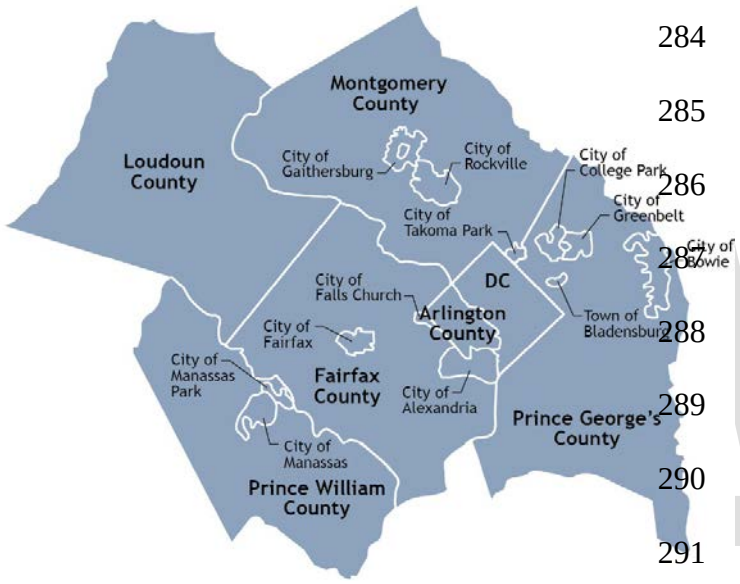


Figure 3. NCR member jurisdictions

In 1957, MWCOG was established to provide networks among federal, state, and local governments in the NCR. MWCOG is an independent, nonprofit association that brings area leaders together to address major regional issues within the District, suburban Maryland, and northern Virginia. MWCOG's membership consists of 300 elected officials from 22 local governments, Maryland and Virginia state legislatures, and U.S. Congress.

Following the terrorist attacks of September 11, 2001, and the creation of the U.S. Department of Homeland Security, UASI established funding opportunities for the highest-risk urban areas in the country. The NCR is a designated UASI area, whereas MWCOG is an association of governments within the NCR. UASI funding is used to address the complexity with which multiple federal, District, and local governments, emergency management structures, countless security organizations, and jurisdictions are in play within the NCR. This close-proximity work environment for many law

enforcement and emergency management leaders creates unique opportunities for coordination, communication, preparedness, training, and exercises.

As the seat of the federal government and the nation's capital, the NCR constitutes an unmatched concentration of federal buildings and operations, irreplaceable cultural and historic treasures, nationally significant monuments and landscapes, and diverse communities. In 2013 the NCR assembled 38 local, state, regional, federal, and private sector stakeholders to conduct a series of webinars and workshops on climate change and resilience. The NCR is already experiencing the effects of climate change—increased frequency of extreme weather incidents, rising temperatures, and recurring flooding. Climate change experts are predicting that these changes will continue and anticipate even greater frequency and intensity of incidents. For example, deaths due to heat in the District (1960–2013) have far outnumbered deaths due to other environmental disasters. The following vision statement resulted from these 2013 meetings: "A climate-resilient National Mall and National Capital Region for future generations, built upon science-informed planning and decision making and sound risk management." In order to achieve its vision, the NCR developed strategies and recommendations to ensure a more resilient region. The final report, *Building a Climate Resilient National Capital Region*, was used as a reference for the Resilien-Seeds initial approach and concept.

THIRAs have been developed for both the District and NCR. Due to the District's physical location within the UASI, there are significant commonalities between the threats and hazards within each THIRA. As the center for the regional economy, Resilien-Seeds in the District will naturally have a regional effect when responding to threats and hazards. Through established relationships and committees, the District will work regionally to ensure that Resilien-Seeds has positive effects within the NCR and, where possible, leverage initiatives that are currently under way within Maryland or Virginia to provide practical and cost-effective solutions.

326 **(TITLE PAGE: EXHIBIT D – NEED)**

FACTOR 2: NEED/EXTENT OF THE PROBLEM

Demonstrating most impacted threshold

Infrastructure – Derecho, June 29-July 1, 2012

One of the most destructive complexes of thunderstorms swept through the NCR on June 29, 2012, packing wind gusts of 60-80 miles per hour. The storm produced extensive damage, downing hundreds of trees, leaving more than a million area residents without power, and resulting in five fatalities within 50 miles of the capital. This kind of fast-moving, long-lasting, and violent thunderstorm complex is a weather system known as a derecho. The 2012 Derecho caused significant power and electrical infrastructure damage and outages. Damages specific to the District totaled $2,551,307 and affected Wards 7 and 8. The arrival of the derecho coincided with the onset of an unprecedented heatwave event. On June 29, Reagan National Airport reported temperatures soaring to a record high for the day and month of 104 degrees Fahrenheit. The heatwave lasted 11 days from June 28 to July 8, broke many long-standing temperature records at the Reagan National Airport weather station, and resulted in seven heat-related deaths in the area including one in the District. At its peak, the derecho interrupted power to more than 75,896 District customers including public health care facilities with long-term dependents. Some customers did not have power restored until 9 days after the derecho passed. Exacerbating the situation, power outages to two regional water filtration plants resulted in water restrictions for several areas within the NCR, highlighting the interdependencies of the utilities.

The District is focusing on threats and hazards that have the ability to disrupt day-to-day functions of Wards 7 and 8 (census tracts shown in Figure 1) as well as the capacity to maintain these vulnerable populations to keep communities intact and in-place during future catastrophic events. Such infrastructure vulnerabilities, as demonstrated by the 2012 Derecho, include centralized utility systems that are interrelated and could cause cascading failures if resilient repairs and redundancies are not implemented, with the most significant system being the District's electrical conveyance and distribution system.

