

Exhibit A: Executive Summary

Since 2009 the Commonwealth of Kentucky has been blazing the trail to statewide resilience. To initiate a comprehensive program for building community resilience across the Commonwealth, management through a cross-disciplinary group that provides three major programmatic components is needed;

- 1) The proper governance - the Commonwealth Council for Community Recovery and Resilience (CCRR)
- 2) A centralized and easily accessible toolbox for local disaster management planning and informed decision-making - the Community Hazard Assessment and Mitigation Planning System (CHAMPS)
- 3) Policy guidance and education for the facilitation of local resilience and recovery plan development processes - Recovery and Resilience Plan Guide and Templates

These three necessary and diversified concepts and tools establish a contiguous network of resilience-based efforts to connect, expand, and ‘Regrow Kentucky’ at all levels of government. This multi-sector initiative has given birth to ‘Regrow Kentucky: A Path to Resilience’. Through four Regrow Phases, the Commonwealth proposes to harness existing planning mechanisms and develop decision-making frameworks to help inform and guide local resilience building for pilot communities that have unmet needs. To stimulate regrowth at the local and regional levels, Regrow Kentucky: A Path to Resiliency program will be delivered through the following four phases:

Regrow Phase 1: Assess and identify pilot communities, develop framework and a resilience based educational program.

Regrow Phase 2: Develop project selection criteria and financing program.

Regrow Phase 3: Select and manage project implementation; continue education.

Regrow Phase 4: Evaluate and measure program outcomes; develop best practices.

A recent tragedy to triumph example in a local Kentucky community espouses the essence of the local policy creation and economic stimulation that the ‘Regrow Kentucky: A Path to Resilience’ Program is seeking to accomplish. On March 2, 2012, the town of West Liberty, Kentucky suffered a massive tragedy when an EF3 tornado ripped through this community of 3,400 residents, killing seven, damaging nearly 400 homes, businesses and government structures, and destroying much of the downtown area. To manage the recovery process from this tragedy, the town created two entities, the Morgan County Long-Term Recovery Committee and B.E.G.I.N Again (Building Entrepreneurial, Green, Innovative and Networked) communities and enterprises. This effort guided the community to not only rebuild, but in a way that is allowing the region to move toward renewed economic prosperity.

This example is used because empowering communities to spearhead culture shifts, with resilience based initiatives is the essence of what the Commonwealth is proposing through the “Regrow Kentucky: A Path to Resilience” program. The U.S. Department of Housing and Urban Development (HUD) National Disaster Resilience Competition (NDRC) provides the Commonwealth with a tremendous opportunity to extend and enhance our efforts toward building economic resilience throughout our communities, so that they may proactively prepare for events, such as the tornados, severe storms, and flooding that repetitively affect so many communities in Kentucky.

Given the Commonwealth’s advanced track record as resilience trailblazers, the Team, consisting of the Kentucky Department of Government (DLG), Kentucky Division of Water

(KDOW), and Kentucky Emergency Management (KYEM) with support from University of Louisville Center for Hazards Research and Policy Development (CHR), Stantec Consulting Services, Inc. (Stantec), and the CCRR are confident that this effort will provide and enhance the Commonwealth's capacity, need, sound approach, leverage, and commitment to stimulate a culture of resilience at the community and regional level while providing a model for other communities and states across the nation.

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Exhibit B: Threshold Requirements

The Commonwealth has identified several areas of unmet needs across the state resulting from Disasters 1976, 4008, and 4057 which qualify for this opportunity. In order to establish the threshold the Team examined unmet housing needs across the state and identified 61 residences that had been damaged during one of the qualified disasters that were not repaired resiliently due to a lack of funding. The unmet needs identified are located in four Kentucky counties; all are designated as repetitive loss properties damaged by flooding and not built back in a resilient manner. ([Attachment E Threshold Maps](#)) KYEM has documented \$70,073,854 of acquisition project needs in these areas.

Funds will be used solely for necessary expenses related to disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in the most impacted and distressed areas for which the President declared a major disaster in the aftermath of an event occurring in 2011, 2012, or 2013, pursuant to the Stafford Act. The expectation is to improve the resilience of the most impacted and distressed target area(s) to current and future threat(s) and hazard(s), including effects of climate change. With respect to activities expected to be assisted with the NDRC funds, the Team will give priority to activities that will benefit low and moderate-income (LMI) families and/or meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community, and other financial resources are not available to meet such needs.

To define the unmet recovery needs, all the houses with severe repetitive loss (SRL) or repetitive loss (RL) properties from flooding (data obtained from FEMA as of September 30th 2014) with claims during one of the eligible disasters that were not mitigated were identified. Of those, a windshield survey was performed for 61 selected properties within the most impacted

and distressed target areas. The property owners were contacted and 22 residents agreed to be surveyed for this grant application. The Team prepared a survey which asked their name, confirmed their address, asked if their home was damaged due to Flooding, Severe Storms, or Tornadoes, between the dates of the disaster, asked if they received adequate funding to rebuild resiliently (e.g. Elevate or have their home acquired), and if not, what would they estimate the value of their unmet need.

