

Cook County, Illinois



DRAFT Phase 2 Application *National Disaster Resilience Competition*

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Cook County Board of Commissioners**

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of the Bureau of Economic Development

* Note – some attachments referenced will be inserted prior to HUD submission.

EXHIBIT A: EXECUTIVE SUMMARY

Cook County is pleased to submit this Phase 2 proposal which sets forth resilience-focused programming and projects that will enhance disaster recovery, facilitate economic and community revitalization, promote social cohesion, better support vulnerable populations, and address many of the risks and vulnerabilities outlined in our earlier Phase 1 submission.¹ The strategies outlined in this Phase 2 proposal are focused on a south suburban demonstration area - including the cities of Blue Island and Calumet City and the villages of Calumet Park, Dolton, Riverdale, and Robbins - but are designed with effective countywide, regional, and national replication in mind.

Cook County is part of the Northeastern Illinois Resilience Partnership's (the Partnership) unprecedented regional effort to build resilience. This multi-jurisdictional, bipartisan Partnership - led by Cook County, City of Chicago, DuPage County, and the State of Illinois, in coordination with the Chicago Metropolitan Agency for Planning (CMAP) - formed in response to severe, repetitive, and chronic effects of flooding. National resilience is largely dependent on the resilience of northeastern Illinois, located between the Great Lakes and Mississippi River watersheds, and steward of 84% of the country's freshwater. The region's strengths are its geography and natural assets. It is uniquely poised to bridge the divide across watersheds and lead a new water culture, grounded by local resilience-building. While the region does not have well-known mega-storms, even small storms pose significant risk and there is a growing frequency of high intensity storm events, resulting in flooding and polluted runoff. The resulting economic, environmental, and social toll of this flooding and other hazards stems from vulnerabilities across social, natural, and built systems and disproportionately impacts low- and moderate income communities and vulnerable households who have less capacity to financially and administratively contend with disasters.

¹ Available at <https://www.dropbox.com/s/svpmeo7otkbzmi3/Cook%20County%20NDRC-DR%20Phase%201%20application.pdf?dl=0>

Cook County is well positioned to drive and implement resilience and contribute to regionwide efforts in a way that builds upon existing partnerships and enhances current efforts. The County is at the heart of the Chicago metropolitan region, comprising more than half of its population, jobs, and businesses. It is the second most populous county in the United States, a regional and national transit hub, and anchors the nation's third largest metropolitan economy with 2.6 million jobs and \$308 billion in annual output.² Despite its multiple assets, the County also has a disproportionate share of vulnerabilities, regionally and nationally. Industrial decline and shrinking job opportunities coupled with the more recent foreclosure crisis have contributed to the increasing suburbanization of poverty, particularly in the south suburbs.³ The County has also experienced multiple hazard events over the last few decades and currently leads the nation in disaster fatalities.⁴

Cook County's replicable strategic local approach - inclusive of 3 programs and 7 projects - builds physical, individual, and governmental capacity to enhance resilience in the demonstration area. It incorporates extensive stakeholder and public input provided during Phases 1 and 2, aligns with the County's *Planning for Progress* strategic plan, and embodies President Toni Preckwinkle's priority focus on economic development to revitalize the south suburbs. The County will partner with CMAP and the South Suburban Mayors and Managers Association (SSMMA) to develop and implement a resilience-enhancing community planning and capacity building program. Building upon an initiative currently being developed under Community Development Block Grant Disaster Recovery (CDBG-DR), the County will collaborate with Neighborhood Housing Services of Chicago (NHS) to design and implement a housing rehabilitation program that addresses remaining

² <http://blog.cookcountyil.gov/economicdevelopment/wp-content/uploads/2014/10/Appendix-B-Partnering-for-Prosperty.pdf>

³ <http://confrontingsuburbanpoverty.org/the-communities/south-cook-co-chicago/>

⁴ Spatial Hazards Events and Losses Database for the U.S. -- <http://hvri.geog.sc.edu/SHELDUS/>

unmet home repair needs and installs resilient features. A final program - focused upon outreach, education, and workforce development - will be crafted and deployed to educate communities and residents regarding resilience opportunities and resources as. From a project-based standpoint, an array of housing and infrastructure focused interventions will be applied. The County will partner with the Metropolitan Water Reclamation District (MWRD) to develop and implement green and gray infrastructure solutions through three “complete communities” projects in Riverdale, Robbins, and Blue Island/Calumet Park as well as one “green streets” project in Dolton. Additionally, the County will collaborate with Mecca Companies, Inc. and Related Companies to develop resilient affordable housing projects in Dolton and Calumet City respectively. With Cook County support, expansion of the Cal-Sag multi-use trail will form the connective tissue between the aforementioned programs and projects and help realize the County’s broader resilience vision. Cook County along with the Partnership, and its diverse array of public, private, and non-profit partners, will also continue to work to advance a regional resilience framework that maintains and improves the quality of life by minimizing exposure, reducing sensitivity, and increasing the built, natural, and social systems adaptive capacity to current and future hazards, stressors, and shocks. The County will provide partial funding for a regional coordinator position towards this end. This multi-faceted regional and local strategic approach, which aims to provide further relief from and future resistance to flooding, will create and expand employment opportunities, facilitate public and private investment, enhance overall economic growth, expand recreational options, promote environmental stewardship, and increase social cohesion. It will foster stronger connections between and within communities and their residents, particularly those that are low-income or otherwise vulnerable. More detail regarding proposed programming and projects may be found in Exhibit E. Supporting files referenced in this application can be accessed via provided password at:

<https://www.dropbox.com/sh/q9awcgitwz0bvgt/AACZ6yowTB9RiAzOmdBYxIEPa?dl=0>.

EXHIBIT B: THRESHOLD NARRATIVE

B.1. General Section

In May 2013, Cook County received a Disaster Declaration due to flooding from severe storms (DR-4116) that resulted in widespread flooding leading to losses exceeding \$62.7 million. HUD determined all of suburban Cook County to be most impacted and distressed. HUD confirmed that the County's CDBG-NDR Phase 1 application demonstrated Unmet Recovery Needs in both housing (\$904.6 million) and infrastructure (\$242.0 million). Based on additional data and information gathering at the community-level, the County has identified Unmet Recovery Need specific to its south suburban demonstration area - including the cities of Blue Island and Calumet City and the villages of Calumet Park, Dolton, Riverdale, and Robbins - an area which disproportionately suffered losses from DR-4116. Total FEMA Verified Loss for this area, which contains 4.4 percent of the County's population, was \$8.1 million or approximately 13 percent of the County's total FEMA Verified Loss. To address significant need, the County has identified direct funding and other resources for this demonstration area totaling \$9.6 million. Despite this, unmet housing need in this area totals \$151,454,282 and affects an estimated 4,314 housing units. In this Phase 2 application, Cook County sets forth a strategy to address Unmet Recovery Need via a prioritized set of projects/programs, as well as scalable resilience-building long-term commitments.

B.2 Eligible Applicant

Cook County was identified by HUD as eligible for the CDBG-NDR Competition and was subsequently invited by HUD in June, 2015 to participate in Phase 2 of the Competition.

B.2. (1) Partners A Partner Letter and Phase 2 Partner Agreement is provided in Attachment A for the following formal partnerships including: Northeastern Illinois Resilience Partnership, Chicago Metropolitan Agency for Planning, South Suburban Mayors and Managers Association, Metropolitan Water Reclamation District of Greater Chicago, Neighborhood Housing Services of Chicago, Mecca Companies, Inc., and Related Companies.

B.3. Eligible County

Cook County, the area primarily benefitting from the proposed CDBG-NDR assisted activities, experienced flooding from severe storms in 2013 resulting in a Presidentially-declared major disaster declaration (DR-4116) under the Stafford Act (PL-113).

B.4. Most Impacted and Distressed Target Area

All of Cook County was determined by HUD to be most impacted and most distressed by DR-4116. In Phase 1, Cook County established and documented Unmet Recovery Needs, including unmet housing recovery need of \$904,624,696, equivalent to 25,768 households not served by existing FEMA, SBA, National Flood Insurance Program (NFIP), and CDBG-DR resources due to limited funding. New data identifies 21,722 approved private insurance claims for DR-4116 equaling a total payment of \$203,657,950, or an average of \$9,376 per household for add-on rider policies for water backup/sump pump discharge. However, 3,800 households submitted claims that were not approved, reflecting potential unmet need.

While this reflects Unmet Recovery Need across the entire County, a demonstration area, described on p.32, will be the primary beneficiary of funding and will be used in the design and testing of a model approach to disaster resiliency to be taken to scale across the County. This area, in particular, was identified due to its disproportionate share of flood losses compounded by significant socioeconomic need and limited adaptive capacity. Using a framework similar to Phase 1, the analysis below identifies Unmet Recovery Need in this area and confirms that it remains most impacted and distressed.

Unmet Housing Need: FEMA and SBA assistance, NFIP payouts, and CDBG-DR funds are inadequate for addressing repair needs, and per HUD guidance, the County does not currently run a qualifying housing recovery program (see “CookCountyHousingNeedData_Demonstration

Area.pdf”⁵). Table 1 summarizes total housing recovery need, funding sources, and unmet need in Cook County’s demonstration area for DR-4116. Unmet need totals \$151,454,282, equal to 4,314 households that will not be served due to inadequate funding.

Total FEMA Verified Loss for DR-4116 in the County’s demonstration area was \$8,108,294, representing approximately 13.0 percent of the County total. These losses were assessed from 6,662 applicants, 19.5 percent of the County total. The losses suffered by the demonstration area are disproportionately high; the area contains just 4.4 percent of the County’s population.

Similar trends are visible in applicants with special needs (21.1 percent of total) and applicants over 60 (16.1 percent of total). A housing impact multiplier of 10.0, described in the Phase 1 application, is applied to FEMA Verified Loss to capture unidentified damage and account for those who didn’t apply for or were denied assistance. An additional \$12,000 per home is added for resilient measures not completed with repairs (see “CNTCostofResilienceMeasures.pdf”⁶).

Funding sources to assist with housing recovery in the demonstration area include \$937,500 from the County’s planned CDBG-DR housing program for housing rehabilitation for approximately 25 homes. Additional sources include FEMA, SBA, and NFIP. To date, Cook County has identified and pursued the award of \$9,572,658 in recovery-related resources.

TABLE 1 – Unmet Recovery Needs Threshold Calculation (Demonstration Area)		
Recovery Need		
FEMA Verified Loss	\$8,108,294	6,662 units
[times 10] Housing Impact Multiplier	\$81,082,940	
[add \$12,000 per unit] Cost of Resilient Measures	\$79,944,000	

⁵ https://www.dropbox.com/s/diyhtaqb33513ho/CookCountyHousingNeedData_DA.pdf?dl=0

⁶ <https://www.dropbox.com/s/ui0u3qedrysrwi/CNTCostofResilienceMeasures.pdf?dl=0>

Total Recovery Need	\$161,026,940	
Funding Sources		
FEMA Individual & Household Assistance ⁷	\$5,653,670	3,064 units
National Flood Insurance Program	\$261,488	46 units
Cook County CDBG-DR	\$937,500	25 units
SBA Disaster Assistance Loan Program – Housing	\$2,720,000	151 units
Total Funding	\$9,572,658	
Total Unmet Recovery Need	\$151,454,282	4,314 units⁸

The windshield survey described in the County’s Phase 1 application was conducted in a subset of the demonstration area Blue Island and Calumet City and identified more than 50 homes with unaddressed flood-related damage. New survey information obtained by Cook County for an additional 25 homes in Blue Island is illustrative of the magnitude of losses for DR-4116 and flood events over the last decade. This survey, conducted in October, 2014 by the Northeast Blue Island Resident Action Group, covered a four block area and was available in print and online in both English and Spanish. On average, households reported having incurred nearly \$10,000 in property damage for basement flooding occurring between 4 and 5 times within the last 10 years. Sixty percent also reported overland flooding in areas such as backyards. Homeowners reported having spent more than \$5,000 on preventative measures, including drain tile, additional sump pumps, gutter systems, sealing and waterproofing, and foundation repair. Several homeowners specifically noted an inability to afford preventative measures, while

⁷ Includes owner-occupied real property and personal property in rental units; personal property is a proxy for real property since rental housing is not inspected by FEMA for unit damage.

⁸ Assumes per unit repair cost of \$35,106 (average SBA award plus cost of resilient measures).

others questioned the impact on the incidence and magnitude of flooding. This survey reinforces the high economic and social cost of flooding in the County's demonstration area and the lack of coordinated resources to build resilience and eliminate flood events affecting residents.

The County also obtained additional information on housing need via public meetings and design charrettes held in its demonstration area in Phase 1 and Phase 2. Following three public meetings in early 2015, the County compiled the results of a mapping exercise which identified areas experiencing frequent flooding. These areas were then overlaid with geographies with potential opportunity areas to begin to identify priority areas of need for Phase 2 projects (see "DisasterResilienceMeetingResults2015.pdf"⁹). Additionally, a Phase 1 planning survey that meeting attendees and other residents completed in February 2015 illustrated the economic and social costs of flooding. Of 26 residents who completed the survey, 40 percent said they were 'very much' worried when heavy rains are forecast. Sixty percent had suffered from flooding damage, and more than half said they had experienced trauma or stress as a result. Reported damages included damage to foundation or walls (37.5 percent); mold (37.5 percent); and felled trees (20.8 percent). Despite apparent disaster-related need, *less than 10 percent* indicated that they had requested public assistance from nonprofit, local government, or FEMA resources. Four interactive charrettes held in Phase 2 to explore design concepts were also valuable in continuing to assess unmet need, particularly among vulnerable populations within the County's demonstration area. Residents expressed frustration with repetitive flooding and an inability to afford some flood prevention mechanisms, such as overhead sewers and insurance riders.

B.5. Eligible Activity

Cook County will ensure that all Phase 2 activities achieve specific disaster-related purposes, as defined by HUD. The proposed projects and programs directly relate to disaster relief from DR-

⁹ <https://www.dropbox.com/s/5ztp2gfoehd9m4/DisasterResilienceMeetingResults2015.pdf?dl=0>

4116, long-term recovery and restoration of housing in Cook County, an area determined by HUD to be most impacted and most distressed. Funding from HUD requested for projects and programs is eligible under section 105(a) of the Housing and Community Development Act of 1974 and 24 CFR 570.201-207, and applicable fair housing and civil rights laws and regulations will be complied with. As described below, all activities will meet a national objective and are not temporary measures but rather reflect feasible, long-term solutions which incorporate resiliency measures.

B.6. Resilience Incorporated

Cook County has demonstrated its commitment to resilience via its plan to design, test, and scale a model approach to disaster resiliency. The projects and programs proposed as part of this Phase 2 application will improve the County's resilience to current and future threats and hazards, including climate change, and expand a shared community asset, the Cal-Sag Trail, which will support social cohesion and highlight the natural features of the area. Within the County's proposed portfolio, three projects support 'complete communities' resilience-building by addressing community need within areas containing residential, industrial, and commercial properties with significant opportunities for revitalization and co-benefits. For example, residential resilience projects such as storm sewer improvements, creation of public right-of-way bioswales, and gray and green infrastructure installations (also featured more broadly as part of the County's proposed housing rehabilitation program on private property), will be coupled with improvements to landscaping, gray and green infrastructure installations, and stormwater management improvements on nearby industrial and commercial land to support redevelopment, economic growth, and long-term job creation. An additional 'green streets' project supplements these efforts. Two housing projects – single-family ownership and multi-family rental - will incorporate resilient features. A housing rehabilitation program will support home renovations, with a specific focus on addressing unmet housing recovery need, preventing basement flooding, and making homes more resilient to rain

storms. Finally, a project which completes the Cal-Sag Trail, a 28-mile multi-use trail, and nearby parkland will create a shared community asset, provide an alternative mode of transportation, offer a healthy recreation option for residents, and illuminate the history of the area in a unique way, while also incorporating features for rainwater storage. Collectively, these projects and programs are expected to improve the adaptive capacity of the area's built, natural, and social systems for current and future hazards and shocks. They also serve as a replicable and scalable resilience model.

Regardless of the outcome of its Phase 2 application, both Cook County and the Northeast Illinois Resilience Partnership firmly commit to activities to enhance resilience in northeastern Illinois and Illinois more broadly. Within one year of Phase 2 results, both will commit to incorporate resilience in policy, design guidelines, workforce development activities, data gathering, modeling and alert systems, capacity-building, and planning, as detailed in Exhibit G – Long Term Commitment, p.X. To highlight a few of the commitments that will be made, the County and Partnership will host Resilience Academies or training sessions for regional planning councils, local governments, and communities and will work to engage and build the capacity of public works agencies. Additionally, there is a pledge to advancing the principles of the State of Illinois' Urban Flooding Awareness Act and examining zoning ordinances, development regulations, and plumbing and building codes for opportunities to incorporate resilience and allow for greater reuse of natural resources. At the regional level, CMAP has convened a Resilience Resource Group, which will provide critical input on the next iteration of CMAP's comprehensive regional plan. CMAP will explore refinements of its current policy and practice areas including green infrastructure co-benefits in parks and open spaces; conservation of undeveloped, agricultural, and natural areas; climate adaptation and resilience; and geographically-based regional planning strategies. As the Partnership works together beyond Phase 2, it commits to supporting resilience-

building measures that address current and future threats while taking into account climate change, population growth, and other factors impacting the frequency and magnitude of hazards.

B.7. Meet a National Objective

Each Cook County’s Phase 2 activities, with the exception of general administration and planning, will meet a national objective as outlined below (See B.8 for more details).

Activity	Applicable National Objective(s)
- Complete Communities - Blue Island / Calumet Park	Low/Mod Area, Low/Mod Jobs, Slum/Blight, Urgent Need
- Complete Communities - Riverdale	Low/Mod Area, Low/Mod Jobs, Urgent Need
- Complete Communities - Robbins	Low/Mod Area
Green Streets - Dolton	Low/Mod Area, Urgent Need
Housing Programs and Projects	Low/Mod Housing
Cal-Sag Trail	Low/Mod Area

B.8 Overall Benefit

Using a comprehensive risk approach, Cook County selected a demonstration area, described in p. 32, to be used in the design and testing of a model approach to disaster resiliency that will provide successful examples and can be scaled Countywide and regionally. The County will prioritize investments in the demonstration area, which is comprised of 57% low- and moderate-income households. At least 50% of the funds will support activities that benefit such households.

B.9 Establish Tie-Back

HUD confirmed that Cook County’s CDBG-NDR Phase 1 application demonstrated Unmet Recovery Needs exist in both housing (\$904.6 million) and infrastructure (\$242.0 million).

Section B.4 further establishes Unmet Recovery Need for the County’s demonstration area, the

primary beneficiary of requested CDBG-NDR funds and a model for other areas within the County and region. Cook County's proposed projects and programs (described in Exhibit E – Soundness of Approach, p. 52) to reduce flooding risk and increase resilience directly tie back to DR-4116. Each project directly addresses housing damage through activities which focus on resilience-building at the residential property level. The housing rehabilitation program will complete flood-related home repairs and mold remediation, where needed, and incorporate resiliency upgrades such as stormwater storage through rain gardens and barrels and overhead sewer systems or backflow valves to reduce the impact of flooding. Monitoring and/or alert systems will also be installed to give homeowners more time to prepare before flooding occurs. New construction of single-family homes and the renovation of a multi-family property are slated for land that regularly floods and will incorporate resilient features. These projects and programs will directly address Unmet Recovery Need in housing resulting from DR-4116 and are estimated to impact 675 housing units. An education component will help residents affected by DR-4116 understand the importance of home upgrades in preventing flooding.