The District is unique with respect to public utility service in that single, independent utility purveyors provide public water, wastewater, and electrical service to a franchise area that comprises the entirety of the District's political boundaries and extends into certain area in Maryland and Virginia. Impacts to any of these systems causes inherent risk as they cannot easily be refitted and/or rerouted to restore service with infrastructure from surrounding communities, as is typical of many metropolitan systems where redundancy can be obtained through cooperative interconnections between metropolitan and independent suburban systems. The following companies and agencies are critical to the short- and long-term survival of the District after a catastrophic event:

Pepco – Provides electricity to approximately 265,000 residential, commercial, institutional, educational, and federal customer accounts in the District covering all Wards and census districts including DC Water and the Washington Aqueduct.

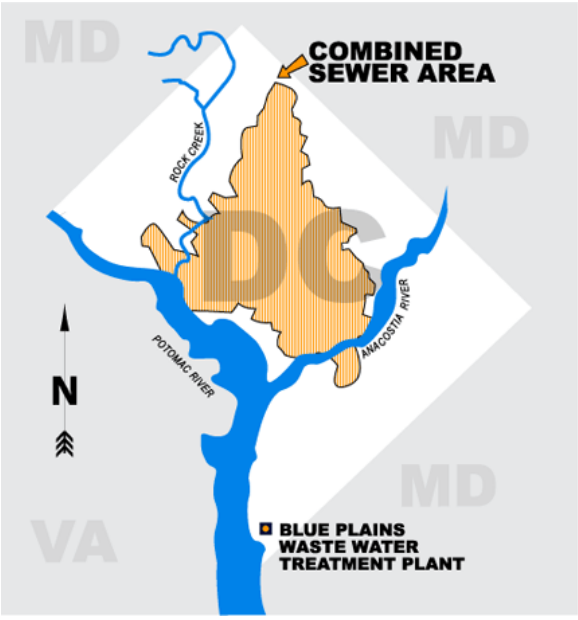
Washington Aqueduct – A division of USACE Baltimore District, Washington Aqueduct is a federally owned and operated public water supply agency that produces an average of 180 million gallons of water per day at two treatment plants, Dalecarlia and McMillan, both of which are located in the District and draw raw water from the Potomac River. All funding for operations, maintenance, and capital improvements comes from revenue generated by selling drinking water, not from federal budgets, and is therefore challenged to fund short- and medium-term resiliency improvements due to budgeting constraints associated with the rate-based capital improvement budgeting model.

DC Water – Regionally provides wholesale, wastewater treatment service to Montgomery and Prince George's Counties in Maryland and Fairfax and Loudoun Counties in Virginia, representing approximately 1.6 million people. DC Water receives 100 percent of its potable water from the Washington Aqueduct; no other sources of water are available. The District's system is engineered to provide two types of service—potable drinking water for residential, commercial, institutional, industrial, and government demands; and fire water supply for the hundreds of thousands of interior building sprinkler systems and thousands of fire hydrants located throughout the District.

Approximately 160 million gallons of water are consumed by the District on an average day, and water pressures are maintained at a level consistent with guidelines established by National Fire Protection Act codes. It is critical to understand that both water flow and water pressure are keys to the resiliency and survival of the District during catastrophic incidents. If flow is reduced, water pressure will be lowered and fire suppression systems will begin to become inoperable, affecting uninsured and underinsured residents, in addition to the community's loss of access to clean drinking water and fire service to Wards 7 and 8.

Environmental degradation – Hurricane Irene, August 26-September 1, 2011; Derecho, June 29-July 1, 2012; Hurricane Sandy, October 26-31, 2013

DC Water operates a wastewater collection system that consists of "separate" and "combined" sewers. Separate systems consist of two independent piping systems—one for "sanitary" sewage and one for stormwater. Currently, approximately two-thirds of the District is served by separate sewer systems. The remaining one-third of the District is served by a combined sewer system (CSS) that was developed before 1900. A CSS conveys both sanitary sewage and stormwater in one piping system. During periods of significant rainfall, CSS capacity is exceeded and the system is unable to convey the mixture of stormwater and sanitary wastes to the treatment plant. When this issue occurs, regulators are designed to let the excess flow—the combined sewer overflow (CSO)—discharge directly into the Anacostia River, Rock Creek, Potomac River, or tributary waters. The District has 53 CSO outfalls listed in the existing National Pollutant Discharge Elimination System (NPDES) permit from EPA.



Rainfall from Hurricane Sandy, the derecho, and Hurricane Irene overloaded the District's CSS, causing untreated sewage and stormwater runoff to flow directly into the waters in and around the District.

While the total overflow amount from the 53 CSO outfalls cannot be determined, CSO data are measured at eight pumping stations, the Northeast Boundary Swirl facility, and at eight of the CSO outfalls where inflatable dams are installed. At pumping stations and swirl facilities, the overflow is measured in volume (millions of gallons), whereas the inflatable dam sites measure overflow by duration (minutes).

Hurricane Sandy caused roughly 475 million gallons of CSO from the O Street pump station and 141 million gallons from the Northeast Boundary Swirl Facility to flow into the Anacostia River. At the CSO inflatable dam sites, the overflow duration varied at each site, and the overall combined duration of overflow was 863 minutes affecting the Anacostia River, Rock Creek, and Potomac River.

Hurricane Irene caused roughly 220 million gallons of CSO from the O Street pump station and 103 million gallons from the Northeast Boundary Swirl Facility to flow into the Anacostia River. At the CSO inflatable dam sites, the duration varied at each site, and the overall combined duration of overflow was 624 minutes affecting the Anacostia River, Rock Creek, and Potomac River.

The 2011 Derecho caused roughly 13 million gallons of CSO from the O Street pump station and 8 million gallons from the Northeast Boundary Swirl Facility to flow into the Anacostia River. At the CSO inflatable dam sites, the duration varied at each site, and the overall combined duration of overflow was 187 minutes affecting the Anacostia River, Rock Creek, and Potomac River.

While the total CSO volume for each event cannot be determined, DC Water states that large rainfalls (greater than 1 inch of rain) create effects of CSO on water quality that can last up to 3 days, and even smaller rainfalls can generate CSO effects on water quality that could last up to 24 hours. Based on this metric, we can infer a significant contribution to environmental degradation due to poor water quality for an extended period of time following all three qualified disasters.