Louisville, which is located within Jefferson County, KY contains the greatest number of properties with unmet needs in a sub county area. Using 2010 Census Geography, Census Place 2148006, and data provided by the Louisville Metro Government. Fifty seven properties were identified as damaged by flood from DR 1976 and left with unmet needs ([Windshield Survey Results](#)). Many of these properties are designated as severe repetitive loss properties, with almost half sustaining greater than five losses and two instances of as many as nine losses since 2000. Louisville/Jefferson County qualified as an impacted place due to damage from DR 1976 to 131 homes and severe damage to 22 homes pushing Louisville/Jefferson County over the threshold for serious damage as well as minor damage to a substantial number of properties according to NOFA Appendix C ([CDBG RDR Disaster-Appendix C2](#)). Louisville/Jefferson County is also a distressed area, as there are 31 EPA identified brownfields located in the Louisville/Jefferson County sub county area ([EPA Brownfield KMZ File](#), [EPA Brownfield Data Spreadsheet with Census Place Identified](#)).

Bell County contains the second sub county area with identified unmet recovery need. There are four contiguous census tracts that individually qualify as impacted in Bell County. For the purposes of this grant the four tracts, 21013960500, 21013960600, 21013960700, and 21013960800, are considered one sub county area. The entire sub county area had 324 housing

units damaged in DR 4008 and 154 housing units sustained serious damage according to the NOFA Appendix C ([CDBGDR Disaster-Appendix C2](#)). Additionally, the sub county area meets the distressed characteristics, as Bell County is part of the Kentucky Highlands Promise Zone (<http://www.kypromisezone.com/>). Additionally, 56.7% of the population in the sub county area are in low and moderate-income households ([HUD ACS 2006 Low and Moderate Income By Block Group](#)) and there are two brownfields located within the floodplain in the impacted area ([EPA Brownfield KMZ File](#), [EPA Brownfield Data Spreadsheet with Census Tract Identified](#)). In the Bell County sub county area 2 properties were identified with unmet recovery needs ([Windshield Survey Results](#)) based on them being SRL/RL properties and incurring damage during DR 4008, but were not built back in a resilient manner.

Magoffin County contains the third sub county area with an identified unmet recovery need. In Magoffin County, Census Tract 21153970200 makes up the sub county area. This sub county area meets the impact threshold because 330 housing units were damaged in DR 4057 and 96 of those incurred serious damage according to Appendix C in the NOFA ([CDBGDR Disaster-Appendix C2](#)). According to the 2013 5 year ACS data the selected census tract has an unemployment rate of 14.1% ([Unemployment Rate Data](#)) which is greater than 125% of the national average of 9.7% ([Factfinder 5YR ACS Unemployment Data](#)) for that same time period, qualifying this sub county area as distressed. Within Magoffin County sub county area, one property has been identified as having unmet recovery needs ([Windshield Survey Results](#)). This RL property was not rebuilt resiliently.

Johnson County contains the fourth sub county area with identified unmet recovery needs. This sub county area consists of three contiguous Census Tracts, Tract 21115960400, 21115960300, and 21115960600. In disaster 4057 the sub county area had 117 housing units

damaged, with 33 housing units receiving serious damage ([CDBGRDR Disaster-Appendix C2](#)).

The sub county area meets the distressed threshold due to the documented environmental distress of an EPA identified brownfield. Johnson County has two brownfields in the selected sub county area ([EPA Brownfield KMZ File](#), [EPA Brownfield Data Spreadsheet with Census Tract Identified](#)) categorizing this area as distressed. Johnson County has one property that has been identified as having an unmet need ([Windshield Survey Results](#)). The RL property was not rebuilt to prevent future damages as proven by the most recent damage claim occurring in 2014.

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Exhibit C: Capacity

General Management and Technical Capacity: The **Department of Local Government (DLG)** will be the applicant for the U.S. Department of Housing and Urban Development (HUD) National Disaster Resilience Competition (NDRC). Kentucky Emergency Management (KYEM) and the Kentucky Division of Water (KDOW) will serve as managing partners. DLG has prior experience working on resilience based projects with the US Economic Development Administration (EDA) and HUD in developing the Commonwealth of Kentucky Council for Community Recovery and Resiliency (CCRR) and the Community Hazard Assessment & Mitigation Planning System (CHAMPS). DLG, under the Office of the Governor, provides financial assistance in the way of grants and loans, as well as advising local governments in matters of budget, personnel, and other issues relevant to those entities. Through 23 different grant and loan programs, DLG has general management and technical capacity within the following fields: data analysis, public works, affordable housing, environmental quality, community engagement, design and engineering, economic revitalization and human workforce development. DLG's regular annual allocation for Community Development Block Grant programs (CDBG) is over \$23,000,000 annually. DLG provides an understanding of local government; including housing (\$42,408,788 in Neighborhood Stabilization funds) and economic development concepts and has managed over 1,900 CDBG regular projects and \$915,227,164 through its office since 1984. They provide assistance to all 120 counties and 420 incorporated cities, and have 11 employees that complete project management, quality assurance, financial management, procurement and complete internal control capacity for the State's CDBG program.