The three proposed projects have a broader focus and indirectly address Unmet Recovery Need in supporting 'complete communities' resiliency and its associated co-benefits. Two other projects also support this goal through 1) a 'green streets' concept implemented in one community and 2) the construction of a multi-use path linking communities within the demonstration area and beyond. The County recognizes that resilience-building measures on residential property alone will not fully prepare and protect the community from the effects of future disasters because the demonstration area, developed in the 1930s, was built with a combined sanitary and sewer system that is now severely undersized. As such, the County proposes a joint focus on improvements to the public right of way, along with adjacent parkland and redevelopment of vacant or underutilized industrial and commercial land. The expected

impact on Unmet Recovery Need in housing from DR-4116 is threefold: 1) It seeks to limit the burden on an aging and outdated infrastructure and make targeted improvements with the most impact on flood reduction. Improvements in the public right-of-way, parkland, and industrial and commercial properties offer valuable opportunities for stormwater management and water retention – given their significant acreage, in many cases – which will reduce inflows to already strained municipal stormwater systems and further lessen residential flooding in adjacent areas; 2) It addresses the significant economic need present in the demonstration area and seeks to build local government and resident capacity to respond to hazards and shocks. By addressing issues of stormwater retention on vacant land, the County will create opportunity for businesses that are looking for sites to locate and grow, which in turn supports long-term job creation (particularly in high paying sectors such as manufacturing) which will grow the tax base and enable new wage-earning opportunities which will increase the capacity of local governments and residents, allowing both to better respond to existing flood-related housing needs, as well as prepare for and withstand future hazards and shocks; and 3) A focus on mixed-use redevelopment results in multiple benefits to the immediate residential community, including improved parkland and recreational space, reforestation (particularly in industrial areas needing landscape / livability improvements), and improved access to an inter-community multi-use path, all of which will improve livability and reduce stress for residents in areas most impacted by DR-4116.

B.10 One Application per Applicant

Cook County is a member of the Northeastern Illinois Resilience Partnership’s regional effort to build resilience. However, per HUD instructions, the County is applying individually.

B.11 Certifications

All required certifications are provided in Attachment C - CDBG-NDR Certifications.

EXHIBIT C: CAPACITY

C.1 Past Experience

Cook County - General Administrative Capacity

The Cook County Department of Planning and Development (DPD), whose mission is to develop and sustain viable communities, can drive and implement resilience within the County and contribute to regionwide resilience efforts in a way that builds upon existing partnerships and enhances current planning and programming initiatives. DPD effectively administers its Federal funds in a timely and compliant manner. Over the past 4 years, DPD has committed and expended millions of dollars in older pre-existing funding, cleared an array of prior findings, and developed/implemented updated policies, procedures, and workflows. Reorganization of operations and personnel for increased efficiency, enhanced compliance, and expanded impact continues. DPD has become a model HUD grantee in the region and nation. Historically, DPD has managed over \$544 million in Federal funding from the U.S. Department of Housing and Urban Development (HUD) including annual entitlement CDBG, HOME, and ESG allocations as well as singular resources such as NSP, HPRP, Section 108 Loan Guarantee, and CDBG-R. More recently, DPD was awarded \$83.6 million in CDBG-DR funds to address impacts from 2013 flooding. Related program development and project deployment is underway. A significant volume of funding commitments, with expenditures expected soon after, will be shortly in DRGR showing progress.

To guide its partnerships and investments, DPD completed an innovative and collaborative strategic planning initiative, *Planning for Progress*,¹⁰¹¹ in partnership with CMAP. Encompassing the City of Chicago, over 130 suburban municipalities, and unincorporated areas, this process incorporated an extensive and multi-faceted outreach/engagement strategy spanning 15 months. *Planning for Progress* resulted in a combined Consolidated Plan and Comprehensive Economic

¹⁰ <http://www.cmap.illinois.gov/programs-and-resources/lta/cook-county>

¹¹ <http://blog.cookcountyil.gov/economicdevelopment/planning-for-progress/>

Development Strategy - perhaps the first in the nation - to guide investments and partnerships around housing, community, and economic development. It promotes resilience, particularly for benefit to low- and moderate-income and vulnerable populations, and aligns County resources, including Federal funds, for expanded community impact. Adopted by Cook County in January 2015 with formal implementation beginning on October 1, 2015, *Planning for Progress* has been touted as a national model and best practice by the Brookings Institution, Metropolitan Planning Council, Federal Reserve Bank of Chicago, national, regional, and local HUD, and regional EDA.

Through *Planning for Progress* and continuing with this resilience effort, DPD has engaged County agencies and affiliates with relevant expertise to align efforts, foster new collaborations, and bolster capacity in developing this application and aimed at making the County more resilient. This interagency team includes the Cook County Forest Preserve District; Commission on Human Rights; Departments of Public Health, Transportation and Highways (DOTH), Environmental Control, Homeland Security and Emergency Management (DHSEM); Chicago Cook Workforce Partnership; Cook County Land Bank Authority; and the Housing Authority of Cook County. Moreover, *Planning for Progress* and resilience initiatives are aligned with other strategic plans including DHSEM's *Hazard Mitigation Plan* (the largest multi-jurisdictional all hazards plan in the nation), the Forest Preserve's *Next Century Conservation Plan* (recently adopted), and DOTH's *Long Range Transportation Plan* (currently under development). The Forest Preserve manages thousands of acres of open space (a significant portion of which is within the regulatory floodplain in Cook County) that absorbs rainfall and cushions adjacent municipalities from overbank flooding.

This application is led by DPD's three Deputy Directors of Community Development, Economic Development, and Housing, and *the application is written by DPD staff with informational support from other partners*. Based on its current successful track record with HUD funding, DPD is well

suited to administer CDBG-NDR funds on behalf of the County and has the legal authority and capacity to competitively procure vendors for program design and implementation.

DPD will be the Cook County agency that directly administers the CDBG-NDR funding, if awarded, and will oversee related staffing, programs, projects, and funding recipients. In an attempt to further enhance capacity, DPD has participated in relevant HUD training on the CDBG-DR program and DRGR system as well as the Rockefeller Foundation sponsored Resilience Academies in Phases 1 and 2. Related information has informed the strategy developed for and outlined within this Phase 2 submission. However, Cook County also recognizes the potential for success of its proposed combined programming and project strategic approach hinges significantly upon partnerships. Following is a summary of the various partners and their respective capacities. See Attachment A – Partner Documentation and Exhibit E – Soundness of Approach for more details.

Partners –Technical Capacity

Northeastern Illinois Resilience Partnership (the Partnership), a multi-jurisdictional, bipartisan, regional Partnership inclusive of CDBG-NDR eligible applicants Cook County, City of Chicago, DuPage County, and the State of Illinois, was jointly formed in late 2014 to address issues related to the severe, repetitive, and chronic effects of flooding. The Chicago Metropolitan Agency for Planning, the designated metropolitan planning organization for northeastern Illinois, coordinates this initiative. Taking advantage of the NDRC opportunity, these local decision makers are leading a coordinated effort to collect data, engage local residents and businesses, test pilot projects, and develop a regional plan for improving resiliency to flooding and other climate impacts.

Like flooding, complex social vulnerabilities cross jurisdictional boundaries and are best addressed through regional coordination. Factors that contribute to social vulnerability – access to transportation, affordable housing, and/or economic opportunities, age, veteran status, social isolation, and poverty - manifest differently in localities, but are regionally interconnected. The

Partnership's framework allows for the relation of local vulnerabilities in the demonstration area to the larger economic, ecological, and infrastructural systems that support the entire region. For instance, local resiliency planning can provide project-specific workforce opportunities for the neighborhood, but those activities will be connected to regional efforts to develop workforce training programs and create market demand for green infrastructure, among other initiatives. This will allow solutions to benefit vulnerable populations in the pilot areas and regionally. While DPD will be responsible for complying with HUD grant requirements and implementing pilot projects from the grant received, the Partnership will provide over-arching coordination between the its' activities, as well as the broader range of crosscutting resilience activities that affect the region.

The Partnership draws on the expertise of an array of public, private, and non-profit partners representing comprehensive planning, research, architecture, landscape architecture, design, engineering, policy, advocacy, stormwater management, environmental stewardship, parks and recreation management, technology, workforce development, civic, philanthropic, and financial institutions sectors. Thus, the Partnership enables cross-disciplinary technical capacity in further support of Cook County's proposed approach. Given the range of partners and their sector expertise, capacity will be retained if an individual partner reduces their participation. Various workgroups, convening subject matter experts, further enhance capacity. Partnership participants include the Center for Neighborhood Technology, Metropolitan Planning Council, the Natural Resources Defense Council, Argonne National Laboratory, Illinois State Water Survey, Midwestern Regional Climate Center, Chicago Wilderness, Elevate Energy, Illinois Department of Natural Resources, Illinois Environmental Protection Agency, Metropolitan Mayors Caucus, OAI Chicago Southland, Openlands, U.S. Army Corps of Engineers, the Calumet Stormwater Collaborative, U.S. Environmental Protection Agency, Design for America, Delta Institute, Foresight Design Initiative,

Chicago Community Trust, Enterprise Foundation, Grand Victoria Foundation, UI Labs, the Illinois Chapter of the U.S. Green Building Council, Rebuild By Design, etc.

As Cook County proceeds with its resilience strategy, it will call upon expertise through the Partnership related to: 1) Demographic/climate research and analysis including climate modeling and forecasting; 2) Regional assessments of fair housing and equal opportunity challenges; 3) Community-based organizing and development, with a focus on flooding; 4) Planning, design, and maintenance of the region's built environment, including buildings, streets, sewers, gray/green infrastructure; 5) Benefit/cost analysis including assessments of cost reasonableness and project feasibility; 6) Open source design; and 7) Technological and product innovation.

The Partnership will serve as the regional coordinator of resiliency activities. A regional approach is particularly appropriate for addressing shared threats and risks, such as flooding and climate change, and ensures that local actions to mitigate flooding don't exacerbate downstream problems. Carrying out pilot and regional activities under the umbrella of the Partnership will lay a foundation for strategic implementation of resiliency planning. It will also encompass an "all-hazards" resilience approach addressing extreme heat, drought, economic/ecological/social vulnerability.

Chicago Metropolitan Agency for Planning (CMAP), created in 2005, is the designated metropolitan planning organization (MPO) for northeastern Illinois, which encompasses Cook County. CMAP has significant experience facilitating expansive and complex planning and policy initiatives. It developed and guides the ongoing implementation of the GO TO 2040, adopted in 2010, as the region's comprehensive plan which establishes coordinated strategies that help the region's 284 communities address transportation, housing, economic development, open space, environment, and other quality of life issues.¹² In the last three years, CMAP has conducted nearly 80 planning projects with local communities through the Local Technical Assistance program,

¹² <http://www.cmap.illinois.gov/about/2040>

initially funded by a HUD Sustainable Communities grant. Each of these projects includes in-depth stakeholder input; civic partnerships; and robust, direct public engagement through focused workshops and surveys that inform existing conditions assessments, visioning, and recommended strategies of the final plan. Many of CMAP's partner communities include large vulnerable populations, including low-income communities, people of color, immigrants, and the elderly. To improve engagement of vulnerable populations in those cases, CMAP has integrated strategies to translate materials, provide in-person language interpretation, partner with existing community and faith-based organizations to reach residents, and develop toolkits of best practices for immigrant integration, aging in place, and climate adaptation. CMAP has also long-served as a central convener of regional stakeholders including the resilience focused Partnership described earlier. It convenes an Environment and Natural Resources Committee that provides project input.

CMAP is also supporting long-term efforts to build resilience as part of the development of its next comprehensive regional plan. The planning process, which began in July 2015, will occur over the next three years and ultimately provide targets and recommendations for the region on land use, transportation, economic development, environmental, and governance issues. This ongoing effort includes the development of a regional resilience strategy, which is expected to be a significant issue covered in the regional plan. The regional resilience strategy largely builds upon the collective efforts of the Partnership by: 1) Fostering multi-jurisdictional collaboration by engaging other jurisdictions in the Chicago area that are not eligible for the NDRC; 2) Ensuring that the Partnership's long-term ideas can be achieved beyond the time-frame of the HUD grant; and 3) Incorporating the shared resilience vision and innovative resilience strategies into a formal, region-wide plan that covers a comprehensive set of planning issues for communities, economies, infrastructure systems, and ecosystems. The cross-sector relationships initiated through the NDRC informed CMAP's approach to establish a Climate Resilience Resource Group of external

public/private/non-profit partners that will guide the regional resilience strategy. The resource group includes representatives from all four NDRC applicants, as well as diverse experts from public health, philanthropy, emergency management, transportation, stormwater, utility companies, land management, the Archdiocese, and community-based organizations. This stakeholder engagement will be paired with robust public and resident engagement in later planning stages. Ultimately, the regional comprehensive plan will provide a framework for CMAP and its partners (including the Partnership) to implement resilience policy and programs in a concerted, strategic manner. CMAP will support Cook County's proposed community planning/capacity building program.

South Suburban Mayors and Managers Association (SSMMA) is an intergovernmental agency that provides technical assistance and joint services to 39 suburban Cook County member municipalities. It also leads the south suburban subregional Council of Mayors. SSMMA's primary focus is to identify and pursue collaborative solutions and facilitate interagency partnerships to address common municipal challenges. SSMMA members work cooperatively on transportation, legislation, land use, economic development, recycling, purchasing, stormwater and open space planning, infrastructure, human resources, public safety and housing issues. SSMMA's tradition of cooperative planning and collaborative execution of programs and projects provides an assurance that any intergovernmental effort will be positioned for success and administered professionally and fairly. A HUD Sustainable Communities grant recipient, SSMMA currently coordinates subregional economic development/affordable housing/stormwater management activities through the Chicago Southland Economic Development Corporation (CSEDC), Chicago Southland Housing and Community Development Collaborative, and Little Calumet River Watershed Planning Council. SSMMA will support Cook County's proposed community planning/capacity building program.

Neighborhood Housing Services of Chicago (NHS) is a nonprofit neighborhood revitalization organization committed to helping homeowners and strengthening neighborhoods throughout

Chicago, South Suburban Cook County & Elgin. Neighborhood Lending Services (NLS), an NHS-affiliate, is Illinois' largest nonprofit lender for homeowners and new home buyers. NHS offers free homebuyer education classes, fixed-rate loans for home purchase and/or rehabilitation, foreclosure assistance as well as invests directly in the preservation and rehabilitation of housing. Since it began in 1975, NHS has served more than 208,000 families; loaned \$577 million to borrowers to buy, fix or keep their homes; educated more than 34,000 potential new home buyers; created more than 4,100 new homeowners; provided foreclosure counseling and education to more than 27,000 homeowners; saved more than 6,500 families from foreclosure; and reclaimed 980 vacant 'problem' properties. NHS' Construction Services Team consists of highly trained and experienced staff that manages repair, upgrade or retrofit projects for hundreds of clients each year. In the past few years, related staff members have enhanced their training in improving indoor air quality, building science, healthy homes principles, and energy efficiency and weatherization best practices. NHS will administer Cook County's proposed housing rehabilitation program and may provide support to homebuyers of the Mecca-developed affordable housing project.

Metropolitan Water Reclamation District (MWRD) is the County's stormwater management agency, which regulates development through its regional watershed management ordinance, and plans, implements, and finances regional and local flood control projects. MWRD protects the health and safety of the residents and the quality of the water supply source, improves the quality of water in watercourses, protects businesses and homes from flood damages, and manages water as a vital resource. MWRD controls municipal sewer construction by permits outside the city of Chicago and owns a network of intercepting sewers to convey wastewater from the local collection systems to its 7 water reclamation plants. MWRD's Tunnel and Reservoir Plan (TARP) is one of the country's largest public works projects for pollution and flood control. Four tunnel systems total 109 miles of tunnels, 9 to 33 feet in diameter and 150 to 300 feet underground. Two reservoirs are

in operation and construction is in progress on one remaining reservoir. Additionally, MWRD controls 76.1 miles of navigable waterways, which are part of the inland waterway system connecting the Great Lakes with the Gulf of Mexico. It also owns and operates 35 stormwater detention reservoirs to provide regional stormwater flood damage reduction. Initially adopted in February 2007 and amended in July 2014, the Cook County Stormwater Management Plan (CCSMP)¹³ establishes the framework for MWRD’s countywide stormwater management program. MWRD has also worked with the Councils of Government (COGs) to create Watershed Planning Councils that represent communities located within major watersheds in Cook County, and communicate the needs and interests of the members of the public and local governments to the MWRD. Currently, MWRD is undertaking Stormwater Master Plans pilot studies including the Little Calumet River/Calumet Sag Channel Drainage Area, which significantly overlaps with the demonstration area. These studies analyze existing flooding problems and the potential for future issues and to identify a comprehensive, replicable approach to address those problems through large or small scale, gray and/or green approaches. Specific to this Phase 2 application, MWRD will manage the proposed “Complete Communities” projects in Riverdale, Robbins, and Blue Island/Calumet Park as well as the “Green Streets” project in Dolton.

Arcadis is a consultant to MWRD on the Stormwater Master Plan for the Little Calumet River/Calumet Sag Channel Drainage Area. Arcadis is a design firm focused on natural and built assets, and through its consultant agreement with MWRD, is providing support for this NDRC application.

Mecca Companies, Inc., founded in 2008, is an affordable housing and student housing development firm based in Indianapolis and Chicago. Mecca, along with its subsidiary Gamma Contracting Group, has produced in excess of 1,750 units throughout the Midwest over the past

¹³ <http://stormwater.mwrld.org/>

seven years with a total development cost exceeding \$150 million. Additionally, Mecca previously developed affordable single family ownership housing with NSP funding in south suburban Cook County. Mecca will develop the proposed Dolton single-family ownership housing project based on a successful response to DPD's rolling housing Request for Applications (RFA).

Related Companies, founded in 1972, is a real estate industry leader across its three divisions of residential development, property management, and financial services. Related is currently the largest owner of affordable multifamily rental housing in the nation overseeing more than 1,100 properties in 47 states. Related, its subsidiaries Related Affordable, LLC and Related Apartment Preservation LLC, and its affiliate Related Management Company, have overseen the purchase of over 90 affordable housing properties consisting of more than 14,000 units (total development value in excess of \$1.3 billion) and management of approximately 25,000 housing units, 19,000 of them affordable. Related will develop the proposed Calumet City multi-family rental housing project based on a successful response to DPD's rolling housing Request for Applications (RFA).

Community Engagement and Inclusiveness

DPD effectively engaged stakeholders and the public through *Planning for Progress*, its strategic planning initiative spanning 15 months. An array of outreach methods were deployed including 20+ formal presentations, 3 interactive sub-regional workshops, web-based surveys, 30+ focus groups, and 4 open house events resulting in input from over 2,000 participants regarding local needs, resources, and opportunities for affordable housing, community, and economic development.