Beyond the immediate consequences of foul smells, the sight of floating waste, and the associated cleanup, sewage overflows can have serious impacts on public health and on the ecosystems in the receiving waterways. During major flooding incidents, there is an added health risk associated with contaminated standing water—raw and inadequately treated sewage contains bacterial and viral pathogens that can lead to serious health problems, particularly concerning immune-compromised individuals. In addition to these pathogens, inadequately treated sewage can impact the health of an aquatic ecosystem by depleting the available oxygen and creating an imbalance of nutrients for organisms living in the contaminated environment. Similarly, untreated sewage contains high concentrations of phosphorus and nitrogen, which promote plant growth. With this sudden nutrient increase, algae in the contaminated waterways can grow very quickly, collect on the water surface in unattractive green algae blooms, and displace normal aquatic life.

Demonstrating distressed threshold

Vulnerabilities are characteristics of structures, places, people, or communities that increase their risk of suffering losses during and after a disaster. The District, like many other jurisdictions, is looking at Americans with Disabilities Act (ADA) compliance as it relates to emergency service provision to all populations, including vulnerable populations, at the time of an emergency. Potential gaps in service were identified through exercises, during real-world responses, and through lessons learned from other jurisdictions. Additionally, a September 2014 lawsuit alleged that the District was not complaint with ADA regulations. The District is currently in negotiations to settle this lawsuit on the basis of the District's current efforts to address potential gaps in providing services to all District populations in the event of an emergency. The District will ensure that access to NDRC program information and benefit is not limited based on a protected class such as race, color, national origin, religion, sex, family status, or disability. Applying a comprehensive-risk approach to analyzing needs resulting from vulnerabilities, the District considered historical impacts and forward-looking analyses of risks of both structural and social vulnerabilities to disasters (such as those exacerbated by a derecho-type event).

The NDRC requires demonstration in at least one of four characteristics to indicate that an area meets the distressed threshold, all of which focus on vulnerability. The District here-in submits data to demonstrate that it meets the following distressed threshold characteristics for the disaster-impacted area—low- and moderate-income (LMI) households; economically fragile area; and prior environmental distress.

Low- and moderate-income households

To qualify for the LMI criteria, we must demonstrate that more than 50 percent of the people in the target area earn less than 80 percent of the area's median annual income. According to HUD Income Limits from 2014, which take into account the D.C. metropolitan statistical area, the median family income is $107,000. Eighty percent of this value is $85,600. From the most recent U.S. Census Bureau American Community Survey, the median family income in the District's NDRC target area is $65,830. Simply stated, half the population of the District makes less than $65,830 annually. At almost $20,000 below the 80 percent threshold, the District in its entirety meets LMI criteria. A more detailed map on LMI in the target area can be found in Attachment D. These data support the mapped Social Vulnerability Index (SoVI) (also provided in Attachment D) developed by the Hazards and Vulnerability Research Institute at the University of South Carolina, which shows high vulnerability scores throughout the District and particularly in the southeast portion of the city. The SoVI analysis includes vulnerability factors in addition to income such as minority ethnic populations, renters, and service industry employment. The SoVI analysis is further confirmed by U.S. Census data and District Department of Employment Services, Office of Labor Market Research and Information data (see Table 1), revealing that Wards 7 and 8 (see Ward map in Attachment E), which are both located east of the Anacostia River, face additional challenges as compared to other wards in the District. These challenges include lowest median household income, highest percentage of families in poverty, highest percentage of individuals in poverty, highest percentage of people under 18 years old in poverty,

lowest percentage of bachelor's degree or higher, highest percentage of female householder with no husband present, and highest percentage of unemployment.

Table 1. Income vulnerability factors for DC by ward

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
Median household income	$77,602	$94,346	$106,151	$66,245	$53,058	$87,393	$38,660	$30,263
Families in poverty	8.9%	4.4%	1.3%	9.4%	17.4%	10.7%	24.2%	33.1%
Individuals in poverty	13.2%	12.5%	9.5%	13.2%	21.5%	14.6%	27.2%	38.4%
Under 18 years old in poverty	21.9%	5.1%	2.1%	18.4%	27.1%	22.0%	40.0%	50.6%
Bachelor's degree or higher	62.7%	82.5%	85.1%	43.6%	33.2%	62.8%	17.1%	12.3%
Female householder, no husband	9.8%	1.9%	4.0%	18.0%	21.5%	11.9%	32.9%	39.0%
Unemployment	4.9%	2.5%	2.7%	7.8%	11.3%	5.4%	14.3%	17.0%

Economically fragile area

In addition to meeting the LMI criteria, the District also meets the criteria for an economically fragile area due to the fact that the District has an unemployment rate that is more than 125 percent of the national average unemployment rate. From the U.S. Bureau of Labor and Statistics, the national unemployment rate for December 2014 was 5.4 percent. During that same month (most recent data), District unemployment was 7.2 percent, which is 133.3 percent of the national average or 8.3 percentage points higher than the distressed requirement (refer to Attachment A for data documentation). In wards 7 & 8, unemployment was 14.3% (265% higher than national average) and 17.0% (315 % higher than national average) which demonstrates the significant distressed characteristic.

The median rental cost for the District – the 4th highest in the nation – adds another layer of complexity for LMI households as they work to create economic stability pre- and post-event. The average renter within the District can face serious hardship in meeting rent obligations. If these residents have to leave the District to find less expensive housing post event, additional impacts would be felt within the District's economy.

Environmental distress

The third and final criteria that the District satisfies is one of prior environmental distress. To qualify, the area must contain contaminated property cleaned, undergoing cleanup, or proposed for cleanup. Nine Superfund sites are located within the District's geographic boundaries. One of these sites (Washington Navy Yard) is also on the National Priority List (NPL). Additionally, brownfields are located throughout the District, with the largest clusters of brownfields along the traditional industrial or commercial strips. These sites are shown in Attachment A and in a map located in Attachment D.

Over the last 200 years, the District's waterways have been subject to human influences such as dredging, filling, and contamination. Each year, 1.5 billion gallons of diluted sewage (CSO) is discharged into the Anacostia River alone. The result of this contamination is that the river has been seriously degraded from its natural state. The District's Water Quality Assessment 2006 Integrated Report to EPA documented that the District's rivers and streams could only support the designated use of navigation; they were not designated for swimming, secondary recreation contact, aquatic life, or fish consumption. The District's Water Quality Assessment 2014 Integrated Report indicated the same results.

Demonstrating unmet recovery needs

Infrastructure – Derecho, June 29-July 1, 2012

The electric system is of particular concern to the District as its transient and non-transient population could be placed in significant risk due to immediate loss of primary and secondary electrical service, as was observed in Wards 7 and 8 during the 2012 Derecho event. Information in support of unmet needs

was derived from reports compiled by USACE, Pepco, and DC Water in response to the 2012 Derecho event as required by the District and/or the federal government.

Pepco. After catastrophic losses from Hurricanes Irene and Sandy and in direct response to the 2012 Derecho event, Pepco developed the $1 billion District of Columbia Power Line Undergrounding (DC PLUG) capital improvement initiative in coordination with the District to improve reliability and resiliency by approximately 95 percent for customers who are served by selected primary feeders. The areas designated to be included in the initiative will be the high-voltage feeders most affected by overhead-related outages in Wards 3, 4, 5, 7, and 8, where feeder distribution lines currently exist. In addition, even though only a select number of feeders will be placed underground, the DC PLUG initiative will improve overall reliability and resiliency for all District customers.

About half of the District is already served by underground power lines. After lines are placed underground, there will still be secondary feeders and service lines running overhead on existing poles (most prevalent in Wards 7 and 8). These secondary feeders, which impact the communities independently of the primary feeders, suffered significant damage during the derecho event, causing Ward-wide power outages of up to 9 days. Restoration time for these secondary feeders is typically much longer than the time needed to restore the high-voltage primary lines, as resources are dedicated to restore primary feeders first, then moved to restore secondary feeders in the communities last. As observed in the derecho event, damage to the secondary feeders prolonged outages at hospitals and schools as well as rendered air conditioning inoperable for vulnerable senior citizen populations during the sweltering 100+ degree temperatures that accompanied this event.

Washington Aqueduct. During the early stages of the 2012 Derecho, rain-saturated soils combined with high winds caused loss of power to the Little Falls raw water pumping station for nearly 48 hours because fallen trees had damaged the local power grid serving the station (specific damage

Figure 4: Georgetown (Washington) Aqueduct

location will not be included in public documents due to vulnerability of the assets being discussed). As with most critical water system components, redundant power systems serve the facility. However, at this facility power originates from one electric company, Pepco, which was also experiencing regional impacts from the derecho, taking down large portions of its systems and, more importantly, impacting its repair resources.

Pepco implemented interim emergency repairs to restore power to the facility before severe water service interruptions were experienced by the Washington Aqueduct or DC Water. The derecho not only caused significant damage but also exposed a systemic problem from similar storm incidents, particularly in the case of cascading effects. The Washington Aqueduct developed a permanent infrastructure resiliency program, in agreement with Pepco and DC Water, which includes reimbursing Pepco for undergrounding its existing power feeders to the Little Falls raw water pumping station to provide resiliency from future storms and/or increased severity of storms from climate change at a cost of $30.2 million as well as construction of an independent, emergency, generator-based power supply at a cost in excess of $15 million to serve as a redundancy to Pepco's system. Had funding for this resiliency program been available, a major interruption of the water supply during the derecho-type event would not be considered a threat. Both indicated improvements serve only the unmet needs criteria without the need for leveraging funds.

The undergrounding would be owned, maintained, and operated by Pepco, and the emergency generator would be owned, operated, and maintained by USACE. At the time of this submission, all parties are in agreement with the preliminary plan; however, no funding is available for the improvements and both

Insert Bob's

PE Stamp

Realizing the importance of the threshold data required by the NOFA, HSEMA developed Exhibit D with the assistance of a Professional Engineer. The data was collected and documented under the direction of Robert Yurick, PE. District of Columbia License #PE905227

566 **(TITLE PAGE: EXHIBIT E – SOUNDNESS OF APPROACH)**

FACTOR 3: SOUNDNESS OF APPROACH

Stakeholder consultation

The number and variety of stakeholders that exist within the District's geographical boundaries play a critical role in establishing institutionalized, long-term resilience measures. An illustrative, though not an exhaustive, list of stakeholders includes the following:

- Local community: Homeowners, renters, businesses (small and large), charter and private schools, nursing homes, hospitals, universities, and religious organizations
- Non-governmental organizations and private businesses: Red Cross, The Urban Institute, Center for Community Change, Vulnerable Populations Community Healthcare Coalition, Historical Society of DC, disability resources, community civic associations, Community Foundation for the NCR, and Pepco
- Government: Federal agencies, District agencies, Congress, regional MWCOG, critical infrastructure, and WMATA

The District makes an effort to consistently engage stakeholders on recovery needs, community development issues, and priority vulnerabilities. However, given the short time frame allotted for the initial NDRC application, the Core Planning Team leveraged the outreach captured by Resilient DC, a program leading the country by inspiring conversations on resilience in local communities. All stakeholders were afforded the opportunity to provide input for this application at the public meeting held on February 18, 2015. In addition to the community engagement model detailed in *Factor 1*, it is envisioned and intended to further expand outreach efforts throughout Phase 2 to make stakeholder engagement more comprehensive and specific to the projects that will be identified.

As part of Resilient DC, DOH conducted focus groups with the general public and community leaders. The feedback associated with this project was extremely helpful in forming ideas for potential NDRC project proposals. Of note, participants discussed that, across all DC wards, the term "resilience" is associated with characteristics of fortitude, strength, and courage. Participants honed in

on the “powerlessness” that people feel during and after disaster, causing the planning team to recognize that the empowerment model for community engagement is the best approach for achieving resiliency.