Additionally, DPD regularly solicits input regarding program design and operations through annual strategic plans and performance reports. In relation to specific flood impacts and recovery needs, DPD solicited input from municipalities and social service providers in developing its CDBG-DR action plan. All DPD outreach efforts comply with the County's Citizen Participation Plan, updated and adopted in 2012, and ensure sufficient advance notice via newspaper publication, website

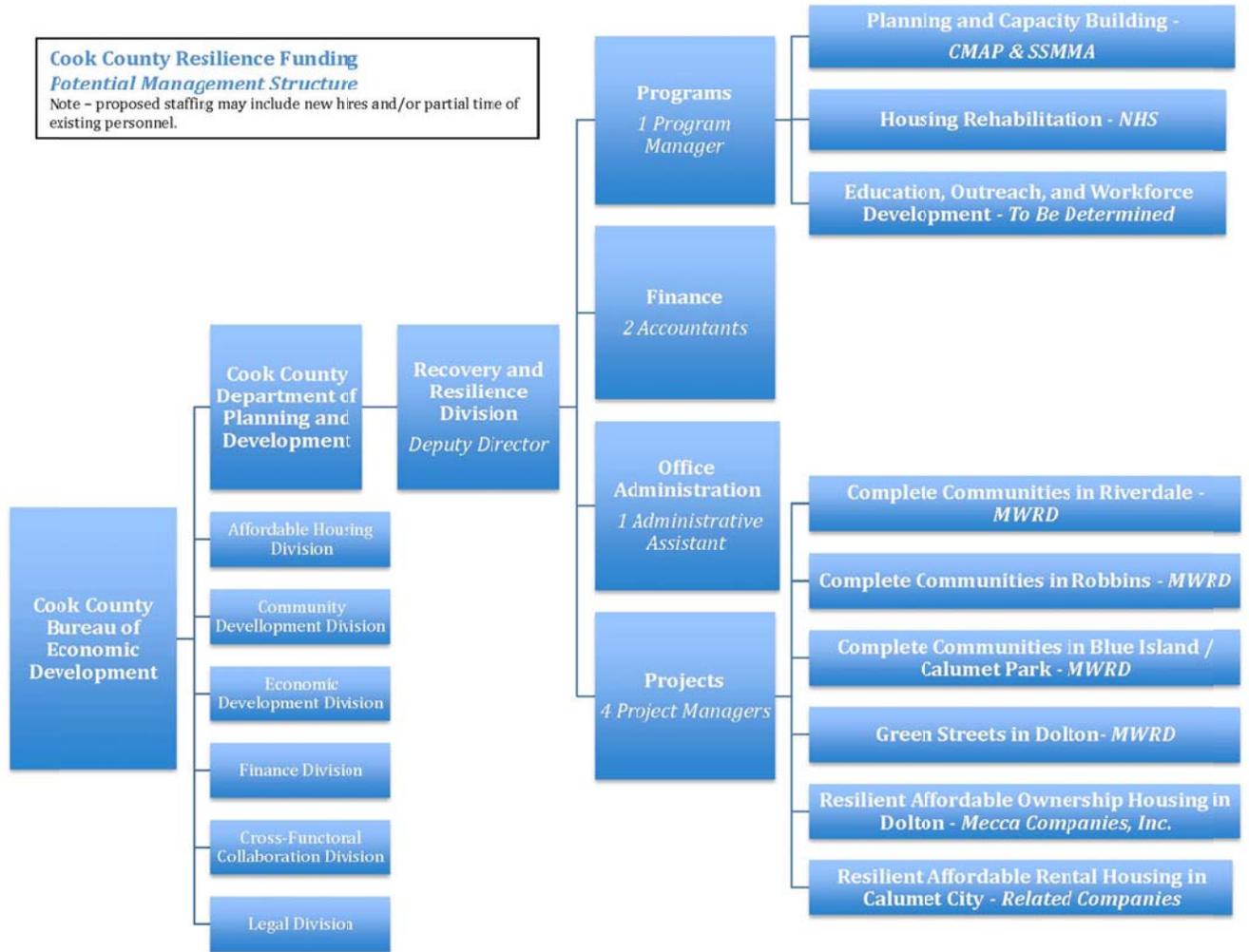
posting, and electronic email blast of public review/comment opportunities including public hearings. DPD regularly makes presentations and announces initiatives and related input opportunities to local stakeholder groups and commissions. Since DPD's programs largely target low- and moderate-income and other vulnerable populations, DPD coordinates with stakeholder agencies serving these groups. Contingent on local needs, meeting notices, surveys, and summaries are made available in both English and Spanish. Additionally, individuals with disabilities or limited English proficiency are able to request special accommodations. DPD's Economic Development Advisory Committee meets bi-monthly and offers opportunity for public comment. Cook County has achieved local and national recognition for effective collaboration and coordination with public agencies regionally. President Toni Preckwinkle initiated and regularly convenes County leaders throughout the region to share information and resources. DPD also led a successful regional effort to apply to the Federal Economic Development Administration for an Investing in Manufacturing Communities Partnership designation as one of just twelve awardees.

DPD and its aforementioned partners have a strong track record for community engagement including building broad-based coalitions to tackle cross-cutting issues. They are well-versed in best practices to solicit and synthesize input from a wide array of stakeholders and members of the public, particularly when they represent competing interests. DPD is employing similar outreach and engagement modalities specific to resilience with an emphasis on households, institutions, and communities most affected by DR-4116, and most importantly, more likely to be impacted by and vulnerable to future threats and hazards including those resulting from climate change. This outreach is creating and empowering formal and informal leaders on stormwater management and broader resilience topics. Outreach began in earnest during Phase 1 and helped lay the groundwork for intensified outreach that sustains awareness, involvement, and implementation of resiliency

efforts during the development of this Phase 2 application. Feedback provided has influenced and impacted the strategy proposed here. See Exhibit E and Attachment D for details.

C.2 Management Structure

Existing Management Structure:



References:

Cook County is prepared to furnish references from the following agencies upon HUD request:

United Way of Metropolitan Chicago, Brookings Institution, National Resources Defense Council,

Federal Emergency Management Agency, and Illinois Emergency Management Agency.

EXHIBIT D: NEED

D.1 Unmet Recovery Need and Target Geography

This application sets forth a comprehensive proposal to support disaster recovery and resilience across three geographic areas: the Northeastern Illinois region; Cook County; and a south suburban demonstration area. Phase 1 detailed the nature and extent of \$904.6 million in unmet housing recovery need and \$242.0 million in unmet infrastructure recovery need from DR-4116 countywide, the geography identified by HUD to be most impacted and distressed. Beyond recovery need from DR-4116, the County documented broader resilience needs: the highest national disaster fatality rate; disproportionate disaster-related property damage, particularly flooding which accounts for 41 percent of disaster loss from all hazards; a substantial gap between insured/ uninsured property losses; significant increases in urban flooding; climate change increasing frequency and severity of weather events (flooding, heat, and winter weather, in particular); and vulnerabilities including an aging, insufficient infrastructure, a poverty rate nearly double the its neighbors, environmental contamination in historic manufacturing communities, and a lack of local government capacity.¹⁴

In response to these needs, the County committed to activities to enhance resilience Countywide for all of its 132 municipalities, such as enrolling communities in the Community Rating System (CRS) and adding a preference for resilience measures in CDBG infrastructure funding requests, and proposes in this Phase 2 application to design, test, and scale community-level model approaches to resiliency to improve the adaptive capacity of built, natural, and social systems for current and future hazards. As described in the County's Phase 1 application, a science-based risk approach was used to identify a demonstration area in south suburban Cook County that receive funding and be used in the design and testing of approaches to resiliency that will be taken to scale across the County. The set of selected communities is ideal because of demonstrated unmet

¹⁴ Spatial Hazards Events and Losses Database for the U.S. -- <http://hvri.geog.sc.edu/SHELDUS/>

recovery need (as detailed below), socioeconomic need, and its representativeness in terms of vulnerabilities and assets, as compared to other County communities.

The County's demonstration area, which contains the cities of Blue Island and Calumet City and the villages of Calumet Park, Dolton, Riverdale, and Robbins, spans two watersheds and is home to 110,000 residents. As detailed in Exhibit B, p. 7, FEMA verified loss within this area resulting from DR-4116 totaled \$8.1 million. Though Cook County has obtained more than \$9.6 million in resources, unmet housing need totals \$151.4 million and affects an estimated 4,314 households within the demonstration area. Evidence suggests that homeowners in this area, despite spending an average of \$5,000 on flood prevention measures over the last decade, still experience repetitive, damaging flooding at a frequency of every 1 to 2 years and remain 'very much' concerned about heavy rainfall events that result in loss of property, foundation damage, mold, and other costs. Yet, less than 10 percent report having requested public assistance during flood events.¹⁵

This anecdotal information reinforces the County's Phase 1 application which described how DR-4116, while significant, was not a one-time event but rather a reflection of frequent, repetitive flood events – often stemming from smaller-scale rainfall events – that have increased in both frequency and magnitude because of climate change and urbanization. While the total rainfall for DR-4116 was similar in magnitude to a 10-year storm, peak storm intensities were comparable to a 2-year storm which flood models indicate would affect 2,500 households (more than 6,000 were actually impacted in DR-4116). In addition to unmet flood recovery and resilience needs, the demonstration area was also selected due to socioeconomic need and particular vulnerabilities, as described further in Section D.2; limited resident resources, comprised of a population whereby 60 percent of households earn less than 80 percent of the area median; outmoded and aging

¹⁵ Northeast Blue Island Resident Action Group survey, October 2014; Cook County Phase 1 Planning Survey, February 2015.

infrastructure with limited local government resources for maintenance; environmental contamination at former industrial sites and other hurdles to redevelopment; and job loss and economic disinvestment. The County's proposed approach addresses these needs through 'complete communities' resilience-building with the revitalization of public space and recreational amenities and residential, industrial, and commercial properties. Collectively, these projects will improve the adaptive capacity of the area's built, natural, and social systems for current and future hazards and shocks and serve as a replicable model that can be taken to scale County- and region-wide.

From a regional perspective, as a global metropolis, transportation hub, and economic center of the Midwest, northeastern Illinois spans the divide between the Great Lakes/Mississippi River watersheds and a key steward of 84 percent of the country's freshwater. The region's strengths remain its geography and natural assets upon which this growing metropolitan area was originally positioned. Its fundamental vulnerabilities lay within the socioeconomic, governance, and infrastructure disparities that divide its communities. One of the most significant risks to the region is flooding exacerbated by these vulnerabilities. Stormwater management and flood prevention can be particularly challenging due to the region's flat topography and broad floodplains. Urban development has caused increasing amounts of the region to be under impermeable cover, and the result is that even small storms overwhelm infrastructure and flood communities across the region, causing significant damage to homes and businesses (particularly costly in high density areas), and drain polluted runoff into Lake Michigan and the Mississippi River.

DR-4116 was particularly devastating for Northeastern Illinois. More than 24,000 residents were left without power, roadways and expressways were closed due to standing water, and officials were forced to empty the City's 109-mile "deep tunnel" system, sending sewage and stormwater into Lake Michigan. The proposed demonstration areas selected by the four applicants from the Northeast Illinois Resilience Partnership respond to these recovery and resilience needs and

represent most regional community typologies – both in terms of land use and demographics – making them ideal for replicability and scaling across the region and State of Illinois.

D.2. Resilience Needs within Recovery Needs

Resilience Measures to Limit Effects of Qualified Disaster

When evaluating options for reducing flooding and increasing resilient response within the demonstration area, multiple options were considered in each drainage area to determine the most cost effective response. Two resilient features evaluated for all drainage areas, as standalone alternatives and in combination with each other, included green streets and flood resilient home repair. The table below summarizes the costs and benefits for the residential neighborhood in Riverdale. If those costs and benefits are extrapolated to all of Cook County based on the number of potentially benefitting structures, the resulting avoided losses totals are significant when compared with the unmet recovery need and total private insurance claims from DR-4116.

Table 2: Resilience Measures Limiting Effects of DR-4116

Service Area	Number of Benefitting Structures	Unmet Recovery Need and Insurance Payout for DR-4116	Estimated Costs	Expected Avoided Costs in 2015 Dollars – Net Total Benefit
Riverdale Residential (#16)				
Single Family Rehab Program	281	NA	\$10,537,500	\$27,144,140
Green Streets			\$6,170,000	\$42,272,021
Cook County				
Single Family	47,400	\$1,108,282,646	\$1,777,500,000	\$4,578,762,406

Rehab Program				
Green Streets			\$1,040,775,801	\$7,130,582,901

Appropriate Investment in Resilience

The County is working to estimate the general amount of total investment in resilience necessary to appropriately benefit communities cost-effectively now and in the future.

Vulnerable Populations

Income characteristics of households within the MID-URN target area, Cook County, and the selected demonstration area are included in Table 2 below. For comparison, indicators are also provided for the U.S. and Chicago Metropolitan Statistical Area (MSA) where available.

TABLE 3 – Geographic Comparison of Economic Indicators				
	<i>National</i>	<i>Chicago MSA</i>	<i>Cook County</i>	<i>Demonstration Area</i>
Unemployment ¹⁶	5.6%	5.6%	6.0%	10.8% (Dolton) 9.5% (Calumet City)
Poverty Rate	15.8%	14.4%	17.8%	22.8%
Household Median Income	\$52,250	\$60,564	\$53,827	\$42,134
Mean Social Security Income			\$17,593 (25.4%)	\$15,108 (27.4%) ¹⁷
Mean Supplemental Security Income (SSI)			\$9,654 (5.4%)	\$9,953 (5.3%)
Mean Cash Public Assistance Income			\$3,124 (2.9%)	\$3,576 (5.7%)

¹⁶ Monthly unemployment rates as of August, 2015. Illinois Department of Employment Security. Rates only available for select municipalities, with those in the demonstration area available listed.

¹⁷ Percentages reflect incidence in the demonstration area’s total population.

Mean Income – Black Households	\$20,021 (23.9%)	\$21,091 (71.5%)
Mean Income – Hispanic Households	\$16,432 (25.0%)	\$13,136 (16.5%)

Table 3 details vulnerable population types within Cook County and its demonstration area.

TABLE 4 – Vulnerable Populations in MID-URN and Demonstration Areas		
	<i>Cook County</i>	<i>Demonstration Area</i>
Female Households w/ Children Under 18	7.6% (149,162)	15.6% (6,093)
Persons 65+ Living Alone	10.0% (193,334)	9.3% (3,618)
Individuals with No Health Insurance	16.7% (864,269)	20.1% (22,102)
Population in Renter-Occupied Housing	38.3% (1,987,858)	34.9% (38,606)
Households with Gross Rent >35% of Income	44.4% (335,675)	51.6% (7,808)

As Tables 2 and 3 illustrate, both Cook County and, even more so, the demonstration area have vulnerable populations which were considered in the design of the County’s proposed recovery and resilience projects and programs. Lower income households, particularly those with unemployed persons and households on fixed incomes, face particular challenges for recovery, including: insufficient financial resources to prepare for and respond to floods and other hazards, such as regular home maintenance and the purchase of flood proofing measures, air conditioning units and fans, and property or hazard insurance; increased transportation challenges and costs corresponding with road closures and detours and a limited ability to make alternate childcare arrangements, both leading to possible job and wage loss; displacement that may become permanent in an absence of affordable housing alternatives in a community; and often, a lack of time to research and access available resources. For example, following DR-4116, 6,662 households in the demonstration area applied for FEMA assistance; just 2.7 percent of these had flood insurance coverage. Based on the demonstration area’s poverty rate, it is likely that more than 1,500 of FEMA applicants had incomes

below the poverty line. During Phase 2 outreach, residents expressed high levels of frustration and stress related to flooding that damages property, creates sanitary issues and health impacts, impacts their employment and work schedule, and constrains their transportation options.

Local businesses that employ low-income residents are particularly critical in ensuring the resilience of the communities they operate in, but have also suffered from repetitive flooding. For example, one area Class III railroad recently invested more than \$150,000 of its own monies to build and maintain a sewer out valve to address repetitive track flooding adversely affecting its operations. The railroad previously had to halt all train movement -- an average of 80 trains per day -- during normal storm events, which caused detours leading to increased costs and delayed the shipment of goods. Employers -- particularly in the transit, logistics and distribution and manufacturing industries, which are so integral to these communities -- must be equipped to go beyond flood recovery to play an important role in assisting local residents. For example, many employers are collaborating with workforce providers to hire newly trained residents. The Calumet Green Manufacturing Partnership Cook County seeks to address the labor/skills mismatch by offering training aimed at vulnerable populations who have lost jobs or income due to recent disasters. Since February 2012, CGMP has screened over 1,000 local applicants, enrolled 241 students, and placed 185 graduates into employment at 82 separate manufacturers.

The challenges that vulnerable populations within the County's demonstration area face are in many ways characteristic of lower-income suburban communities in Northeastern Illinois (such as those in West Cook County, or areas of Kane County such as Aurora), which lack sufficiently strong social service provider networks as compared to their more urban counterparts. Accessing and obtaining public assistance is a greater challenge, both because of a more limited availability of resources and limited staff or social service capacity to assist in accessing the resources that are available at the local, State, and Federal levels. Such areas also have fewer links to public transit

which limit mobility and access to employers and/or childcare providers during events impacting transportation networks. State-wide, vulnerable populations in more rural areas face even greater challenges in mobility and transportation, lacking any form of public transportation system.

These challenges pose a growing concern for Cook County and Northeastern Illinois, with demographic and economic trends pointing to greater needs among vulnerable populations. Since 1989, real median household income has declined by 7.1 percent in the region.¹⁸ Low-income populations in suburban areas have been particularly hard hit; the share of the metropolitan poor living in the region's suburbs grew from 38.9 percent in 2000 to 48.1 percent 2010, representing a change of 9.1 percent.¹⁹ These data reflect a growing need for more robust social service systems – particularly in suburban areas – and opportunities for wage and job growth via economic development. Statewide, homelessness and the availability of affordable housing is a growing challenge, hindering resilience by preventing individuals from moving to greater economic independence. The Illinois State Board of Education reports that public schools identified 59,112 homeless students during the 2013 – 2014 school year, a 7.7 percent increase from the year prior and more than double what it was five years earlier.²⁰ In Illinois, there are only 59 available rental units for every 100 low-income renter households.²¹ There need for affordable units is particularly critical near job and transit centers. Health problems exacerbate economic hardship because they limit a person's ability to work. People with disabilities are twice as likely to be unemployed those

¹⁸ CMAP. GO TO 2040.

¹⁹ The Suburbanization of Poverty. Elizabeth Kneebone and Emily Garr. Brookings, 2010.

²⁰ Chicago Coalition for the Homeless, 2015. <http://www.chicagohomeless.org/faq-studies/>

²¹ The right choice to cut poverty and restore shared prosperity. Half in Ten Annual Report. 2012.

without, and they have significantly lower incomes.²² Recovery is more urgent for these groups, and resilience-building must account for the greater needs of these vulnerable populations.

Factors Affecting Disaster Recovery & Resilience²³

In considering resilience needs and potential alternatives, the County has given consideration to factors (in addition to those related to the needs of and trends affecting vulnerable populations noted in the previous section) which may support or hinder disaster recovery and resilience activities.

Social: Within the County’s demonstration area, recovery is aided by a relatively open conversation around flooding, due in part to the widespread impact (for example, prior to an election homes in Blue Island had yard signs declaring “My Property Floods and I Will Vote”). These communities – like many others in Northeastern Illinois – benefit from strong faith-based organizations, and the Southland Human Services Leadership Council is active in coordinating social service providers.