The majority of participants could not identify one person in the community who served the role of preparing the community for emergencies, though many suggested that communicating through ANCs would be a good way to build in that role. The groups considered leadership a key component in resilience work. ANCs consist of established, neighborhood-level, elected officials within each ward who consider a wide range of policies and programs affecting their neighborhoods, including traffic, parking, recreation, street improvements, liquor licenses, zoning, economic development, police protection, sanitation and trash collection, and the District’s annual budget. The existing structure of these ANCs forms a natural bridge between the bottom-up and top-down approaches, facilitating the sharing of information and ideas among various stakeholder groups.

Also discussed was the definition of community. Participants felt that communities can be both culturally as well as geographically based. Some people felt particularly disconnected from those within their immediate geographic proximity because of the turnover of residents within the area and/or the “hustle and bustle” of city life. Central congregating or coordinating locations for resilience actions was encouraged, though the location is completely dependent on the neighborhood—for some, it was churches, but varied for others. Community members from Wards 7 and 8 felt that the increase in vulnerability factors among the population, combined with a high crime rate, led to a high level of distrust among neighbors and created serious barriers to creating social connections.

Comments received at the February 19, 2015 public meeting were very much in line with the community feedback recorded by Resilient DC, and predominantly concerned the opportunities provided by the ANCs; the active city culture that makes engagement in resilience actions seem like a possible “inconvenience”; and use of churches and other central locations as good coordination points. Specific comments that had not been encountered previously included the District as the literal and

figurative center of the regional economy; resilience of tourist sites supporting business resilience; weaving in the historical, disaster context during education and dialogue with neighborhood residents; and the challenge of overcoming the gap between "the haves and have-nots." Meeting notes have been included in Attachment E for review.

The overlap between Resilient DC focus group comments and the NDRC public meeting highlights cumulative impacts of the District's overall risks and specific vulnerabilities, independent of the type of threat and/or hazard. The time frame of the four qualifying disasters were such that the District and its stakeholders (including utilities, agencies, and communities) did not have time to fully recover. The four qualifying disasters occurred in quick succession and caused significant damage, but not to the point of requiring substantial FEMA mitigation funds; hence, many recovery projects were unfunded and left unaddressed before the next disaster occurred, resulting in compounded disaster damages. Much of the damage was to utilities (power and water) servicing the District, including low- and moderate-income populations, thereby increasing risk for vulnerable populations. The results of the collaboration with stakeholders, project partners, and residents have shaped the District's NDRC proposal by:

- Identifying target areas of concern, including neighborhoods in Wards 7 and 8 whose residents struggle daily with affordability challenges in the absence of a disaster.
- Prioritizing utility needs as a result of damage suffered.
- Targeting outreach materials toward appropriate stakeholders based on suggestions for improvement.
- Focusing on a neighbor-to-neighbor approach to community engagement.

Ideas and co-benefits

Programs focused on resilience in the District may have been initiated under different titles but are all part of the comprehensive resilience efforts by the District inclusive of its inhabitants, infrastructure, and overall governance to be sustainable to disaster shocks and stresses. Development of the District's

NDRC application and approach of integrating proposed and existing resilience programs and projects (DC Silver Jackets, Resilient DC, and Sustainable DC, mentioned in *Factor 1: Cross-Disciplinary Technical Capacity*) under a unified Resilien-Seeds program is a priority that is being undertaken by HSEMA and all District agencies and community partners.

The Resilien-Seeds program builds upon the District's Hazard Mitigation Plan, which is aligned with past and current planning requirements for the Flood Mitigation Plan, Floodplain Management Strategic Plan, and Flood Map Modernization Business Case. The District has been a proud participant in the National Flood Insurance Program (NFIP) and is actively pursuing admittance in the Community Rating System (CRS) program with an initial rating of 10. The goal is to achieve a rating of seven or higher, which will result in additional flood insurance savings for the District and its homeowners. The District is committed to disaster mitigation, including flood measures such as the CRS program and meeting the infrastructure and outreach goals.

The Resilien-Seeds program utilizes existing District mitigation and pre-disaster planning tools that influence actions taken in advance of a disaster. Mitigation encourages public safety and emergency management professionals to creatively identify urban improvement opportunities, as well as serves as a guide toward redevelopment after a disaster occurs. Together, the Resilien-Seeds planning process and implementation provide the framework for District officials to make informed decisions supporting permanent hazard protection. Resilien-Seeds activities conducted before or after a disaster will immediately result in cost-effective benefits including a reduction in the impact of physical, social, and economic damage sustained by communities and residents; elimination of the repetitive damage cycle; reduction in economic costs to the taxpayer; and fewer resources expended to prepare for, respond to, and recover from future disasters.

The District of Columbia Public Emergency Act of 1980, DC Law 3-149, authorizes the HSEMA Director to act on behalf of the District Mayor, as the mayor's authorized representative (MAR), in matters related to disaster management. In this capacity, the HSEMA Director has the authority to act

on all emergency management matters, including leading the Resilien-Seeds program. HSEMA has primary responsibility for identifying hazards, as well as implementing pre-disaster hazard mitigation and permanent post-disaster recovery programs in the District to prevent future damages. HSEMA has a strong allegiance to protect District residents and visitors from future disasters by implementing a comprehensive, community-based resilience strategy for managing and minimizing hazards.

The vulnerabilities and unmet recovery needs faced by the District from the four disasters will need to be addressed both internally within the District and externally with federal, state, regional, and private partners. The District has demonstrably long-standing, collaborative relationships with these partners (U.S. Congress, GSA, USACE, FEMA, MWCOG, DC Water, and Pepco). As an indication of their support for building resiliency in the District, several private entities have provided partner letters of commitment (see Attachment F).

The aforementioned existing projects and initiatives and those listed in Table 2 that follows are examples of potential Resilien-Seeds projects that support the District's objectives to achieve community, economic, and infrastructure resilience. In addition, Resilien-Seeds will also advocate for policy initiatives that address social cohesion as an integral aspect of resilience, providing program support for at-risk LMI populations residing in flood-prone areas and updating building codes as part of adopting Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, which calls for floodplain management for federal investments based on best-available data.