However, the segregation of minority and low income populations and geographic dispersion hinder efforts regionally. Racial/ethnic segregation is particularly marked in the demonstration area:

Dolton, Riverdale, and Robbins are more than 90 percent African-American, while Blue Island is primarily Hispanic (47 percent). Racial/ethnic disparities create artificial barriers between communities and deter collaboration. **Governmental:** Cook County Board President Toni

Preckwinkle has prioritized regional collaboration and meets regularly with leaders from the collar counties and the City of Chicago. At a sub-regional level, Preckwinkle has made a commitment to growing sub-regions and, in particular, the south suburbs. The County works closely with the South Suburban Mayors and Managers Association (SSMMA), an organization uniting 43 municipalities, including those within the County’s demonstration area. Success in bringing new Federal

²² Wittenburg, D., & Favreault, D. Safety net or tangled web: An overview of programs and services for adults with disabilities. Occasional Paper #68. The Urban Institute, 2003.

²³ Data for this section is from CMAP’s GO TO 2040 and U.S. Census 2010, unless marked.

investments to the region, including HUD Sustainable Communities Initiative awards to the Green TIME Zone, through SSMMA, and GO TO 2040, through CMAP, have helped, but the resources and capacity of local governments remain limited, infrastructure needs are great, and challenges are compounded by the State’s fiscal issues. **Educational:** Northeastern Illinois is home to top-ranked universities – including the University of Chicago and Northwestern University – and has many research and post-secondary assets. Cook County’s south suburbs have a strong workforce development network, led by the Chicago Cook Workforce Partnership and Calumet Green Manufacturing Partnership, a local workforce provider which connects employers and community colleges. These educational and workforce assets are critical to building resilience. Hindering resilience, however, is an ailing K-12 educational system which impedes attainment. Suburban communities suffer from an increasing large number of low-income students and a poorly funded system, which relies largely on property taxes. Fragmentation also exists; within the County’s demonstration area, 11 K-8 and 9-12 school districts exist, creating a high tax base but little to show in educational results. Thornton Fractional Township High School District which serves 3,441 area students, 74 percent of which are low-income, adequately prepares just 19 percent of its students for college (compared to 46 percent State average).²⁴ **Environmental:** The region benefits from 350,000 acres in public and private parks and preservation areas, though this has not kept pace with the population expansion over the last 100 years and only 49 percent of the population has adequate access to parkland. The Forest Preserves of Cook County are a valuable asset with 1,215 acres in the demonstration area. Local initiatives such as the Millennium Reserve, a State-led renewal program of President Obama’s Great Outdoors Initiative, and the Calumet Stormwater Collaborative, which aims to better coordinate stakeholders around stormwater management and conservation, are assets to the area. Resilience efforts are hindered by increasing imperviousness in

²⁴ Illinois State Board of Education, At-A-Glance Report Card 2013 – 2014.

the region due to population growth and environmental contamination, which is a particular challenge in the demonstration area with its legacy of steel production and manufacturing. Nearly 10 million pounds of toxic substances were released across Cook County in 2013, of which 43 percent were released in communities within the demonstration area.²⁵ Toxins such as zinc, manganese, and ammonia are present in the area's air, water, and soil. **Economic:** Northeastern Illinois is the nation's third largest metropolitan economy, with 2.6 million jobs and \$308 billion in annual output.²⁶ The region has strengths as a transit hub, with an extensive passenger and freight system that is among the nation's largest. This is particularly true in the demonstration area, located at the intersection of major highways and home to 5 Class I railroads, 2 major intermodal terminals, and an international Great Lakes port. Other assets include strong economic development organizations, including CMAP regionally and the Chicago Southland Economic Development Corporation locally. Recovery and resilience are hindered regionally across key income and employment indicators as compared to both national average and by challenges more specific to Cook County, which lags further, and the demonstration area (as previously illustrated in Table 2). Disinvestment is also a major challenge. The region has more than 100,000 vacant or underutilized commercial and industrial properties, and more than 1,000 acres of these properties are within the demonstration area. The demonstration area lost 4,300 jobs between 2002 and 2007, and the number of firms decreased by 210.²⁷ For example, in Blue Island's largest employer, Modern Drop Forge, left in 2011, taking 250 jobs to Indiana. Disinvestment is exacerbated by Cook County's relatively

²⁵ U.S. EPA Toxics Release Inventory (TRI) Program data, 2013.

²⁶ Partnering for Prosperity

²⁷ 2002 and 2007 U.S. Economic Census, Survey of Business Owners.

high tax rate which is due to a weakened tax base. Tax capacity in the demonstration area is around 25 percent below the median of the region.²⁸

D.3. Best Actions / Appropriate Approaches

The County's Phase 1 framing was the building of physical, individual, and governmental capacity within vulnerable suburban communities, with the demonstration area in the south suburbs as a geography in which to establish Multi-Hazard Resilience Pilots. The Phase 1 application set forth possible solutions to increase capacity, including public infrastructure investment, restoration of ecosystems via green infrastructure, private property buyouts, individual education and skill-building (such as private property retrofits and workforce training), and support and technical assistance for suburban communities. A needs analysis continued and expanded in Phase 2 looked at the criteria of reducing the risk of vulnerabilities, enhancing the quality of life and place, and creating economic opportunity. The County proposed to evaluate potential solutions that build these capacities in Phase 2 against three goals: 1) reducing the risk of vulnerabilities, especially to the core flooding challenge, 2) enhancing quality of life and quality of place, and 3) creating economic opportunity. As the County analyzed the needs, both flood and otherwise, it was obvious that a comprehensive risk approach was needed to revitalize this geography and to make it more resilient.

In Phase 2, through the combination of municipal and resident engagement, along with careful analysis, Cook County first identified over 70 projects. The projects ranged from large reconfiguration of multiple lots to individual homes that needed 'resilient' measures to alleviate basement flooding. As described in Exhibit E – Soundness of Approach, careful analysis and prioritization process was undertaken and the projects were filtered for impact, cost, and ongoing benefits to the community. Ultimately, the proposed resilience portfolio includes seven projects and three programs: three projects to support 'complete communities' resilience-building in mixed-use

²⁸ CMAP analysis of Illinois Department of Revenue data; U.S. Census Bureau, 2008 – 2012 ACS.

residential, industrial, and commercial areas with significant opportunities for revitalization; a project to build out a ‘green streets’ concept in a flood-prone neighborhood; two housing projects to rehabilitate multi-family rental units and construct new single-family ownership units resilient measures; a project to complete a multi-use recreation path to link the project areas and foster social cohesion; a planning and capacity building program; a single-family housing rehabilitation program to address unmet housing need and incorporate resilience measures; and an outreach, education and workforce development program.

The County’s selected approach starts with the individual and neighborhood level because as much as residents may have strong community ties, their immediate priority is what is happening to their individual homes. Public feedback provided during Phase 1 and 2 confirmed this prioritization. An intervention focused on private property – home rehabilitation that maintains this important housing stock while also making properties flood-proof and more resilient both internally and externally – was identified as a high priority. Within the more than 39,000 households in the demonstration area, this intervention would be piloted in several neighborhoods that showed the most significant impacts from DR-4116, as determined by mapping of FEMA claims and input provided during public meetings.

Yet, a private property intervention alone – no matter how widespread – could not address the scale of flooding experienced in these communities. Public infrastructure was also a critical component, so gray and green infrastructure solutions were assessed as a companion to the private property-level interventions in targeted neighborhoods. The selected public infrastructure investments are within the public right-of-way but also on other public land and on vacant properties. They offer a multitude of co-benefits, including improved recreational opportunities, economic development leading to job creation, and environmental restoration (including clean-up). Taken together, the private property and public infrastructure interventions address both individual

and physical capacity but also serve as a demonstration to local governments of innovative ways to approach their infrastructure investments and land use options – and these are ways that the County and MWRD will continually prioritize as they invest respectively in suburban Cook County.

The demonstration area also is in great need of economic revitalization to combat decades of loss of industry and jobs, so the County looked at public investments in stormwater management installations that will simultaneously foster the development of long-dormant sites by removing pre-development hurdles and incorporate amenities – such as green space, walking trails, athletic fields, etc. – that will improve communities. This approach improves government capacity by demonstrating a model of smart public investment that can catalyze redevelopment and create multiple benefits for residents. It also builds the tax base. This type of intervention improves the physical capacity in terms of handling stormwater in areas with flooding history and improves individual capacity through the job opportunities from industrial and commercial redevelopment and health and social benefits of a more amenity-rich, socially connected community.

In the demonstration area, nothing can be a better connector of the communities than the long-proposed Cal-Sag Trail that will literally tie these communities together. The western portion, which traverses less vulnerable communities, was recently finished, yet the eastern portion through the County's demonstration area still lacks the resources for completion. Completion of the Cal-Sag Trail, using techniques like a permeable path and bioswales along its course, will ensure good stormwater management as it winds through the communities. The Trail will improve transit options for residents (particularly important for a population with less vehicle access), tie the communities together, and provide development opportunities based on users of the Trail.

Finally, quality, well-managed affordable housing is an issue in the demonstration area, so examples of both rehabilitation and new construction of single- and multi-family housing with resilient features was deemed an important element that builds capacity at all three levels. Education

is also need to build this capacity, including municipal training on resilient concepts, engagement of the adult resident population as community learners on issues related to resilience, the development of curriculums for youth in local schools, and improving workforce development opportunities for both available industrial jobs and to meet the demand related to green infrastructure installation and maintenance as that industry grows in the County and region. The selected interventions aim to position residents to benefit from these employment opportunities.

As the CDBG-NDR program is based on the highly flexible CDBG program platform, there are many eligible approaches to improving and maintaining resilience in the demonstration area. All of the strategic approaches that Cook County has considered meet basic CDBG eligibility requirements. While some communities may struggle to identify eligible community areas based on income, many Cook County communities contain proportions of low- and moderate-income households that exceed 51 percent. Having said that, the entire County was impacted by the qualifying disaster. As such, some middle and upper income communities may be ineligible for assistance depending on the proposed activities. Furthermore, the required tie-back to the specific qualifying disaster and presumed requirements around the prevention of duplication of benefits (similar to CDBG-DR) pose unique challenges in identifying interventions that address needs, achieve intended impact, all while remaining compliant with HUD rules.

EXHIBIT E: SOUNDNESS OF APPROACH

E.1 Sound Approach Description: Project / Frame Correspondence

Cook County's Phase 1 and Phase 2 selection process was thoughtful and comprehensive, taking into account many sources of information: data and anecdotal information on recovery need from DR-4116 and other natural hazard events; science-based data on climate change; resident input on community needs and specific projects; and consultation with cross-disciplinary experts. This process is reflected in the projects and programs that set forth a comprehensive solution here.

The County's Phase 1 process started with an analysis of quantitative data to gain a strong understanding of the impact of flooding across the County and potential unmet recovery need. A review of estimated damage and recovery assistance from DR-4116, including FEMA, SBA, NFIP, and CDBG-DR, and beneficiaries identified Unmet Recovery Need, was conducted. Then, FEMA total loss data was overlaid with data on low- to moderate-income households to identify a demonstration area with both disproportionate losses and greatest need. FEMA data was further analyzed to identify needs for households with incomes less than \$30,000, individuals over the age of 60, and those with flood insurance coverage. Finally, a windshield survey within the demonstration area verified substantial flood damage and Unmet Recovery Need.

As detailed in the County's Phase 1 application, community engagement among residents and businesses helped to gain an even better understanding of flooding impacts, unmet needs, responses, needed resources, and resilience opportunities. A resident survey with regional and County-specific components provided baseline information, and three subsequent local public meetings were held to gather and share information through a mapping exercise and framing discussion. These meetings were community-led conversations about how Cook County could reduce impacts, increase adaptability, create opportunities, and build regional resilience capacity. In tandem with these public meetings, the County also met with 25 representatives from the planning, public works, and storm water departments of the demonstration area to identify the specific locations of flooding. The

County also conducted two public hearings through its Economic Development Advisory Council (EDAC) which included informational presentations and offered opportunities for public comment. The draft Phase 1 application was also available for a 15 day public comment period which was advertised electronically via website posting and e-blast distribution to 2,000+ stakeholders.

These consultations provided insights regarding potential focus areas for Phase 2 and the need to:

- 1) Prioritize vulnerable communities and meet them where they are with information, technology, and resources;
- 2) Reduce single-points of failure by creating redundancies through decentralized systems;
- 3) Leverage existing community engagement;
- 4) Improve trust between residents/public agencies;
- 5) Balance efforts between recovery/long-term proactive actions;
- 6) Consider flexible policies encouraging improvement through recovery, rather than return to previous states;
- 7) Evolve resilience-building strategies with future forces of change (i.e., technology, market demand, shifting hazards, etc.);
- 8) Strike a balance between gray/green infrastructure and consider them holistically;
- and 9) Capitalize on high interest related to economic growth and job creation.

Research, data gathering, and past experience working in the demonstration area shed light on some of the potential challenges and opportunities facing these communities that could hinder or help resilience-building activities. The Phase 1 application detailed the area's outmoded and aging infrastructure, strained environment and history of environmental contamination, segregation of low-income and minority populations, disparity in housing markets and a lack of affordable housing, job loss and economic disinvestment, and local government fragmentation. These factors suggested a need to increase the built, natural, and social systems adaptive capacity to current and future hazards, stressors, and shocks. Other trends were also accounted for: urbanization leading to increased imperviousness; climate change causing more frequent and more intense weather events; and historic under-insurance for natural hazards, particularly among vulnerable populations.

Finally, the County's Phase 1 process involved consultation via the Northeastern Illinois Resilience Partnership, through work groups, Resilience Roundtables, and regional events. Five Work Groups, led by a subject matter expert, provided input as related to: Design and Engineering; Financing the Future; Using Technology to Impact Behavior; Economic Transformation and Opportunity; and Multiplying the Benefits. The County reviewed and considered more than 60 Work Group-recommended resilience building actions covering planning and policy, research and modeling, financing, infrastructure, and adaptive capacity. A series of Resilience Roundtables focused on learnings from national experts, and other regional events gathered feedback on the identification of need and proposed concepts for each of the Partnership's applicants.

Cook County's Phase 1 application proposed to design and test a model approach to disaster resiliency in the selected demonstration area via Detailed Multi-Hazard Resilience Pilots focused on 1) improving physical capacity to handle stormwater in innovative ways and create economic and environmental co-benefits, 2) increasing the capacity of residents and businesses to respond to flooding and other shocks, and 3) building the capacity of local governments. The County proposed to evaluate potential solutions that build these capacities in Phase 2 against three goals: 1) reducing the risk of vulnerabilities, especially to the core flooding challenge, 2) enhancing quality of life and quality of place, and 3) creating economic opportunity.

In Phase 2, the County worked to more closely identify recovery and resilience needs and community-defined areas of opportunity. County representatives met with municipal leaders and other stakeholders to identify these opportunity areas – those with a history of repetitive flooding that also demonstrated high need (poverty or job loss, vacant or underutilized land, etc.) and opportunity (redevelopment opportunities, potential for stormwater storage and/or management, etc.). A master list of 70 opportunity areas was compiled by Arcadis which laid out, for each proposed area, the following: current land use; location within a 100 or 500 year flood plain;

number of structures impacted by DR-4116; whether a redevelopment opportunity existed; access to transit or transportation; existing County or MWRD projects in the area; priority for community; space for public amenity; potential environmental hazards; and the potential to provide reduction in stormwater flows (see Figure A for a map of these initial opportunity areas). These attributes were weighted, allowing for each project to be scored and ranked. Highly ranked projects were identified, and the list was narrowed to approximately 30 project areas. With a targeted, more precise summary of potential project areas, the County returned to stakeholder consultation and worked with communities in the demonstration area to further refine the project list. The County also assessed feasibility and potential co-benefits, confirmed tie-back to DR-4116, and analyzed the impact on vulnerable and low-income populations. Following additional consultation and analysis, the County identified thirteen opportunity areas representing the seven projects proposed here – three ‘complete communities’ areas, one ‘green streets’ pilot, two resilient housing projects, and one multi-use recreational path linking these projects (see Figure B for a map of these near-final opportunity areas). Three programs – focused on housing rehabilitation, planning/capacity building, and outreach/education/workforce development -- span the demonstration area.

The County worked with its partners to hone its portfolio of project and program descriptions, creating renderings and compiling information to share with the public. As part of the development of this Phase 2 proposal, two additional charrettes were held (with an additional two scheduled over the next few weeks) in the demonstration area inclusive of the general public, representatives from community-based institutions, and municipal leaders. Thus far, 46 attendees participated. These meetings were publicized in accordance with Cook County’s current Citizen Participation Plan and outreach/engagement approach as outlined earlier in this application. Electronic and hard copy flyers were also distributed through key stakeholder groups to cast a wider net for interested parties.

During the meetings, the County and its partners shared information about the competition, flooding challenges, and potential solutions including the proposed programs/projects. Engaging discussion and interactive mapping and visioning exercises followed to advance shared community understanding of flooding risks/impacts, recovery, and resilience. During these discussions, residents, public officials, and other stakeholders shared personal stories regarding the impacts flooding has had at the individual, family, and community levels. A designer was on hand to capture immediate feedback and create on the spot visual renderings of proposed resilience solutions to enhance understanding and provoke interest. While some residents had participated in earlier Phase 1 community meetings, others were new to the process.

Charrette participants spotlighted unique community assets including historical significance, geographic location, and transit access. However, they highlighted the significant negative impacts flooding has on their properties, belongings, incomes, interpersonal relationships, and their physical and mental health. Residents highlighted the need – and support for – community and homeowner education of resilient / green infrastructure and how to maintain it. The communities within the demonstration area have both long-time and new homeowners, neither of whom are educated about what can or should be done for basement flooding. Residents expressed interest in allocating funds towards education to address this gap. Community meeting participants expressed concern about the impact of proposed solutions on other areas and families outside the demonstration area and were pleased that the models proposed were intended for ultimate replication throughout the County and broader region.

The County's proposed resilience approach has and continues to evolve from Phase 1 and throughout Phase 2 based upon outreach and feedback provided. In response to resident identified needs, an outreach, education, and workforce development program has been incorporated.

Residents expressed a strong demand for a better understanding of how to make their homes more

resilient and to maintain related upgrades at low-cost. Additionally, demonstration area residents and communities are seeking job training and employment opportunities. The proposed program is a direct response to this critical economic need. While specific program partners have yet to be determined, Cook County has had exploratory discussions with potential providers. The proposed single family housing rehabilitation program is also being designed on the basis of this feedback to ensure that residents have the necessary tools to achieve and maintain resilient homes.

In addition to the community-based charrettes, Cook County has consulted locally with a wide array of public, private, and non-profit stakeholders regarding its proposed strategy inclusive of the identified programs and projects. Relevant feedback has been incorporated as the program and project concepts have evolved from Phase 1 and throughout Phase 2. This draft application is also being released for a fifteen-day public review and comment period which is now underway. Feedback obtained as a result will be incorporated as appropriate in the final HUD submission. Additionally, on October 14th, the EDAC is conducting a public hearing inclusive of the proposed resilience strategy whereby additional community input can be provided.

On a regional level, during Phase 2, the Northeastern Illinois Regional Partnership has convened 10 regional meetings with stakeholders representing 79 organizations, including 27 non-profit and community based organizations, 24 public sector agencies, 19 businesses, 6 research institutions, and 3 local foundations. During the same period, the Partnership also met with 40 new organizations on top of the 170 that had been engaged during the first phase. See Attachment D – Consultation Summary for additional details on regional and local stakeholder consultation and public engagement.

As detailed in the sections which follow, Cook County's Phase 2 application puts forth a resilience portfolio of seven projects and three programs to improve the County's capacity to respond and adapt to current and future threats and hazards, including climate change. A project to

complete the Cal-Sag Trail, a planned 28-mile multi-use path with a gap in the demonstration area, will link the project areas and foster social cohesion among the communities and beyond. Three of the selected projects support ‘complete communities’ resilience-building by addressing community need within a demonstration area containing residential, industrial, and commercial properties with significant opportunities for revitalization and co-benefits. The projects are located in the communities of Riverdale, Robbins, and Blue Island / Calumet Park. One project will build out a ‘green streets’ concept in a flood-prone neighborhood in Dolton. Two housing-specific projects in Calumet City and Dolton will rehabilitate multi-family housing rental units and construct new single-family ownership housing units, respectively, while incorporating resilient measures in both to provide affordable, resilient housing. Several programs will then be overlaid with both these project areas, as well as the wider demonstration area, to build resilience. A single-family rehabilitation program directly addresses unmet housing need and incorporates resilience measures into the area’s existing single-family housing stock. A community planning and capacity building program enhances resilience at the local level. Finally, educational programs build individual and government capacity by sharing information on municipal best practices, and on climate change and how green infrastructure – particularly on private property – can be a solution. Workforce development programs will help prepare residents for available industrial jobs as well as emerging opportunities in the green infrastructure maintenance and installation. Planning programs will support a range of needs including redevelopment site planning, stormwater modeling capacity, assessment of shared service potential and the regional resilience efforts.

Riverdale Resiliency Project

Riverdale, a community of approximately 13,000, has experienced frequent flooding throughout the community, especially in residential areas in the northeast. A loss of industry and high home

foreclosure rates has left the Village with one of the highest tax rates in the County, further impeding growth.

Recent planning efforts identified significant redevelopment opportunities for the southwest portion of the Village tied to the network of rail lines and rail yards that currently exist, including two major switching railroads, CSX and Indiana Harbor Belt (IHB) serving more than 160 industries, and a nearby marshland. Four developments are estimated at \$100 million at full build out, with multiple benefits to the community including remediation of former brownfield sites, the creation of nearly 500 jobs in transportation and logistics and manufacturing, and improved green space. These businesses would provide a huge boost to a declining tax base that has limited Riverdale's ability to respond to hazards and fund resiliency efforts that benefit low- and middle-income residents but also to other, everyday needs of their citizens. In order to attract these important new developments, improvements to eliminate flooding, drainage, and wetlands issues are desperately needed. The County's partner, SSMMA, has been the driving force to bring in the needed resources to these redevelopment sites, including a HUD Sustainable Communities grant (now a revolving loan fund administered by Enterprise Community Partners), as well as U.S. EPA funding for brownfields cleanup.

These stormwater improvements are integral to flood mitigation in an adjacent neighborhood in Northeast Riverdale, an area which experiences basement backups and street flooding during most major storm events. The area is served by combined sewers which were designed to a 2- to 5-year return period and are undersized. When sewer backups occur, which is quite frequently, water levels will often take a day to recede back to dry weather conditions. An opportunity connecting these two areas – the industrial redevelopment opportunities in the southwest and the residential neighborhood in the northeast – focuses on commercial redevelopment in an area which is having difficulty maintaining a business presence. The Cal-Sag Trail, described later, has its proposed route down

this corridor, as well. A nearby commercial corridor was rehabilitated and redeveloped by the Village of Riverdale, including a building, which houses the Village's Administration offices, so there is an opportunity to build on this development and extend it to the nearby commercial corridor.

The three areas make up the proposed 'complete communities' resiliency project in Riverdale, shown in Figure C, covering an area of approximately 393 acres and providing improvements that address resiliency to flooding and other hazards in the northeast, facilitate economic and community revitalization in the west, and use a green streets approach to provide resiliency and promote social cohesion between the two areas. Proposed green and gray infrastructure improvements are capable of mitigating flooding during the 25-year, 24-hour design rainfall event (5.51 inches), an event larger than DR-4116 and providing additional resiliency to flooding within the community.

Management scenarios for the green street locations (the public right-of-way) were developed based on the layout of the storm and combined sewer collection systems and a basic understanding of the location of problem areas. Surface ponding and/or flooding may be aggravated by an insufficient number of storm inlets and the surcharging of the collection system, which results in basement backups by hydrologic overloading of the storm sewers scattered throughout the study area. Therefore, management scenarios reduce the flow of stormwater into the collection system while also increasing the ability of the system to remove runoff from the streets. Management scenarios were developed for five subareas within the project area (see Figure D) that discharge to the Little Calumet River and the regional interceptor sewers.

Subarea A: This subarea contains an existing retention basin, Riverdale Marsh. The proposal for Subarea A will be to create additional retainage on the eastern edge of the Marsh and create park space corresponding with a portion of the Cal-Sag Trail, commercial development to support the new park, and additional recreation such as a possible birding tower over the train tracks. The goal

of this subarea is to relieve local drainage issues in the western section of the village and provide stormwater storage for portions of the proposed industrial redevelopment areas. Due to the proposed location of the stormwater facility just east of Riverdale Marsh, it will also serve as a new park and educational facility that helps demonstrate resilient measures to the local community. Subarea A is located at a high point in the larger project area with runoff generally draining west. Therefore, industrial redevelopments have the potential to drain by gravity to the proposed stormwater storage facilities. By creating this drainage, the sites become more attractive to developers, and the IHB has expressed interest in further developing these sites for cargo-oriented development sites (CODs).

Subarea B: Subarea B is approximately 202 acres in size and involves a green streets pilot program along 138th Street in tandem with the Cal Sag Trail that provides resilience, promotes cohesion between the northeast residential and southwest industrial area, and can serve as a model for future enhancement of the entire 138th Street corridor. Along 138th Street, a County road, just east of where the proposed Cal-Sag Trail turns north toward Patton Elementary, green streets will be implemented two to three blocks to the east. The first six feet of the parking lanes would be permeable, and the gravel storage galleries under the permeable pavement would extend up to 10 feet toward the limits of the right-of-way. The green street design for 138th Street could be a “face lift” for the corridor adding new sidewalks and landscaping.

Subarea C: This area is better known as the Northeast Riverdale neighborhood and suffers from both surface flooding and basement backups due to limited capacity of the storm and combined sewers passing under the railroad corridor. The proposed intervention reduces the hydrologic flow from the southern portion of the subarea to allow the northern portion to drain through the existing pipes during the peak the storm events. To achieve this objective, the pavement on the six main north-south streets would be replaced with permeable pavement. This would save the many mature street trees, achieving a goal of maintaining and replacing tree canopy as it not only cleans the air

but cools the earth. The underlying gravel storage gallery would average six feet deep. The estimated total storage provided by the green streets was estimated to be approximately seven to eight acre-feet, which should provide sufficient storage to reduce the peak discharge from the 25-year design storm event to the combined sewer system by approximately 70 to 80 percent. A segment of Subarea C will use home rehabilitation and resilient upgrades in tandem with the aforementioned green street solution. Modeling has determined that green streets would address basement backups and street flooding in 428 homes while 38 homes would be addressed via the proposed housing rehabilitation program (discussed below). This program would include disconnecting downspouts from the sewer system, use of overhead sewers or back-up flow preventors, sump pumps, basement flood proofing, and other gray alternatives to minimize basement backups and rain barrels, cistern, rain gardens and other green alternatives to address surface flooding. Eighty-five dwellings in this area filed FEMA verified claims in 2013.

Robbins Resiliency Project

Located just west of Riverdale with a population just over 5,000, Robbins was where many of the slaves and sharecroppers settled during the Great Migration. Robbins is the oldest majority-African American suburb in the Chicago area and one of the oldest incorporated African American municipalities in the U.S. Robbins has the highest poverty rate – 26 percent – within the demonstration area, and its \$21,800 median household income ranks dead last among the County’s 134 municipalities. Residents maintain a sense of pride of their historic community but also are in great need of resources to build resilience. Flooding is a particular challenge because the Village lacks stormwater drainage infrastructure in several residential areas, leading to frequent surface water flooding. Midlothian Creek, which traverses the village from west to east, is a chronic source of this flooding, due in large part to its ninety degree bend. Ongoing planning efforts include restoration of Midlothian Creek to minimize the impact of the bend, strengthening of eroded banks,

and restoring lost flood plain. However, a nearby residential neighborhood west of Kedzie Avenue is impacted by overbank flooding from Midlothian Creek and experiences street and yard flooding during most major storm events. Within this area, 131 acres of single-family homes lack a formal drainage infrastructure and is particularly vulnerable to storm events.

The proposed resiliency project in Robbins, shown in Figure E, is approximately 271 acres in size and provides improvements that address resiliency to flooding in residential areas, and facilitates economic revitalization. Drainage improvements to both Midlothian Creek and the residential neighborhood west of Kedzie will provide resiliency to hazards that benefit the low- and middle-income residents that make up the majority of the project area.

Subarea A: A major issue in Subarea A with the existing conditions of Midlothian Creek is a relatively flat slope between 139th Street and the Metra Rock Island railway, a commuter rail line. To mitigate this issue, widening the creek channel and adding storage along the reach is proposed. The proposed creek channel from 137th to Metra Rock Island Railway has a 3-foot bottom; the creek channel from 137th to 139th Street has a 20-foot bottom width. Armoring stone has been assumed to protect the channel side slopes from erosion through this area.

A 13 acre pond east of Midlothian Creek between 139th and 137th is also proposed and features a dry bottom detention basin with a long berm with concrete revetment to control flow in and out of the detention area and an outlet structure/sewer. A stepped basin to permit recreational use could be possible if more area is dedicated to the basin. The inlet structure to the existing bypass conduit could be revised to create a larger and more effective overflow into the bypass conduit. It is assumed that a weir style inlet structure along the west bank of the creek and south of 137th Street would be most effective with a weir length of 55 feet. The structure would incorporate bar racks parallel to the flow path to minimize clogging of the inlet. The subarea also includes a berm/barrier along Kedzie Avenue. Several options exist which include reconfiguring the creek channel to fit a

berm/levee or raising all of Kedzie Avenue between 137th and 139th but a flood wall has been recommended with a top of wall elevation 3 feet above the computed 100 year flood elevation.

Subarea B: This is a predominantly single family residential area in Robbins west of Kedzie Avenue. There are approximately 455 parcels in the subarea, of which approximately half appear to be undeveloped, with a total value of approximately \$3.4 million. Proposed interventions will provide a green streets pilot program for a stormwater collection system that will provide protection from the 25-year, 24-hour design rainfall event (5.51 inches) for a two block area that either does not have a storm sewer or has a storm sewer that cannot protect adjacent properties from flooding. One gray and two green infrastructure conceptual scenarios were initially examined. They included construction of new storm sewers, green infrastructure detention devices (rain gardens, bioswales, bio-retention/detention, etc.) in easement areas, and a green street approach to managing stormwater. The selected concept assumes that two blocks of village streets in the project area would be reconstructed as green streets as a demonstration for how green streets can reduce flooding and increase appeal in the community. Public right-of-way within the study area ranges from 60 feet or 66 feet in width with road pavements widths ranging between 24 feet and 36 feet. Pavements within each street would be reconstructed using permeable paving bocks over sub-surface gravel galleries. Sub-surface gravel galleries were assumed to be made up of four to five feet of two-inch diameter clear stone (approximately 10.5 gallon per square feet). This option provides the village with new and stronger streets than are presently in the project area.

Blue Island – Calumet Park Resiliency Project

With areas north of the Calumet-Sag Channel and directly adjacent to the City of Chicago, the City of Blue Island and Village of Calumet Park have a combined population of approximately 30,000. Facing many of the same challenges as other communities in the demonstration area, Blue Island and Calumet Park would benefit from broad-based resilience building. Both communities

have experienced frequent flooding, especially in residential areas. Ongoing planning efforts have identified a redevelopment opportunity that straddles the two communities and would repurpose a former landfill site to provide much needed retail, industrial development, and recreational opportunities for the region. The proposed project would tie new development to stormwater improvements in nearby residential areas to provide a multi-community solution to flood prevention and increased economic opportunity including jobs, recreation space, and a healthier living environment.

The City of Blue Island has ownership of a 88-acre landfill site (with significant environmental hurdles but opportunity for stormwater management) and scattered commercial properties that are generally in foreclosure or struggling to survive. The City issued a RFQ envisioning mixed-use, transit-oriented development near a Metra station, commercial development, and a blend of recreation, open space, and habitat restoration in the remaining portion. This development would provide a significant boost to the tax base, serve as a signature, gateway development to the area, and improve Blue Island's ability to respond to hazards and fund resiliency efforts to benefit low- and moderate-income residents. Two nearby residential neighborhoods – one in Blue Island and one in Calumet Park – face flooding issues, including basement backups and street flooding during most major storm events. These areas are served by combined sewers which are undersized by today's design standards. Drainage issues within the Blue Island neighborhood are currently being addressed by an MWRD-funded project, but necessary improvements to solve drainage issues in the Calumet Park neighborhood have been proposed but are not currently being addressed.

The proposed project in Blue Island and Calumet Park, shown in Figure F, is approximately 300 acres in size and provides improvements that address resiliency to flooding in residential areas, facilitates economic revitalization, and creates recreational opportunities that promote social cohesion between the two communities. The projects are linked by two key elements: stormwater

retention facilities that capture runoff from both the industrial/commercial and residential areas, and trails that link the residential areas with the recreational facilities (soccer fields and retention ponds) that are proposed for the industrial/commercial property. This project is co-sponsored by Blue Island and Calumet Park, as well as the developer, and provides a key building block toward environmental, institutional and social resiliency and capacity building.

The project area is served entirely by combined sewers. Proposed green and gray infrastructure improvements have been recommended for the Blue Island – Calumet Park area that are capable of mitigating flooding during the 25-year, 24-hour design rainfall event (5.51 inches). This event is larger than DR-4116 and provides additional resiliency to flooding within the community. Proposed interventions were developed based on the layout of the combined sewer collection system and a basic understanding of the local drainage topography and problem areas locations. Surface ponding/flooding may be aggravated by an insufficient number of storm inlets, limited combined sewer capacity and surcharging of the collection system, which results in basement backups by hydrologic overloading the sewers within the study area. Interventions were developed for three subareas within the project area. These scenarios are targeted at reducing the flow of stormwater into the combined sewer system while also increasing the surface storage, infiltration and transpiration of stormwater runoff.

Subarea A: Subarea A is a residential area in Blue Island just west of the proposed new development. It includes the following proposed gray/green infrastructure: Washington Avenue Relief Sewer; 123rd Street Relief Sewer; Vincennes Road Relief Sewer; Main Line Upsizing; Five Rain Gardens; Five Stormwater Bumpouts; and Seven Green Alleys. These features have been designed to handle a 5-year, 24-hour design rainfall event and prevent flooding of all but one structure up to a 25-year, 24-hour event; however, additional underground storage facilities have been proposed to enhance resiliency and minimize all flooding up to a 25-year, 24-hour event.

Subarea B: This subarea contains the proposed development, as discussed above. New sewers for the proposed redevelopment area will be sanitary lines that tie into the existing combined sewer. Storm sewers will drain to stormwater features within the development or to adjacent properties. A detailed design of the proposed 8 acres of stormwater storage has not been completed; however, for a 25-yr, 24-hour design event, 28 ac-ft of storage would be required, equating to an average pond depth of 3.5 feet. While this is certainly a reasonable design depth for wet ponds, the proposed location of the ponds is an area of the site where the existing dump is located. The dump has a cap that ranges from 3 to 15 feet deep which should allow for excavation of the proposed wet ponds to the required depth.

Subarea C: This area is a residential neighborhood in northwest Calumet Park that suffers from both surface flooding and basement backups. Stormwater runoff within Subarea C generally drains from north to south. The intervention uses green infrastructure to reduce runoff to the combined sewer system in an effort to minimize basement backups. To achieve this objective, the pavement on the six main north-south streets would be replaced with permeable pavement. The underlying gravel storage gallery would average six feet deep. For Subarea C, single-family home rehabilitation and upgrades will be used in tandem with the aforementioned green street solution to address basement flooding.

Dolton Green Streets Project

The residential neighborhood south of 142nd street in northeast Dolton has historically experienced frequent flooding, including basement backups. The area is approximately 134 acres with residential lots approximately 1/8 acre each. A 57-acre open space north of the neighborhood (Needles Park) would seem ideally suited for providing stormwater relief for the community. However, the park was previously owned by an aluminum manufacturer, so it may be necessary to

perform site investigation and due diligence on the past uses of the site if any excavation for stormwater structures is to be undertaken.

Concept plans for a pilot three block green streets program were developed for the study area that is capable of mitigating flooding during the 25-year, 24-hour design rainfall event (5.46 inches). This program will serve as a demonstration for how green streets can improve resiliency within the community. The majority of the site is flat, which can make it difficult to route stormwater. Another limitation is that there appear to be few vacant lots that could be utilized for detention. Street drainage appears to flow south to north, based on existing inlet locations. Thus, a green street approach to managing stormwater is proposed which will take advantage of wide right-of ways (60 or more feet in width) to detain stormwater throughout the area. Green streets may take a number of different forms. Existing mature trees (which provide significant stormwater benefits in the neighborhood currently) will be avoided as excavation sites. The green streets approach suggested for this site includes the following components: 1) Six feet wide installations of permeable pavement on both sides of road with gravel storage at a depth of 6 feet (an effective storage depth of 2 feet). New street curbing would provide consistent guidance to road runoff for pooling outside the roadway. 2) Additional vegetated storage trench in the area between the edge of pavement and the sidewalk extent on the streets. This width is typically 12 feet (16 feet including sidewalk width) on each side of the roadway. These would connect with both the surface street runoff and the permeable pavement underdrains to distribute storage. This location is also able to accept runoff from not only the street, but also downward sloping front yards, and roof disconnections extended from building footprints to fully utilize available storage volume. Plantings could provide opportunities to increase street tree canopy, cooling, and aesthetic benefits. Forty percent of the grass strip is turf without tree canopy. Curb bumpouts at intersections can also contribute toward the estimated storage volume and provide triple bottom line benefits such as

shorter pedestrian crossings and vehicular traffic calming. 3) Green alleys are also proposed to facilitate stormwater capture and reduce impervious surfaces. Green alleys utilize permeable surfaces to permit runoff interception from garage structures, and downspout extensions. It is estimated that two feet of effective storage could be utilized in the alleyway improvements.

Dolton Resilient Housing Project

This project is the development of 30 new single-family for-sale homes on the site of an abandoned factory on the Little Calumet River. The development will include the removal of the existing concrete slab and installation of a new park and homes. The homes will be targeted to households making 80 percent to 120 percent of area median income. They will be built to withstand a 500-year rain event and will also include many components consistent with the updated “Enterprise Green Communities” criteria. This housing will be marketed in compliance with fair housing and equal opportunity rules and requirements. MECCA will be the developer of the project. MECCA has produced over 1,740 units of housing since its inception including nearly half of Cook County’s NSP funded for sale housing portfolio. Neighborhood Housing Services of Chicago will assist offering homebuyer counseling, down-payment assistance, and favorable loans. For more information on MECCA and Neighborhood Housing Services and their capabilities as partners, please see Exhibit C, p. 27.