Table 2: Project ideas and co-benefits

Program objective	Potential project	Information/links to program sites	Existing/ongoing project	Co-benefit to unmet need
Community resilience	DC NFIP CRS program	DC CRS plan http://ccap.org/resource/analysis-report-the-	DC completed CRS study in Sept 2014 and is actively	Compliance with these programs directly benefits the overall community and

Program objective	Potential project	Information/links to program sites	Existing/ongoing project	Co-benefit to unmet need
Community Resilience		district-of-columbia-community-rating-system-program-review/	complying with NFIP and CRS programs, focused on minimizing flood risk and achieving reductions in flood insurance premiums.	provides rerouting of community resources that would otherwise be dedicated to assistance in flood-prone areas.
	Neighbor-to-Neighbor Resilience Program	Https://vimeo.com/115574137 Password: resilient	Yes, began post-Hurricane Isabel in 2006 and is continuing today as a neighborhood-centric coordination and outreach program.	Supports neighborhood-level interaction and pre- and post-disaster support.
	Metro DC 211	http://211metrodc.org/about-metro-dc-2-1-1	Yes, the NCR 2-1-1 Combined Database project was initially funded by a grant from DHS UASI. It is now part of the resilience fabric of DC and is ongoing.	This program supports DC's population pre- and post-disaster. Post-disaster this site is a central portal and database for recovery services, including case management support for the LMI community.

Program objective	Potential project	Information/links to program sites	Existing/ongoing project	Co-benefit to unmet need
Economic resilience	District of Columbia Sustainable Energy Utility (DCSEU)	Helps DC residents and businesses use less energy and save money.	Yes, DCSEU is operated by a private company under contract with DDOE.	Improve the energy efficiency of low-income housing, increase the number of jobs and specialized job training.
	Targeted construction skills training	DC DOES Apprenticeship Program • http://does.dc.gov/service/apprenticeships	Leveraging the DC DOES Apprenticeship program to provide specialized post-disaster training	Increasing resilience with the added benefit of building the economy and also buy-in from the community.
Infrastructure resilience	Clean Rivers Project (Bloomingdale/ Ledroit Park)	Compliance with DC Water/EPA consent decree to reduce impacts of stormwater on the Potomac and Anacostia Rivers.	Ongoing to meet Clean Water Act requirements: http://www.dcwater.com/clean rivers	Reduce flow and mitigate environmental impacts from managing stormwater flow in CSO portion of the District. See Attachment D for map.
	Build a project in tandem with Pepco's efforts to bury power lines through DC PLUG	Improve service reliability to community electrical supply zones during storm incidents. • http://www.pepco.com/dcplug/	Ongoing	Convert existing high-value surface feeders to underground design for resiliency during storm incidents. Primary drivers: Hurricane Irene, Hurricane

Program objective	Potential project	Information/links to program sites	Existing/ongoing project	Co-benefit to unmet need
		• http://oca.dc.gov/page/dcplug		Sandy, and 2012 Derecho.
	DC Water Blue Plains Flood Wall	Protect Blue Plains wastewater treatment plant from inundation due to storms and storm surge that threatens to shut down the facility's 1-billion-gallon-a-day capacity.	Phased approach, with phase 1 complete. Remaining phases are unfunded.	Every storm of significance places DC Water on high alert to maintain plant operations. Inundation could cause treatment outages greater than 30 days.

Resilien-Seeds program approach

Upon receipt Phase 1 funding for planning and program execution, the Resilien-Seeds program would employ the following approach to further build out our Phase 2 project application and commence institutionalizing Resilien-Seeds as presented in our Phase 1 application. The multi-step approach is intended to facilitate the District's use of community based decision making during the expedited Phase 1 time period. The approach allows for the:

- Identification of projects of interest (Phase 1)
- Conceptual project design (Phase 1)
- Development of the NDRC Phase 2 Application
- Final design and implementation of community selected projects (Phase 2)