Calumet City Resilient Housing Project

This project will renovate 142 existing multi-family housing units in the Garden House of River Oaks project to retain existing affordability, as well as build in resilient features to benefit residents and the surrounding residential community. The existing building is located between the River Oak’s Shopping Center and the Little Calumet River. The purpose of the renovation, beyond extending the life of the building, would be to resurface the surrounding area including the parking area to make it permeable, and to add features into the building that will reduce to effects of

flooding. The renovations will bring the buildings into compliance with Enterprise Green Communities standards. This project will include the acquisition and renovation of two existing buildings that stand side by side and contain 142 units of housing affordable to households making at or below 60 percent of area median income. The Garden House of River Oaks will maintain 142 units of project-based Section 8 housing. The renovations will include many resilient features to assure that the housing remains a viable resource in the area. Permeable paving will be included as well many other sustainable features. The reserves will be substantial enough to maintain the property for the next 20 years and assure steady operations. Applications will be taken by Related Affordable through their lease up center. This housing will be marketed in compliance with fair housing and equal opportunity rules and requirements. Leasing will occur on a first come, first serve basis. This project will be managed by The Related Companies, L.P. and Related Affordable, LLC, entities with extensive experience in the acquisition, recapitalization, rehabilitation, and preservation of low- and moderate-income properties across the County. For more information on the capacity of this project partner, please see Exhibit C, p. 27.

Cal-Sag Trail Project

This project will aid in the construction of Cal-Sag Trail, supporting the planning and construction of missing portions of the trail in Blue Island, Burnham, Calumet City, Dolton, and Riverdale that will complete the 28-mile multi-use trail and link more than 185,000 people in 14 communities. The western half of the Trail opened in June of 2015. The remaining five eastern Villages – of which four are within the County’s demonstration area – have been working to raise local matching dollars, and the funding requested is the last 10 percent needed to complete this eastern edge of the Bike Trail. When complete, the Trail will provide a safe corridor to be physically active in the outdoors to 61,550 residents who live within a 10 minute walk from the

trail, of which over 55% are low-income and over 80% are non-white. See Figure G for a map of the Cal-Sag trail.

Planning for the Cal-Sag Trail goes as far back as the 1970s, during which groups promoted a multi-use path along the Little Calumet River and Calumet-Sag Channel. Work began in earnest eight years ago, when representatives from several south suburban municipalities; county, state and Federal agencies; and non-governmental organizations held a series of meetings to advance the initiatives to get to pavement on the ground. When complete, the Cal-Sag Trail will be a 28-mile multi-use trail system extending from Lemont (enabling connectivity with the Centennial Trail and the I&M Canal Trail) eastward to Burnham (and the Burnham Greenway Trail). The Cal-Sag Trail will provide alternative means of transportation, increased connectivity to the region's trail network, linkages with transit, opportunities for economic development, enhanced environmental sustainability and greater community health, all in compliance with the objectives of CMAP's GO TO 2040 regional master plan. Further, it will become an important element of the demonstration area, facilitating improved public access and environmental restoration. A multi-faceted promotional campaign including well-placed trail signage will help to market the trail to prospective users.

The Cal-Sag Trail offers of a variety of benefits to the communities through which it passes. These may include: trail oriented residential and business development, historical and environmental education, community festivals and events space, recreational and cultural facilities, public art, local bike loop networks, links to local attractions and the like. The benefits of regional trails extend well beyond fitness and leisure pastimes; they have the potential to drive economic development as well as increase property values. A National Association of Homebuilders study identified trails as the number one amenity potential homeowners cite when they are looking at moving to a new community. Trails also improve connectivity between communities for people and

connectivity between opens spaces for wildlife. The trail's corridor can become an integral element in the green infrastructure network of a region.

Housing Rehabilitation Program

This program will support up to 500 single family home renovations, with a specific focus on addressing unmet housing recovery need, preventing basement flooding, and making homes more resilient to rain storms. Targeted households will make at or below 80 percent of area median income and have been impacted by DR-4116. Up to 500 homes will receive full upgrades to alleviate property flooding.

The program will address landscaping, plumbing and building solutions; the repair, cleaning, or lining of private lateral sewer lines; and an installed water alert sensor. While there, the program will also remove effects of flooding, i.e. repair basement including filling any cracks that might have formed or are filling areas that leak – possibly including a new membrane around the foundation wall to keep water out of foundation, replace furnace, replace windows on ground floor, and/or replace roof. Finally, the program will test and remove any lead-based paint in the home.

As mentioned in Exhibit B, p. 7, the demonstration area has a disproportionate number of FEMA claims from DR-4116 and the highest populations living in poverty in the County. The home ownership rate in the area is 58 percent. Knowing that well over 50 percent of land in the area is privately owned, it is imperative that private owners begin to understand their need to address storm water issues on their own property, and many do not have the resources to begin to address the issue. An incentive to help defray the cost will give homeowners an incentive to make some of the changes and set examples for their neighbors who may have the means do install their own improvements. The benefits from this program include creating additional areas to store storm water, increasing value of single-family homes, and providing housing for the increase workforce

that will be needed for other proposed projects in the demonstration area. There are clearly defined benefits to health by providing decent, safe and sanitary housing.

This program will be facilitated by Neighborhood Housing Services of Chicago as the flooding mitigation specialists. Outreach to homeowners will be done by NHS in agreed upon areas. There will not be a broad outreach on this effort due to limited dollars. Additional homeowners may call in for other reasons and if there is good reason to move forward with that homeowner the County has discretion. Applications will be taken by the NHS. NHS will be responsible for income verification, documents from 2013 flood, as well as checking duplication of benefits. Eligible applicants will have a household income of 80% or less of area median income and demonstrate that they were affected by the 2013 flood. Also there are no duplication of benefits, so any prior benefits for the same work, must be deducted.

Education Program

An educational program will engage municipal leaders, the adult resident population as community learners, youth in local schools, and the local workforce through the following: 1) The general public will benefit from a campaign explaining climate change and how rain gardens and other green infrastructure installments can be helpful. Outreach for this program will be through public service announcements and door hangers in targeted neighborhoods. A municipal component of this will provide training on resilience topics for leadership in local governments. 2) An interdisciplinary environmental education curriculum will be developed and taught in K - 8 school districts in the area. This curriculum is intended to change the dynamic around climate change education by increasing knowledge, leadership, and engagement in climate action among diverse communities by building on local assets and community life. The approach is placed-based and asset-based, building on existing social structures and community leadership to better equip students to get involved and share positive, active messages with their family, friends, and community

leaders. 3) Workforce development opportunities will focus on both available industrial jobs and jobs related to green infrastructure installation and maintenance and habitat restoration. Local residents will be targeted, as well as low-income, disadvantaged job seekers.

The selected projects and programs described above address Unmet Recovery Need from DR-4116. As described in Exhibit B, p. 7, the demonstration area suffered from more than \$161 million in damages, and unmet housing need totals \$151.4 million. Each project directly addresses unmet housing need through activities which focus on resilience-building at the residential property level. The housing rehabilitation program will complete flood-related home repairs and mold remediation, where needed, and incorporate resiliency upgrades such as rain gardens and overhead sewer systems to reduce the impact of flooding. The Calumet City Resilient Housing Project, which renovates existing multi-family housing units in the Garden House of River Oaks will create affordable, resilient housing for low-income residents, including those displaced as a result of DR-4116. The Dolton Resilient Housing Project will create a single-family home community, replicable throughout the region.

The three proposed ‘complete communities’ projects, one ‘green streets’ project, and the Cal-Sag Trail project have a broader focus and indirectly address Unmet Recovery Need. Recognizing that resilience-building measures on residential property alone will not fully prepare and protect the community from the effects of future disasters, the County proposes a joint focus on improvements to adjacent parkland and redevelopment of vacant or underutilized industrial and commercial land. The expected impact on Unmet Recovery Need in housing from DR-4116 is threefold: 1) This approach seeks to limit the burden on an aging and outdated infrastructure and make targeted improvements with the most impact on flood reduction. Parkland and industrial and commercial properties offer valuable opportunities for stormwater management and water retention – given their significant acreage, in many cases – which will reduce inflows to already strained municipal

stormwater systems and will thus further lessen residential flooding in adjacent areas; 2) This approach addresses the significant economic need present in the demonstration area and seeks to build local government and resident capacity to respond to hazards and shocks. The redevelopment of vacant land and associated long-term job creation (particularly in high paying sectors such as manufacturing) will build a larger tax base to and create new wage-earning opportunities which will increase the capacity of local governments and residents, enabling both to better respond to existing flood-related housing needs, as well as prepare for and weather future hazards and shocks; and 3) A focus on mixed-use redevelopment results in multiple benefits to the immediate residential community, including improved parkland and recreational space, reforestation (particularly in industrial areas needing landscape / livability improvements), and improved access to a local recreational path, all of which will improve livability and reduce stress for residents in areas most impacted by DR-4116.

Each proposed project and program is allowable under CDBG-NDR funding and includes only components which meet unmet recovery needs from DR-4116 and related community development objectives and economic revitalization needs in a most impacted and distressed target area.

Additionally, each project and program will meet a national objective to benefit low- and moderate-income persons. The Riverdale Resiliency Project primarily benefits residents in the census blocks within and surrounding the 393 acre project area, 66.4 percent of which are low- to moderate-income. The Blue Island – Calumet Park Resiliency Project primarily benefits residents in the census blocks within and surrounding the 300 acre project area, 63.4 percent of which are low- to moderate-income. The Robbins Resiliency Project primarily benefits residents in the census blocks within and surrounding the 271 acre project area, 70.3 percent of which are low- to moderate-income. The Calumet City Resilient Housing Project will make available housing to residents making up to 60 percent of the area median income and is located in an area in which 56.3 percent

of residents are low- to moderate-income. The Dolton Resilient Housing Project will make available housing to residents making between 80 and 120 percent of area median income and is located in an area in which 57.2 percent of residents are low- to moderate-income. The Cal-Sag Bike Trail will provide recreation opportunities for residents within a half-mile of the Trail, of which 56.5 percent are low- to moderate-income. Within the proposed programs, the housing rehabilitation program will be open to homeowners with a household income of 80 percent or less of area median income.

The County's proposed portfolio of projects and programs benefits vulnerable populations. For those struggling with limited incomes, as noted above, such as the unemployed, those with social security income, supplemental security or public assistance income, and single-headed households with children, the portfolio promises to improve local opportunities for income via job creation, particularly in high-wage jobs such as manufacturing and transportation and logistics. It will also increase options for affordable housing by 675 units, create healthy recreation opportunities, and address community environmental concerns through the redevelopment of several prominent brownfield sites. Homeowners will see improved property values due to new retail development – estimated at more than \$12,000 per home – and will have greater access to resources, including rehabilitation and renovation funds to implement green features to defray the costs of recovery and preparation for future storm events and educational information on the benefits of such renovations. Finally, individuals that experience the racial, ethnic, and socioeconomic segregation that currently divides communities will benefit from increased social cohesion within and between communities in the demonstration area and beyond, with new opportunities and connections for recreation and transportation.

Cook County is confident that this Phase 2 application reflects feasible projects, programs, and outcomes. In large part, this is due to the County's thoughtful and comprehensive Phase 1 and

Phase 2 project selection process, which took into account multiple sources of information: data and anecdotal information on recovery need from DR-4116 and other natural hazard events; science-based data on climate change; resident input on broad community needs and specific projects; and consultation with cross-disciplinary experts. Only the highest-ranked projects with strong community partners were selected. Indeed, the County is particularly confident in its proposed resilience portfolio because of the capacity of its partners, detailed more fully in Exhibit C – Capacity. Many of the established partners have significant relevant experience and have successfully collaborated with the County in the past, as highlighted here with several key examples.

Economic Development: SSMMA has a proven track record in fostering economic development, with specific experience in evaluating markets, identifying and engaging developers, preparing sites (including brownfield remediation), and coordinating across local government jurisdictions. Recently, SSMMA was instrumental in assisting a manufacturer with consolidating three manufacturing plants on previously vacant brownfields properties spanning two communities and creating and sustaining over 150 jobs. Representatives from SSMMA meet with County leadership weekly to discuss projects.

Housing: Neighborhood Housing Services of Chicago is Illinois' largest nonprofit lender for homeowners and new home buyers. They have a strong track record of assisting low- and moderate-income households in obtaining and maintaining housing that is decent and affordable. NHS previously partnered with Cook County to provide first time homebuyer counseling under the NSP initiative and has been tapped to deploy a housing rehabilitation program under CDBG-DR in south suburban Cook County.

Stormwater Management: MWRD is the County's stormwater management agency which plans, implements, and finances flood control projects. Its Stormwater Master Plans pilot studies,

currently underway in the demonstration area, analyze flooding problems and potential solutions, including both gray and green infrastructure. MWRD has extensive experience in sustainable stormwater management and meets regularly with the County and SSMMA to discuss projects. For example, MWRD is in the process of completing nine green infrastructure projects in Blue Island, including rain gardens, bioswales, and permeable pavement in the public right-of-way.

The scaling of projects and programs tested and honed in the County's demonstration will be made successful via strong partners in the Northeastern Illinois Resilience Partnership and CMAP. These partnerships provide necessary cross-disciplinary technical capacity and expertise to help implement, assess, and refine projects and foster multi-jurisdictional collaboration by engaging other local governments that are not eligible for the CDBG-NDR.

Of course, with any large-scale project there are always risks associated with implementation and scaling. Given the importance of addressing vulnerabilities and building individual capacity, there is a risk that outreach will not identify and touch the most vulnerable, including low-income individuals, minorities, persons with disabilities, veterans, and/or elderly persons living alone. The County is committed to a high quality outreach strategy for each project that will engage all community members. Public service announcements, door hangers, and outreach by the County and its partners (as well as relevant non-profit, religious, and social organizations within the area) will ensure that the most vulnerable are reached. Several of the proposed projects and programs are also designed with income restrictions, and the overall benefit to low- and moderate-income individuals has been established.

The projects and programs are implemented in the context of existing conditions, including an aging infrastructure, a lack of individual capacity to learn about and make green infrastructure improvements on private property, and, broadly, very limited resources at government levels for maintenance. Components of this Phase 2 application are designed to address each of these and

mitigate the risks that each poses. In infrastructure, critical upgrades to stormwater systems will be made in the demonstration area and the majority of the projects proposed will lessen rainfall flows into sewer systems, thus reducing the overall burden on the system. This makes a difference in the aggregate. Several projects and, most notably, the Single Family Rehab Program in tandem with educational programming, will provide financial and information resources to address individual capacity. Anticipated job creation and workforce training opportunities also increase capacity more broadly. Government capacity is built via a growing property tax base with new economic development. The County is also committed to working with local governments to ensure that green infrastructure installations are maintained.

The following potential metrics will be developed to help assess local progress in the community context. Metric refinement, specific target setting, and development of corresponding monitoring systems to capture related data is still in process.

Blue Island / Calumet Park Resiliency Project:

Resiliency Value: Reduction in property damage from flooding

Environmental Value: Reduced heat island effect from increased tree cover

Social Value: Improved recreational opportunities

Economic Revitalization: Increased tax base for the communities

Robbins Resiliency Project:

Resiliency Value: Reduction in property damage from flooding

Environmental Value: Improved water quality

Social Value: Improved living environment / aesthetics of the community

Economic Revitalization: Increased property values for homeowners

Riverdale Resiliency Project:

Resiliency Value: Value of reduced business impacts from flooding

Environmental Value: Increased wildlife habitat

Social Value: Improved recreational opportunities

Economic Revitalization: New industrial job opportunities

Dolton Resiliency Project:

Resiliency Value: Reduction in property damage from flooding

Environmental Value: Improved tree cover

Social Value: Improved living environment / aesthetics of the community

Economic Revitalization: Increased property values for homeowners

Calumet City Resilient Housing:

Resiliency Value: Reduction in property damage and other impacts from flooding

Environmental Value: Improved water quality from reduced stormwater runoff

Social Value: Improved living environment

Economic Revitalization: Increased property value

Dolton Resilient Housing:

Resiliency Value: Improved stormwater management

Environmental Value: Increased tree cover and habitat

Social Value: Benefit to low-mod individuals via new, quality affordable housing

Economic Revitalization: Improved property value from redevelopment of underutilized parcel

Cal-Sag Trail:

Resiliency Value: Value of additional transit option during future disasters

Environmental Value: Value of reduced car trips due to trail availability

Social Value: Improved community identity and social cohesion

Economic Revitalization: Impacts on local economy from users of trail

Single Family Rehab:

Resiliency Value: Reduction in property damage from flooding

Environmental Value: Improved water quality from reduced stormwater runoff

Social Value: Reduction in suffering from repetitive flooding

Economic Revitalization: Improved property value and ability to redirect resources spent on flood response to other expenditures

The Northeastern Illinois Regional Partnership will evaluate its effectiveness in improving regional resilience overtime by regularly measuring key indicators. These indicators will be used as summary measurements that provide information on the progress made to improve resilience of built, natural, and social systems. Informed by the structure of the Rockefeller Foundation’s City Resilience Framework, regional resilience indicators will fall under the four categories: (1) the health and wellbeing of individuals; (2) infrastructure and environment; (3) economy and society; and (4) leadership and strategy. Regional resilience indicators will be selected based on their ability to meet the following:

- Ability to be measured on a regular basis
- Usefulness for decision-making
- Responsiveness to levers of change
- Clarity and ease of comprehension

A sample list of potential regional resilience indicators are outlined in the following table.

Table 5: Potential Regional Resilience Indicators
Potential Indicator
Health & Wellbeing
Percentage of disaster-related deaths
Social Vulnerability Index (SoVI)
Percentage of population with health insurance
Percentage of mold-related illnesses
Infrastructure & Environment
Number of structures within FEMA 100-year floodplain
Disaster-related transportation corridor closures (or energy blackouts)
Percentage of residents (or buildings) with Air Conditioning
Percentage of residents with access to emergency response services (e.g. 911)
Public facilities with backup power source
Open space per capita
Number of communities that adopt 2-foot freeboard standard
Economy & Society
Percentage of households covered with flood insurance and basement backup riders
Household savings as percentage of household income
Number of people trained on resilience/preparedness
Percentage of disaster-related financial losses
Leadership & Strategy
Participation rates in platforms for coordinating across jurisdictions (e.g. Partnership meeting attendance)

Number of local plans with clearly delineated hazard mitigation goals
Number of updated hazard mitigation plans that reflect resilience planning
Percentage of communities demonstrating improvement in Community Rating System ranking

In Phase 1, the Partnership convened over 275 non-resident stakeholders through 27 meetings representing 41 units of government, 35 non-profit and community-based organizations, 15 research institutions, 8 foundations, and 61 businesses. It employed a four-pronged approach to engagement: 1) Expert consultation; 2) Engagement of local leaders and stakeholders; 3) Community engagement meetings; and 4) Partnership coordination meetings. Expert consultation efforts have occurred in primarily two formats, Work Groups and Resilience Roundtables, broadening the conversation with thought leaders across the public, private, non-profit, philanthropic, and academic sectors. Five Work Groups, each comprised of 10-20 representatives, were convened to inform the region’s resilience framework for action, particularly as it relates to cumulative impacts. Work Groups and their respective conveners include: Design & Engineering (NRDC); Financing the Future (Enterprise Community Partners); Using Technology to Impact Behavior (CNT); Economic Transformation and Opportunity (MPC); and Multiplying the Benefits (the Delta Institute). Over 60 Work Group-recommended resilience building actions covering planning and policy, research and modeling, financing, infrastructure, and adaptive capacity informed were explored in Phase 2. During Phase 2, the Partnership has convened 10 regional meetings with stakeholders representing 79 organizations, including 27 non-profit and community based organizations, 24 public sector agencies, 19 businesses, 6 research institutions and three local foundations. In Phase 2, the Partnership met with 40 new organizations on top of the 170 that had been engaged in Phase 1. At a local level, Cook County has met regularly with stakeholders in the demonstration area including other County agencies and affiliates, municipal leaders including elected officials and

planning/development/engineering personnel, prospective funders, developers, service providers, advocacy groups, etc. Feedback provided thus far based on local and regional outreach efforts has helped to narrow the list of potential projects and programs as well as refine related scopes, budgets, and schedules. See Attachment D – Consultation Summary for more details.

E.2 Increases Resilience

Cook County has demonstrated its commitment to resilience via its plan to design, test, and scale model approaches to disaster resiliency. The proposed resilience portfolio of projects and programs will improve the County’s resilience to current and future threats and hazards, including those impacted by climate change, by increasing physical, individual, and governmental capacity. This will be accomplished by increasing stormwater retention on private and public property, thus reducing the amount of water going into sewer systems and subsequent backups into basements; providing new resources and education for homeowners to incorporate green infrastructure features; and rehabilitating and constructing affordable and resilient single- and multi-family housing. By decreasing flooding issues, residents have fewer worries and can focus on other things and spend scarce resources on other priorities. The proposed projects also expand a shared community asset, the Cal-Sag Trail, which will support social cohesion, offer additional transit options, and highlight the natural features of the area; and create land available and ready for redevelopment leading to increased tax revenues, job opportunities, retail amenities, and sustained economic growth. Collectively, these projects will enhance the quality of life for residents in the demonstration area and increase property values, stabilizing the community and making it more ‘livable’. The impact of this work is most critical for low- and moderate- income households who serve to benefit most from additional resources for recovery and preparedness, new training and job opportunities, and valuable community assets which provide transit opportunities and connections to other communities.

The resilience value of the proposed portfolio goes beyond the County’s demonstration area, as the proposed Multi-Hazard Resilience Pilots serve are intended to be a replicable and scalable model for the County, region, and beyond. For example, the ‘green streets’ project features innovative ways to manage and store rainwater through the installation of bioswales, permeable pavement or parking lanes with gravel storage galleries underneath, and more resilient landscaping features. This type of project will be piloted in a residential neighborhood in Dolton, refined, and then replicated in other residential neighborhoods facing repetitive flooding. Likewise, the two resilient housing projects in Calumet City and Dolton put forth a new model for how to incorporate green and gray infrastructure into rehabilitation and construction projects for affordable single- and multi-family homes. If successful, the County could share this model with affordable housing providers and support its replication. Beyond these discrete projects and programs which offer natural opportunities for scaling, Cook County and the Northeast Illinois Resilience Partnership’s long-term commitments to enhance resilience, detailed in Exhibit G, p. 91., further the impact of this proposal by incorporating resilience in policy, design guidelines, workforce development activities, data gathering, modeling and alert systems, capacity-building, and planning.

E.3 Model / Replicable / Holistic

Cook County’s strategic approach was designed with interconnectedness, scaling, and replication in mind. As noted earlier, *Planning for Progress*, the County’s recently adopted 5 year strategic plan, incorporates disaster recovery and resilience approaches. The resilience enhancing programs and projects approach outlined in this application is aligned with this strategic vision and was developed to holistically address the immediate needs resulting from continual flooding but to also go beyond to enhance overall living conditions, improve and preserve the housing stock, create educational and workforce development opportunities, upgrade and strengthen commercial and industrial bases, facilitate job creation, promote economic investment, create and enhance community amenities and

recreational opportunities, expand the local tax base. The proposed activities can stimulate further investment, foster development and redevelopment, and precipitate community revitalization. Most importantly, the proposed improvements will play a critical role in enabling and strengthening connections between communities, their institutions and leaders, and residents.

The proposed approach can be replicated throughout suburban Cook County, particularly in older, inner ring suburbs, as well as throughout similar communities in the broader region and nation. It is a scalable model that can be adapted for different challenges. It can inspire changes in how and where infrastructure investments occur so that they are inclusive of street maintenance, enhanced stormwater management and flooding mitigation measures, and green space installation. The single family rehabilitation program can be customized to meet the needs of varying housing stock. A common theme concerns the education of property owners – whether homeowners of single-family or owners of multi-family rental property – regarding how they can incorporate improvements to enhance the resilience of their own individual property as well as that of their neighbors and surrounding community. Given its geographic size, demographic diversity, and regulatory complexity, Cook County’s approach offers many opportunities for scaling and replication in other communities. This approach encompasses innovative ways to approach redevelopment in areas with significant hurdles: land fragmentation, environmental contamination, absentee owners, stormwater requirements, and high tax rates. It creates a new paradigm whereby the public sector takes a lead role on addressing stormwater management challenges in ways that expand and protect community amenities (through the utilization of vacant land for stormwater retention) as well as remove regulatory barriers to redevelopment. Initial public investment can be catalytic in the development process.

Cook County will continue to explore opportunities for scaling of its proposed approach through regional and local coordination and consultation. The County’s participation in the Northeastern

Illinois Resilience Partnership will help facilitate this through continual peer review and feedback from regional experts. Regional coordination will avoid problematic approaches, like making infrastructure investments that simply push flooding problems downstream. The “regional scaling” process provides an opportunity for other jurisdictions to be involved; beyond the Partnership, adjacent units of government have expressed willingness to cooperate, as well. This approach allows resilience concepts to be applied beyond the timeframe of the CDBG-NDR grant, providing a lasting, long-term commitment to address resilience.

E.4 Schedule

A detailed and feasible schedule for all projects and programs is provided on the following page (Table 4) which follows. Start and completion dates are provided for all tasks and CDBG-NDR activities. A milestone is noted for the dates at which projects will become functional and the expected benefits realized.

Table 6: CDBG-NDR Activity Schedule

NDRC schedule		Exhibit A - NDRC Activity Schedule												09-Oct-15 11:49						
Activity Name	Start	Finish	2016				2017				2018				2019				2020	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
NDRC schedule	04-Jan-16	30-Sep-19	[Gantt bar for NDRC schedule]																	
Blue Island	04-Jan-16	29-Dec-17	[Gantt bar for Blue Island]																	
Design	04-Jan-16	12-Sep-16	[Gantt bar for Blue Island Design]																	
Environmental Review	13-Sep-16	05-Dec-16	[Gantt bar for Blue Island Environmental Review]																	
Permits	13-Sep-16	02-Jan-17	[Gantt bar for Blue Island Permits]																	
Bidding / Procurement	03-Jan-17	27-Mar-17	[Gantt bar for Blue Island Bidding / Procurement]																	
Construction	27-Mar-17	29-Dec-17	[Gantt bar for Blue Island Construction]																	
Substantial Completion		03-Nov-17	[Milestone for Blue Island Substantial Completion]																	
Final Completion		29-Dec-17	[Milestone for Blue Island Final Completion]																	
Robbins	04-Jan-16	29-Dec-17	[Gantt bar for Robbins]																	
Design	04-Jan-16	12-Sep-16	[Gantt bar for Robbins Design]																	
Environmental Review	13-Sep-16	05-Dec-16	[Gantt bar for Robbins Environmental Review]																	
Permits	13-Sep-16	02-Jan-17	[Gantt bar for Robbins Permits]																	
Bidding / Procurement	03-Jan-17	27-Mar-17	[Gantt bar for Robbins Bidding / Procurement]																	
Construction	27-Mar-17	29-Dec-17	[Gantt bar for Robbins Construction]																	
Substantial Completion		03-Nov-17	[Milestone for Robbins Substantial Completion]																	
Final Completion		29-Dec-17	[Milestone for Robbins Final Completion]																	
Calumet Park	02-Jan-17	27-Dec-18	[Gantt bar for Calumet Park]																	
Design	02-Jan-17*	08-Sep-17	[Gantt bar for Calumet Park Design]																	
Environmental Review	11-Sep-17	01-Dec-17	[Gantt bar for Calumet Park Environmental Review]																	
Permits	11-Sep-17	29-Dec-17	[Gantt bar for Calumet Park Permits]																	
Bidding / Procurement	01-Jan-18	23-Mar-18	[Gantt bar for Calumet Park Bidding / Procurement]																	
Construction	23-Mar-18	27-Dec-18	[Gantt bar for Calumet Park Construction]																	
Substantial Completion		01-Nov-18	[Milestone for Calumet Park Substantial Completion]																	
Final Completion		27-Dec-18	[Milestone for Calumet Park Final Completion]																	
Riverdale	02-Jan-17	27-Dec-18	[Gantt bar for Riverdale]																	
Design	02-Jan-17*	08-Sep-17	[Gantt bar for Riverdale Design]																	
Environmental Review	11-Sep-17	01-Dec-17	[Gantt bar for Riverdale Environmental Review]																	
Permits	11-Sep-17	29-Dec-17	[Gantt bar for Riverdale Permits]																	
Bidding / Procurement	01-Jan-18	23-Mar-18	[Gantt bar for Riverdale Bidding / Procurement]																	
Construction	23-Mar-18	27-Dec-18	[Gantt bar for Riverdale Construction]																	
Substantial Completion		01-Nov-18	[Milestone for Riverdale Substantial Completion]																	
Final Completion		27-Dec-18	[Milestone for Riverdale Final Completion]																	
Dolton	02-Oct-17	26-Sep-19	[Gantt bar for Dolton]																	
Design	02-Oct-17*	08-Jun-18	[Gantt bar for Dolton Design]																	
Environmental Review	11-Jun-18	31-Aug-18	[Gantt bar for Dolton Environmental Review]																	
Permits	11-Jun-18	28-Sep-18	[Gantt bar for Dolton Permits]																	
Bidding / Procurement	01-Oct-18	21-Dec-18	[Gantt bar for Dolton Bidding / Procurement]																	
Construction	21-Dec-18	26-Sep-19	[Gantt bar for Dolton Construction]																	
Substantial Completion		01-Aug-19	[Milestone for Dolton Substantial Completion]																	
Final Completion		26-Sep-19	[Milestone for Dolton Final Completion]																	
MISC	04-Apr-16	30-Sep-19	[Gantt bar for MISC]																	
Garden House of River Oaks	04-Apr-16*	29-Dec-17	[Gantt bar for Garden House of River Oaks]																	
Dolton Resilient Community	05-Apr-16*	02-Feb-18	[Gantt bar for Dolton Resilient Community]																	
Single Family Rehab	06-Apr-16*	01-Apr-19	[Gantt bar for Single Family Rehab]																	
Cal-Sag Trail	07-Apr-16*	31-Jan-18	[Gantt bar for Cal-Sag Trail]																	
Education	08-Apr-16*	30-Sep-19	[Gantt bar for Education]																	
Workforce Development	11-Apr-16*	30-Sep-19	[Gantt bar for Workforce Development]																	
Planning	12-Apr-16*	30-Sep-19	[Gantt bar for Planning]																	

 Actual Work
 Cri...
 Remaining Work
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E.5 Budget

Please see the following page for budgets for each proposed project and program, including direct leverage and illustrating the sources and uses of funds. A detailed Sources and Uses Statement for the collective portfolio of projects and programs within this Phase 2 application is submitted in Attachment B – Leverage Documentation. Cook County’s Attachment F - Benefit-Cost Analysis was instrumental in determining the cost-effectiveness of specific activities and selecting the projects and programs identified to be the most prudent – and impactful – use of funds. The County will ensure that all costs are in line with industry standards and are appropriate for the scope of the project.

The proposed projects and programs can be scaled, scoped, or phased in a number of ways. The Cal-Sag Trail could be scaled to exclude certain segments, but the value of completing the trail and making linkages across multiple communities would be lost. Alternatively, the project could be scoped to eliminate some of the green infrastructure features, including use of permeable material and bioswales, but again, the loss to the project is in terms of benefits to stormwater management. The two housing projects could be scaled by reducing the number of homes rehabilitated or the number of new construction homes completed. In terms of scoping, the project could be revised to incorporate fewer resilient features per home, thus reducing the total cost. This poses a challenge, though, in terms of the overall concept which is to create resilient housing projects which can be a model for others in the region.

Table 7: Cook County Draft Budget CDBG-NDR

Municipality	Project Area Description / Proposed Solution	Cost Amounts		Leverage Amounts			Total Cost in NDRC Application	Source of Leverage
		Estimated Project Costs *	Requested in NDRC Application	MWRD Commitment	Other Leveraged Amount	Total Leveraged Amount		
BLUE ISLAND/CALUMET PARK RESILIENCY PROJECT								
Blue Island	Former dump/Industrial area adjacent to residential focus areas							
	Demolition of blighted properties	\$1,300,000	\$650,000	\$0	\$650,000	\$650,000	\$1,300,000	County CDBG and Blue Island
	Green infrastructure from developer to meet design requirements	\$1,500,000	\$0	\$0	\$1,500,000	\$1,500,000	\$1,500,000	Private developer
	Green infrastructure to meet resiliency needs	\$1,500,000	\$1,500,000	\$0	\$0	\$0	\$1,500,000	
	Additional resiliency to meet 25yr/24hr storm	\$400,000	\$400,000	\$0	\$0	\$0	\$400,000	
	SUBTOTAL	\$4,700,000	\$2,550,000	\$0	\$2,150,000	\$2,150,000	\$4,700,000	-
Calumet Park	Veterans Park/ Winchester Ave area with basement and street flooding							
	Single Family Rehab Program	\$2,004,750	\$1,854,750	\$0	\$150,000	\$150,000	\$2,004,750	Calumet Park overhead sewer cost-sharing program
	Green Streets	\$6,000,000	\$1,800,000	\$4,200,000	\$0	\$4,200,000	\$6,000,000	MWRD
	SUBTOTAL	\$8,004,750	\$3,654,750	\$4,200,000	\$150,000	\$4,350,000	\$8,004,750	-
Blue Island	Residential area at Vincennes/ Washington with basement and street flooding							
	Single Family Rehab Program	\$4,191,750	\$4,191,750	\$0	\$0	\$0	\$4,191,750	
	Resilient Street Improvement	\$450,000	\$0	\$0	\$450,000	\$450,000	\$450,000	County CDBG and CDBG-DR
	Relief Sewers (Phase 2 Design)	\$3,570,093	\$1,071,028	\$2,499,065	\$0	\$2,499,065	\$3,570,093	MWRD
	Sewer Mainline Upsizing (Phase 2 Design)	\$818,350	\$245,505	\$572,845	\$0	\$572,845	\$818,350	MWRD
	Rain Gardens (Phase 2 Design)	\$644,144	\$193,243	\$450,900	\$0	\$450,900	\$644,144	MWRD
	Stormwater Bumpouts (Phase 2 Design)	\$220,968	\$66,290	\$154,677	\$0	\$154,677	\$220,968	MWRD
	Green Alleys (Phase 2 Design)	\$792,532	\$237,760	\$554,772	\$0	\$554,772	\$792,532	MWRD
	SUBTOTAL	\$10,687,836	\$6,005,576	\$4,232,260	\$450,000	\$4,682,260	\$10,687,836	-
Blue Island	Cal Sag Bike Trail	\$7,984,000	\$3,172,400	\$0	\$4,811,600	\$4,811,600	\$7,984,000	CMAQ; STP; IDNR
	SUBTOTAL	\$7,984,000	\$3,172,400	\$0	\$4,811,600	\$4,811,600	\$7,984,000	-
	TOTAL	\$31,376,586	\$15,382,726	\$8,432,260	\$7,561,600	\$15,993,860	\$31,376,586	-
ROBBINS RESILIENCY PROJECT								
Robbins	Lightly populated residential area with overbank flooding from Midlothian Creek							
	Inlet/Outlet Structures (Phase 2 Design)	\$1,549,996	\$464,999	\$1,084,997	\$0	\$1,084,997	\$1,549,996	MWRD
	Channel Widening (Phase 2 Design)	\$661,532	\$198,460	\$463,072	\$0	\$463,072	\$661,532	MWRD
	Detention Basin (Phase 2 Design)	\$896,909	\$269,073	\$627,836	\$0	\$627,836	\$896,909	MWRD
	Flood Wall along Kedzie (Phase 2 Design)	\$747,033	\$224,110	\$522,923	\$0	\$522,923	\$747,033	MWRD
	Mobilization (Phase 2 Design)	\$192,773	\$57,832	\$134,941	\$0	\$134,941	\$192,773	MWRD
	SUBTOTAL	\$4,048,243	\$1,214,473	\$2,833,770	\$0	\$2,833,770	\$4,048,243	-
Robbins	Residential area with street/yard flooding due to lack of storm sewer system							
	Green Streets Pilot Program	\$2,000,000	\$600,000	\$1,400,000	\$0	\$1,400,000	\$2,000,000	MWRD
	SUBTOTAL	\$2,000,000	\$600,000	\$1,400,000	\$0	\$1,400,000	\$2,000,000	-
	TOTAL	\$6,048,243	\$1,814,473	\$4,233,770	\$0	\$4,233,770	\$6,048,243	-
RIVERDALE RESILIENCY PROJECT								
Riverdale	Riverdale Marsh							
	Constructed wetlands	\$877,410	\$877,410	\$0	\$0	\$0	\$877,410	
	Right-of-way bioswale	\$260,000	\$260,000	\$0	\$0	\$0	\$260,000	
	Porous pavement parking lot	\$96,000	\$96,000	\$0	\$0	\$0	\$96,000	
	Permeable hike/bike trail	\$300,000	\$300,000	\$0	\$0	\$0	\$300,000	
	Park amenities (educational signage, etc.)	\$20,000	\$20,000	\$0	\$0	\$0	\$20,000	
	SUBTOTAL	\$1,553,410	\$1,553,410	\$0	\$0	\$0	\$1,553,410	-
Riverdale	Northeast Riverdale residential neighborhood							
	Single Family Rehab Program	\$1,425,000	\$1,425,000	\$0	\$0	\$0	\$1,425,000	
	Green streets (7.4 ac-ft for 25yr/24hr storm)	\$6,170,000	\$1,851,000	\$4,319,000	\$0	\$4,319,000	\$6,170,000	MWRD
	SUBTOTAL	\$7,595,000	\$3,276,000	\$4,319,000	\$0	\$4,319,000	\$7,595,000	-
Riverdale	Industrial redevelopment area in western Riverdale							
	Green infrastructure to meet design requirements and resiliency needs	\$2,155,600	\$1,077,800	\$0	\$1,077,800	\$1,077,800	\$2,155,600	Private developer
	SUBTOTAL	\$2,155,600	\$1,077,800	\$0	\$1,077,800	\$1,077,800	\$2,155,600	-
Riverdale	Pacesetter residential area and Patton School							
	Single Family Rehab Program	\$668,250	\$668,250	\$0	\$0	\$0	\$668,250	
	Green Streets Pilot Program	\$1,455,800	\$436,740	\$1,019,060	\$0	\$1,019,060	\$1,455,800	MWRD
	Cal Sag Bike Trail	\$3,213,000	\$500,000	\$0	\$2,713,000	\$2,713,000	\$3,213,000	STE; IDNR
	SUBTOTAL	\$5,337,050	\$1,604,990	\$1,019,060	\$2,713,000	\$3,732,060	\$5,337,050	-
	TOTAL	\$16,641,060	\$7,512,200	\$5,338,060	\$3,790,800	\$9,128,860	\$16,641,060	-
DOLTON RESILIENCY PROJECTS								
Dolton	Residential / Open Space with basement backups and street flooding							
	Single Family Rehab Program	\$4,934,250	\$4,934,250	\$0	\$0	\$0	\$4,934,250	
	Green Streets	\$2,851,300	\$855,390	\$1,995,910	\$0	\$1,995,910	\$2,851,300	MWRD
	Cal Sag Bike Trail	\$1,995,000	\$414,658	\$0	\$1,580,342	\$1,580,342	\$1,995,000	TAP; IDNR
	SUBTOTAL	\$9,780,550	\$6,204,298	\$1,995,910	\$1,580,342	\$3,576,252	\$9,780,550	-
Dolton	Residential area near Little Calumet River							
	Housing Redevelopment	\$10,260,000	\$5,100,000	\$0	\$5,160,000	\$5,160,000	\$10,260,000	Mecca; SSLBDA
	SUBTOTAL	\$10,260,000	\$5,100,000	\$0	\$5,160,000	\$5,160,000	\$10,260,000	-
	TOTAL	\$20,040,550	\$11,304,298	\$1,995,910	\$6,740,342	\$8,736,252	\$20,040,550	-