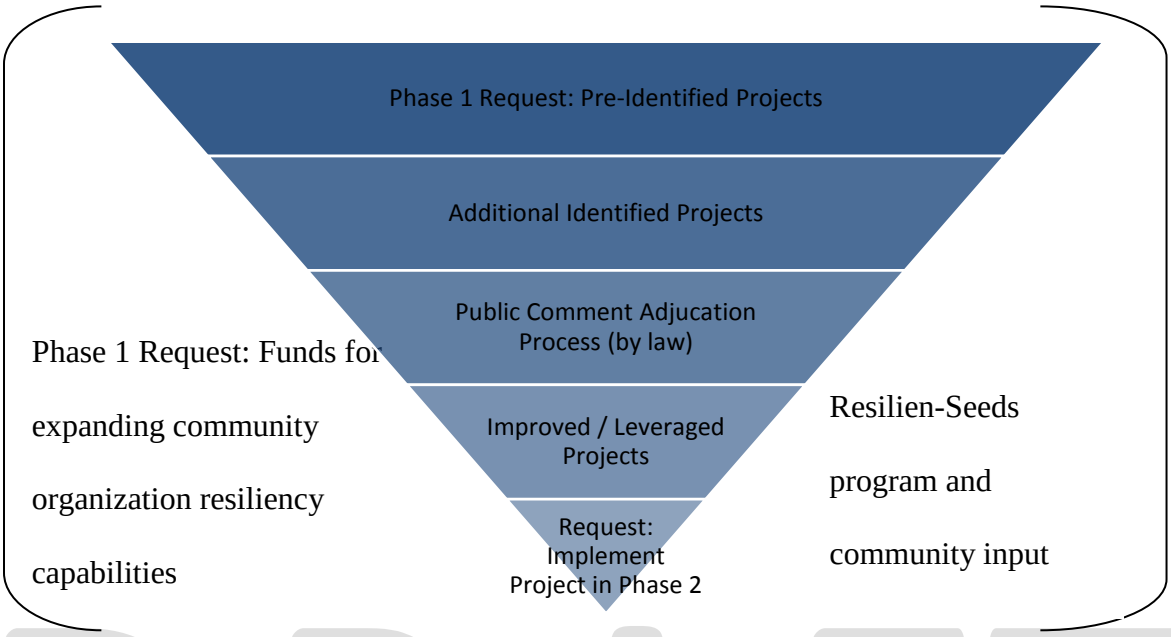


Figure 5: Phase 1 to Phase 2 Resilien-Seeds program approach

1. Implement the Phase 1 Award District NDRC Resiliency Program Management Organization (Page 7):
    a. Implement our proposed program management structure to administer the Phase 2 grant application; develop and commence integrated resilience planning across the District's existing programs, inclusive of community organizations district-wide, to provide Phase 1 award funds for resiliency education and training to improve community-based resilience capabilities and to further define the District's NDRC infrastructure projects
2. Establish Competitive Grant Program for Community Based Resiliency Capacity. Requested funding, as part of the Phase 1 NDRC would be used to establish a competitive grant program for local community organizations interested in building their technical expertise in the resiliency fields. The focus of this program would be to enable local organizations to obtain the technical understanding and expertise related to resiliency issues (infrastructure design, economics, impacts, etc.) and subsequently furthering their

active participation in the Resilien-Seeds program. The grant program would focus on education, training and technical capacity building.

3. Identify the universe of existing, unfunded projects for hazard reduction, mitigation, and resiliency that should be evaluated and enhanced to meet the Resilien-Seeds team's NDRC program objectives:
    a. Identify a potential pool of projects in the following areas with a focus both District-wide and specifically to those located within census tracts in Wards 7 and 8
    b. Identify additional projects from the Phase 1 application that can be implemented and/or leveraged with other components of the Resilien-Seeds program
    c. Identify supporting policy improvements that can be made to enable long-term success of resilience projects:
        i. Work with District agencies (adopting building codes, modifying ordinances, etc.)
        ii. Work with MWCOG on regional adoption and implementation of Resilien-Seeds program
        iii. Support federal partners' adoption of various resilience standards, including EO 13690 regarding guidance to federal buildings and flood risk management
4. Evaluate and ensure projects will leverage District/private/philanthropic funds and existing successful District programs:
    a. Outreach to private/philanthropic organizations and District government for support
    b. Buildout of Phase 2 application and selected project(s) to include multiple funding sources, thereby fully engaging the Whole Community for Resilien-Seeds Phase 2 application and the District's Resilien-Seeds program
5. Evaluate and ensure projects will build upon existing programs and can leverage District and regional resilience efforts:

a. Identify project linkages and opportunities to leverage existing programs
b. Does this project build upon existing District programs, such that this Resilien-Seeds project will have longevity with the community?
c. Can it be institutionalized and how?

6. Evaluate the feasibility of the projects:
    a. Can they be built and implemented?
    b. Develop an action plan for existing policies/governance that would need to be amended to allow projects, once awarded, to be built based on Phase 2 application
    c. Does the infrastructure project meet engineering principals? What aspects need to be further defined in Phase 2 to enable constructability?
7. Scalability of projects:
    a. Can the projects be completed within the 4-year timeline of the NDRC program?
    b. What project amendments are necessary to enable completion within the timeline?
    c. If enhancements are made, will the project meet previous criteria?
8. How and which shocks and stressors does the project address?
    a. Ability to reduce economic impacts to LMI population post-event. Does the project offer opportunity for large employer partnering? Does it provide an opportunity for entrepreneurship within the neighborhood? What is the prospective development growth around the project?
    b. Reduce vulnerability to specific hazards, using the District THIRA for identification of priority (ranking) of addressing hazards and level of consequences
    c. Create community cohesion – connection: Does the project engage the community and provide opportunities for partnerships?
9. Quantifiable and measurable return on investment:

a. Identify projects with the highest return on investments utilizing a cost-benefit analysis and STAPLE-E criteria as defined in Phase 1

b. Does the project meet the Resilien-Seeds performance metrics?

10. Develop portfolio of prioritized projects:

a. Create a portfolio of community-based, resiliency projects that meet the above criteria and develop a project summary sheet for presentation and evaluation

11. Public comment and adjudication process:

a. Using a best practice from the OP Small Areas Planning Process, the Resilien-Seeds team will produce a Public Comment Digest that captures 1) all public comments, by name/organization, received on a Phase 1 Projects received during the required public comment period; 2) Resilien-Seeds's response to the comment; and 3) an indication of whether or not we modified the draft project based on the comment. This can become a public document if it is submitted it to Council.

12. Post-public comment/adjudication process:

a. Enhance and address any project-specific request that meets the Resilien-Seeds program evaluation criteria

b. Identify order of projects for implementation

13. Select the top projects for Phase 2 application submittal:

a. Need to meet community cohesion, infrastructure resilience, and economic resilience as defined by Resilien-Seeds

b. Develop detailed work plans and project implementation components with Phase I funding as part of the Phase 2 submittal

c. All projects will be shovel-ready and able to be completed within 4 years of Phase 2 application award

786 **(TITLE PAGE: EXHIBIT F – LEVERAGE)**

FACTOR 4: LEVERAGE AND OUTCOMES

Outcomes

The District understands there is no one-size-fits-all solution to resiliency. Solutions need to be tailored to the ward, neighborhood, and community. In Phase 2, the District will consider projects of all scales and varying lifespans. For instance, grassroots efforts to integrate resiliency into the fabric of the District's communities will involve a life-long time frame, whereas infrastructure projects could have a useful lifespan between 20 and 50 years. Considerations will also include projects that provide multiple co-benefits such as energy efficiency, air quality improvements, improved community livability, business opportunities, stormwater management, and recreational prospects, as demonstrated in the *Table 2: Project Ideas and Co-Benefits* in *Factor 3: Idea and Co-Benefits*.