Municipality	Project Area Description / Proposed Solution	Cost Amounts		Leverage Amounts			Total Cost in NDRC Application	Source of Leverage
		Estimated Project Costs *	Requested in NDRC Application	MWRD Commitment	Other Leveraged Amount	Total Leveraged Amount		
CALUMET CITY RESILIENCY PROJECTS								
Calumet City	Renovation of existing Section 8 development for GI community near Shopping Center							
	Housing Redevelopment	\$24,525,403	\$3,750,000	\$0	\$20,775,403	\$20,775,403	\$24,525,403	IHDA
	SUBTOTAL	\$24,525,403	\$3,750,000	\$0	\$20,775,403	\$20,775,403	\$24,525,403	-
Calumet City	Residential / Open Space with basement backups and street flooding							
	Single Family Rehab Program	\$6,648,750	\$6,498,750	\$0	\$150,000	\$150,000	\$6,648,750	Calumet City overhead sewer cost-sharing program (estimated)
	SUBTOTAL	\$6,648,750	\$6,498,750	\$0	\$150,000	\$150,000	\$6,648,750	-
Calumet City	Cal Sag Bike Trail	\$1,755,000	\$273,212	\$0.0000	\$1,481,788	\$1,481,788	\$1,755,000	TAP; IDNR
	SUBTOTAL	\$1,755,000	\$273,212	\$0	\$1,481,788	\$1,481,788	\$1,755,000	-
	TOTAL	\$32,929,153	\$10,521,962	\$0	\$22,407,191	\$22,407,191	\$32,929,153	-
All in Pilot Area	Education Programs		\$500,000	\$0	\$0	\$0	\$500,000	
All in Pilot Area	Planning Programs		\$1,250,000	\$0	\$100,000	\$100,000	\$1,350,000	Chicago Community Trust
All in Pilot Area	Workforce Development		\$1,000,000	\$0	\$200,000	\$200,000	\$1,200,000	County CDBG
	Administrative Costs		\$2,500,000	\$0	\$0	\$0	\$2,500,000	
	TOTAL		\$5,250,000	\$0	\$300,000	\$300,000	\$5,550,000	-
	GRAND TOTAL	\$107,035,592	\$51,785,659	\$20,000,000	\$40,799,933	\$60,799,933	\$112,585,592	-

NOTES

* - project costs include contingency

The projects most challenging to adjust are the three ‘complete communities’ projects in Riverdale, Blue Island – Calumet Park, and Robbins. If a significant revision to these projects needed to be made, it would make the most sense to select one or more to focus on, out of the three. MWRD projects in Blue Island and Robbins have an established schedule and would be difficult to amend. Reducing the scope of stormwater management features is a possibility, but the trade-off would be losing some of the resilient features or features that provide other co-benefits. For example, the green streets components within each project area could be phased or re-sized as needed (i.e., less linear feet, fewer blocks). Additionally, in Riverdale, the Riverdale Marsh portion of the project could be scoped by removing the hiking trail or other park amenities, but not without the loss of key value.

A final way to consider scoping, scaling, and phasing is to look at the County’s resilience portfolio by geographic focus area. The proposed projects in Dolton – green streets and single-family housing construction – could be eliminated because both are standalone projects. For reasons discussed above and due to the more comprehensive nature of the projects, the three ‘complete

communities' projects are of higher priority. Of course, cost-benefit implications would be paramount in making these types of re-sizing or elimination decisions.

E.6 Plan Consistency

The proposed activities in this Phase 2 application are consistent with Cook County's combined Consolidated Plan and Comprehensive Economic Development Strategy, both adopted in 2015. Additionally, they are consistent with GO TO 2040, CMAP's comprehensive regional plan which also serves as a U.S. Department of Transportation approved fiscally constrained long-range transportation plan. Moreover, these efforts are consistent with CMAP's regional sustainability initiatives. The proposed activities are also consistent with the Cook County Multi-Jurisdictional All Hazards Mitigation Plan, last revised November 6, 2014. This Mitigation Plan includes all federally required elements and has been adopted by the Illinois Emergency Management Agency and FEMA. Supporting documentation will be inserted as Attachment D prior to HUD submission.

EXHIBIT F: LEVERAGE

Cook County has significant community support for its proposed CDBG-NDR projects and programs. These funds – representing both direct financial commitments and supporting commitments – will increase the effectiveness of the proposed activities, enabling the County to ‘do more’ with the federal dollars requested. Documentation for the leverage commitments listed in this exhibit can be found in Attachment B – Leverage Documentation and Sources & Uses of Funds.

Direct financial commitments, or cash commitment by the applicant or partner that is part of the Sources and Uses statement for the CDBG-NDR eligible activities proposed, received by Cook County total \$60,799,933. As compared to the County’s CDBG-NDR request of \$51,785,659, this represents a leverage commitment of 117 percent of grant funds requested. Direct financial commitments include the following:

- MWRD will commit \$20,000,000 for stormwater improvements to support the County’s proposed resilience portfolio. This commitment includes \$8,432,260 in Blue Island and Calumet Park for implementation of ‘green streets’ and installation of relief sewers, rain gardens, stormwater bumpouts, and green alleys and upsizing of sewer mainlines; \$4,233,770 in Robbins for implementation of ‘green streets’, as well as widening of the Midlothian Creek channel, installation of inlet / outlet structures, detention basins, and a flood wall, and mobilization; \$5,338,060 in Riverdale to implement ‘green streets’; and \$1,995,910 in Dolton to implement ‘green streets’.
- In total, \$650,000 will be committed by Cook County via CDBG funds and the City of Blue Island for demolition of blighted properties in Blue Island.
- The County will also commit a total of \$450,000 of CDBG funds and CDBG-DR funds for resilient street improvements in a residential area in Blue Island.
- Cook County will commit \$200,000 in CDBG funds for workforce development programs.

- Calumet Park will commit \$150,000 as part of its overhead sewer cost-sharing program, activities which are part of the County's proposed Single Family Rehab Program.
- Calumet City will commit an estimated \$150,000 as part of its overhead sewer cost-sharing program, activities which are part of the County's proposed Single Family Rehab Program.
- A private developer in Blue Island will commit \$1,500,000 for green infrastructure improvements to meet design requirements.
- A private developer in Riverdale will commit to \$1,077,800 for green infrastructure improvements to meet design requirements.
- MECCA and the South Suburban Land Bank and Development Authority have committed \$5,160,000 for housing redevelopment in Dolton.
- IHDA has committed \$20,755,403 for housing redevelopment in Calumet City.
- A total of \$10,586,730 has been committed by the Transportation Alternatives Program (TAP), the Congestion Mitigation and Air Quality Improvement (CMAQ) program, Surface Transportation Program (STP), and the Illinois Department of Natural Resources to support the construction of the Cal-Sag Trail.
- The Chicago Community Trust approved a grant in the amount of \$100,000 to Foresight Design Initiative, a capacity-building partner to the Northeastern Illinois Resilience Partnership, to convene a resource group of multidisciplinary experts to develop a consensus strategy for integrating climate resilience into the next regional comprehensive plan (the *GO TO 2040* successor plan) due for completion in 2018. The Climate Resilience Resource Group is co-chaired by the Chicago Community Trust and the Chicago Metropolitan Agency for Planning. Under the guidance and leadership of Foresight Design Initiative, the Climate Resilience Resource Group will leverage existing local and regional collaborations to support resilience-building activities and identify gaps in the capacity of

regional institutional networks. It will establish a long-term coalition on regional resilience creation and work with that coalition to create and implement initiatives that fulfill the resilience objectives of the next regional comprehensive plan.

Supporting Commitments, or funding that the applicant or partner has to carry out supporting activities but that is not part of the Sources and Uses Statement, are currently being formalized by the County. Several commitments have been made, as follows:

- MWRD, a unit of general local government partner, procured the services of ARCADIS, valued at \$923,479.50, for outreach and engineering for the Cook County demonstration area. Arcadis also provided support for the County's Phase 2 application.
- The University of Illinois received a \$3,000,000 planning grant to look at resiliency planning in suburban Cook County's transportation system.
- Blue Island is receiving a \$1,100,000 million Illinois Green Infrastructure Grant to implement stormwater best management practices, and \$235,295 for green infrastructure installation from the Chi-Cal Rivers Fund.
- Robbins, Blue Island, and Calumet Park will share in a \$260,000 grant from the Great Lakes Restoration Initiative.

EXHIBIT G: LONG-TERM COMMITMENT

Regardless of the outcome of its Phase 2 application, both Cook County and the Northeast Illinois Resilience Partnership firmly commit to activities to enhance resilience in northeastern Illinois and Illinois more broadly. The Partnership is committed to meeting quarterly for five years, with potential extension, to facilitate cross-jurisdictional coordination in scaling up successful interventions across the region and State, and to advance a regional resilience framework for action focused on planning, capacity-building, and policy and institutional changes. The Partnership will evaluate its progress and effectiveness (in terms of both ability to improve resilience, particularly for flooding, and to scale projects) annually to adapt its approach and forge a possible ongoing extension of this initial commitment. The Partnership will be the first and model partnership of three to five that will form across the State to achieve these goals at greater scale.

High priority local, regional, and State commitments are described in greater detail below. Of particular note are two that reflect significant changes in thinking or policy around flooding and resilience. The first is the **passage of the Urban Flooding Awareness Act (PA 098-0858) in Illinois**, which was signed into law on August 4, 2014 and seeks solutions for urban areas that have been most affected by increased flooding. A June 2015 report, mandated by the Act, was published in 2015 that gathered information on the prevalence and cost of urban flooding in Illinois and made 33 recommendations for minimizing the damage to property which are now being explored in greater detail.²⁹ The second is collaboration **with the Prairie Research Institute to help identify metrics to evaluate progress for all of the demonstration areas** set forth by the Northeast Illinois Resilience Partnership. This collaboration will ensure the successful replicability and scalability of the projects proposed by each of the four applicants. The Institute's evaluation will find ways to revise and retool current projects to increase effectiveness, and identify potential challenges in

²⁹ https://www.dnr.illinois.gov/WaterResources/Documents/Final_UFAA_Report.pdf

scaling across different jurisdictions. The successful scaling of projects within each demonstration area will validate the Partnership's model and can be used to promote greater take-up in other areas in Northeastern Illinois and, more broadly, across Illinois.

Local Commitments

In its Phase 1 application, Cook County committed to look at ways to promote enrollment in the Community Rating System (CRS) by strengthening low capacity communities' ability to participate. The County is aligning the implementation of the HMP (adopted 9/2014), CDBG-DR Strategy Plan (adopted 1/2015), *Planning for Progress* (adopted 1/2015), and the Long Range Transportation Plan (under development) and related investment strategies to promote resilience. DPD is in talks regarding expanding Greencorps and the Conservation Corps and with the United Way and other partners regarding the possible launch of a countywide 211 system which could aid disaster recovery.

The County already supports Living Wage policies, having mandated adherence to its Living Wage Ordinance, Section 2-408 of the Cook County Code of Ordinances, for recipients of its tax incentives and businesses or persons awarded a contract or subcontract with the County. For fiscal year 2015, this ordinance mandates that employers pay a wage of at least \$11.66 per hour (employees with health benefits) or \$14.57 per hour (employees without health benefits). The County's mandate is directly in support of resilience and individual capacity building.

Cook County now makes new commitments to the following to support resilience:

- Broaden coverage of stormwater and floodplain ordinances and draft model stormwater ordinance.
- Examine zoning ordinances and development regulations for opportunities to incorporate resilience.
- Revise County plumbing and building codes to allow for greater reuse.

- Require disclosure on renting basement apartments in flood-prone areas.
- In partnership with the Calumet Stormwater Collaborative, update Bulletin 70 to represent current rainfall frequency.
- Promote early warning systems.
- Update design standards for transportation and infrastructure projects.
- Include monitoring component to local pilot projects to determine effectiveness of interventions and inform replicability and scalability across the region.
- Examine renters' insurance and renters rights.

Regional Commitments

The Northeastern Illinois Resilience Partnership has established shared priorities, with a particular focus on those that necessitate collaborative effort. These key regional priority areas include policy, design, workforce development, financing, insurance, data and modeling, capacity and network building, scaling, monitoring and evaluation, and outreach. While many of the local commitments detailed above are shared among the Partnership's other NDRC-DR applicants, the Partnership also commits collectively to shared actions.

In the County's Phase 1 application, CMAP committed to integrating climate considerations in its Local Technical Assistance projects through climate vulnerability assessments and recommendations that take into account climate projections in infrastructure, land use, economic development, conservation, and natural resource management issues. Since Phase 1, CMAP has initiated three projects that incorporate more advanced analytical techniques and robust recommendations for stormwater management, capital improvements, and comprehensive planning. These projects are supported by the MacArthur Foundation and cover 59,380 residents across three municipalities in Cook County. CMAP has recommended the initiation of five additional projects for the upcoming year that will also likely include a significant stormwater resilience aspect

(pending approval from CMAP's Board). The recommended projects include a stormwater management plan, river corridor study, comprehensive plan, together include over 130,000 residents. CMAP has also applied for \$900,000 of funding to pursue additional work on climate vulnerability assessments through two grant opportunities from the National Oceanic and Atmospheric Agency (NOAA), both of which are still pending.

New regional commitments in Phase 2 are as follows:

- Conduct a thorough review of what design guidelines are currently being used across departments and agencies; require use of leading edge design guidelines.
- Scale up existing workforce development programs, particularly those in green infrastructure construction and maintenance.
- Create a green infrastructure training and certificate program; require through MS4 permits to hire certified contractors/firms. Promote marketplace to support job growth in green infrastructure construction and maintenance.
- Build a regional Hydrologic and Hydraulic Model to inform decision-making and investments (CH2MHill & MPC)
- Improve and update regional climate and precipitation modeling.
- Conduct or commission a formal assessment of optimal revenue generation options for transformative, sustained and long-term investment in stormwater infrastructure, operations and maintenance.
- Consider stormwater fees, social impact bonds, and value-capture mechanisms.
- Work with insurance companies to discuss opportunities for investment in regional approach to reducing risk.
- Increase consumer education on flood insurance riders to expand coverage.

- Engage and build capacity of implementers such as landscaping companies, engineers, stormwater engineering firms, etc. through industry and homeowners associations.
- Implement shared regional indicators and track and evaluate progress over time.
- Identify and create mechanisms for scaling successful projects to other adjacent communities across the region and State.
- Identify ‘place typologies’ throughout the region and organize working groups for lesson sharing and collaboration around similarities in land use, density, etc.
- Coordinated, co-branded education and outreach campaigns

CMAP is supporting long-term efforts to build resilience as part of the process to develop a new regional comprehensive plan for the Chicago region. The planning process, which began in July 2015, will occur over the next three years and ultimately provide targets and recommendations for the region on land use, transportation, economic development, environmental, and governance issues. This ongoing effort includes the development of a regional resilience strategy, which is expected to be a significant issue covered in the regional plan. The regional resilience strategy largely builds upon the collective efforts of the Northeastern Illinois Resilience Partnership by:

- Fostering multi-jurisdictional collaboration by engaging other jurisdictions in the Chicago area that are not eligible for the NDRC;
- Ensuring that the Partnership’s long-term ideas can be achieved beyond the time-frame of the HUD grant; and
- Incorporating the shared resilience vision and innovative resilience strategies into a formal, region-wide plan that covers a comprehensive set of planning issues for communities, economies, infrastructure systems, and ecosystems.

The cross-sector relationships initiated through the NDRC informed CMAP’s approach to establish a resource group to guide the regional resilience strategy. The resource group includes

representatives from all four NDRC applicants, as well as diverse experts from public health, philanthropy, emergency management, transportation, stormwater, utility companies, land management, and environmental justice community-based organizations. This stakeholder engagement will be paired with robust public and resident engagement in later planning stages. Ultimately, the regional comprehensive plan will provide a framework for CMAP and its partners (including members of the Northeastern Illinois Resilience Partnership) to implement resilience policies and programs in a concerted, strategic manner.

State Commitments:

As discussed, the Northeastern Illinois Resilience Partnership will be the first and model partnership of three to five others that will form across the State, co-convened by the State of Illinois and the University of Illinois. The State, through its various agencies, will be an integral part in ensuring that policies, programs, and commitments to support resilience are scaled Statewide.

In Phase 1, the State committed to the passage of Urban Flooding Awareness Act. This occurred on August 4, 2014, and the mandated report was published in June 2015. The research presented in the report has led to 33 recommendations, some of which the Illinois Department of Natural Resources (IDNR) is already working on with other state agencies: developing a draft state model stormwater ordinance for local communities; determining how best to appropriate expenditures of state revolving funds for stormwater management measures; and, coordinating Federal and state mitigation grant programs and projects potentially addressing urban flood measures through the Illinois Mitigation Advisory Group. The remaining recommendations in the report address the need for authorities, education and awareness, local regulations, collaboration between government agencies and communities, and funding for programs and data collection efforts to reduce future flood damage costs in Illinois.

The Illinois Environmental Protection Agency also committed to make low interest financing available through its Clean Water State Revolving Fund (CWSRF) for the first time ever for urban stormwater, green infrastructure, water efficiency and projects intended to make water infrastructure more resilient. This was implemented, and MWRD is currently working to secure the first loan of this type, for a stormwater project.

The Illinois Department of Natural Resources also committed in Phase 1 to expand the implementation of a GIS database of flood hazard risk for every structure located within or near a designated floodplain.

New commitments for Phase 2 include the following:

- IL State Water Survey's regional rainfall projections, with potential to include temperature and other climate impacts
- INDR's proposal to increase monitoring of stream gauges / text-based warning systems
- Statewide Resilience Academies (trainings) for regional planning councils, elected officials, local governments, and communities.
- State-led interagency resilience working group
- Engage the University of Illinois to develop, monitor, and evaluate progress toward common, agreed-to metrics