Since the District will provide a comprehensive approach to resiliency, the Collaborative Planning Team feels the portfolio of projects should be implemented in an environmentally and financially sustainable manner. This process will allow diversity in breadth and scale of projects and allow for attainable goals over an extended period of time. The existing foundation within the District and the relationships with community and regional partners increases the capability to identify and implement sustainable techniques as the cornerstone of resilience projects.

An assessment of vulnerabilities in the District, both social and structural, revealed an opportunity to leverage the implementation of resiliency projects as an avenue for enhancing community assets, such as providing job training for the unemployed. Job training for resilience project implementation supports the prospect of increased employment resulting from actionable job skills in the very same communities affected by resilience projects. Particularly in Wards 7 and 8, where the unemployment rate is considerably higher than other wards, developing community buy-in with resilience projects while providing immediately useful training would be especially productive.

Concepts such as empowerment and resilience require creative approaches for quantification due to their dependence on qualitative measures such as cohesion, preparedness, and flexibility. Additionally, determining a metric to measure the efficacy of resilience measures depends heavily on the actions of each individual resilience project. Therefore, metrics will be described in greater detail in the Phase 2 application. The critical elements that will inform the framework and approach to resilience metrics are social vulnerabilities, recovery time for critical infrastructure, structural integrity of community coordination points, and risk communication.

During the development of this application it has been determined that all eight wards, in addition to the metropolitan region, are susceptible to the effects of disasters and the disruptive effects of climate change if resilience measures are not taken. While project-specific metrics will be developed under Phase 2, the District has been developing climate-resilient program goals for some time under the Sustainable DC initiation and with MWCOG. Current programmatic goals include:

1. Educating and informing leaders and communities about the risk of climate change to NCR.
2. Coordinating individual adaptation efforts to maximize benefits and minimize unintended negative impacts (interdependencies among built systems with the socioeconomic and natural systems imply failure of one system will lead to a cascading failure of other systems).
3. Agreeing on collective risks and a commitment to a shared set of priority actions.
4. Integrating adaptation strategies into existing policies, capital planning, and operations, and using a “risk management” model to address climate risks.
5. Funding system-wide adaptation actions through innovative partnerships.
6. Encouraging grassroots initiatives alongside government actions.

The District believes that, in addition to detailing specific goals and objectives to assess success, evaluation is a continual process in order to achieve quality improvement and must begin during the program design phase. The program will be evaluated using specific measures for processes, outcomes,

and costs as they relate to selected projects under Phase 2. For long-term project and program sustainability, disseminating evaluation findings is critical.

Leverage

Attachment F details letters of commitment and support from District, private sector, and regional partners and resources that will assist in the implementation and maintenance of projects addressing the District's vulnerabilities. These letters represent long-standing, working relationships between HSEMA and these partners. As the Collaborative Planning Team builds individual projects as part of Phase 2, projects will be evaluated against each other to determine cascading benefits. For example, projects avoiding road closures during flash flooding will result in a stronger economic base for businesses. Alternatively, there are also options of projects that present an opportunity for financing the resilience action itself through Public Private Partnerships, such as an underground garage that can sustain flooding in an area that is plagued by flash flooding.

An additional significant step demonstrating long-term commitment is Smart911 and DC 211. The DC Office of Unified Communications introduced Smart911 to the District in July 2012 to improve 9-1-1 services to residents, an important step to increasing resilience by allowing residents to create a free Safety Profile for the household that includes any information that 9-1-1 and first responders should have in the event of an emergency (disabilities, vulnerabilities, sensitivities, etc.). Smart911 immediately displays a caller's Safety Profile to emergency service dispatchers and provides vital, life-saving information that can be used to facilitate the proper response to the proper location. The community engagement approach detailed in *Factor 1: Community Engagement Capacity*, which focuses on empowerment of local communities by improving risk communication and understanding, will support the mission of Smart911 by encouraging the public to engage in self-motivated disaster preparedness by signing up and entering information that includes their own family's vulnerabilities. The DC 211 system is a free service that links District residents to government and community

programs that can assist with crisis intervention; referrals to mental health professionals, food subsidy programs, employment, job training, and post-secondary education; information about health insurance; and information about home ownership programs. The District is actively investing in this community based service, providing assistance in over 140 languages. It is critical to long term survivability of residents post-event to have known accessible resources that can assist with navigating the post-event environment. DC 2-1-1 is that resource.

Streams of public funding to the District will likely be used differently in the long-term as a result of this approach. For example, significant public funding currently used for community outreach and affairs could be directed to Resilien-Seeds. A more permanent result would be reduced public spending during disasters of all types and at all levels as a result of the Resilien-Seeds program. This would be particularly evident in cases of local flooding and non-federally declared disasters. With more resilient infrastructure, there will be a reduction in public safety spending that, in the past, has been directed toward providing life safety and resources to individuals without power. Implementing resilience measures means potentially saving lives and money for individuals and the government over time.

By introducing resiliency improvements to the District's distressed and most impacted areas, economic resiliency will be improved for residents in suburban Maryland and Virginia who commute to, or work within, the District. A majority of this area's population works daily to support efforts within the District, and any improvements to the District's portfolio will have a positive outcome for Maryland and Virginia commuters as well as DC residents.

Committed leverage resources

(HSEMA will have the District's response prepared before submittal.)

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FACTOR 5: REGIONAL COORDINATION AND LONG-TERM COMMITMENT

The District is committed to increasing resilience in the jurisdiction, regardless of whether or not it is the recipient of a CDBG-NDR award. Examples of commitment to resilience-building have been referenced throughout this document. For example, the teams already mentioned in *Factor 1: Cross-Disciplinary Technical Capacity* have been engaged in resilience actions in our communities and will continue to do so in the future.

In a major step towards increasing resilience in the jurisdiction, DOH has been a member of the National Academy of Sciences Workgroup for Measurements of Community Resilience since its first workshop in September 2014. As part of its initiatives in the target area, DOH has used the information gained from the workshop to provide resilience training throughout the District to more than 500 participants in FY 2014, with 700 set as the target for resilience training in FY 2015, which will increase even more as the focus on resilience continues to grow.