The Commonwealth of Kentucky receives funds from HUD through the CDBG, the HOME Investment Partnerships Program, Housing for Persons with AIDS, and the Emergency Shelter Grant Program. As a recipient of HUD funds, the Commonwealth is required to be in compliance with the Consolidated Plan rule published in 24 CFR 91.225. An integral part of the Consolidated Plan is the Analysis of Impediments to Fair Housing (AI) and the certification by the Commonwealth that it is affirmatively furthering fair housing through: 1) Conducting an analysis of impediments to fair housing choice within the state; 2) Taking appropriate actions to overcome the effects of any impediments identified through that analysis; and 3) Maintaining records reflecting that analysis and actions in that regard. The DLG is also required to ensure that any state-funded jurisdiction comply with their Affirmatively Furthering Fair Housing Certification.

As an organization, DLG routinely responds quickly to launch and implement major projects. In 2008, DLG received disaster funds of \$3,171,686. These funds were distributed by competition to 25 entities and were mainly used to purchase generators and warning sirens with the largest award being \$257,000. In 2010, DLG received disaster funds of \$13,000,000. These funds were distributed by competition to 27 entities and were used in various ways from road repair to infrastructure with the largest award being \$1,177,809. The largest single project DLG managed from the 2010 disaster was the construction of a new regional wastewater treatment facility totaling in cost of \$13 million + (with \$2 M from regular CDBG, \$1.1 M in CDBG-DR, and \$9.9 M in other funds) to replace two failing systems due to CSO/SSO issues. With the completion of this project the imposed sanctions were lifted aiding in the creation 113 and retention 82 of jobs. Since 1997 DLG has managed \$22,818,343 in disaster recovery funds

which displays DLG capabilities of managing disaster related funding programs that would complement this program.

KYEM has the relevant project management, quality assurance, financial and procurement, and internal control capacity to quickly launch and implement a major project is to appeal to the nature of the agency's work itself. Through its Recovery Branch, KYEM's houses its management of the Public Assistance (PA) Program, the Individuals and Households Assistance (IA) Program, the Hazard Mitigation Grants Program (HMGP), and the Volunteer Coordination Program. The first 3 programs are grant (and, subsequently, project) management programs: The PA, IA, and HMGP programs of the Recovery branch of KYEM all manage FEMA grants marked for projects dedicated to response and recovery toward public infrastructure and emergency protective services in the event of a (presidentially-declared) disaster, response and recovery toward individual citizens in the event of a (presidentially-declared) disaster, and protection and the lowering of risk effects from future disasters.

In just the past 5 years, FEMA has entrusted KYEM with the management of 16 separate multi-million dollar project grants used to address immediate needs for State communities adversely affected by natural disasters. In 2009, KYEM and its staff had to have the capacity to administer an unanticipated quarter of a billion dollar PA project grant (DR-1818) and, then within three months be able to manage another \$50 million set of grants only to manage an additional \$22 million at the end of that year. FEMA would not have allow KYEM to administer the PA and IA federal grants if KYEM had not repeatedly proven capacity for "quick launch and implementation" of said grants. In addition to the review of KYEM's internal capabilities to manage large scale grant programs it is also important to note that the Commonwealth of Kentucky is 1 of 11 States in the country to be certified by FEMA as an "Enhanced" state

through KYEM's Hazard Mitigation Grants Program. The "Enhanced Status" certification is awarded to those states who can prove – both through its state-level hazard mitigation plan and through a separate and independent site visit and review by FEMA itself – that its hazard mitigation grant management program is not only capable, but is proactive in coordination, assures quality through project files and administrative redundancy, is efficient in finance and procurement, and possesses clear and regularly-implemented internal controls.

In order to further enhance management and technical capacity, our other managing partner will be the Kentucky Division of Water (KDOW). KDOW serves as a cooperating technical partner (CTP) for the FEMA Risk MAP program and manages many water-related programs throughout the State. Through the development of the Risk MAP program, KDOW conducts watershed-based risk assessments for flood hazards across the State, Kentucky's highest ranking hazard. All 120 counties within the Commonwealth have been mapped for risk identification due to riverine flooding. The other programs within KDOW's purview include major components of the Clean Water Act, water and wastewater infrastructure, floodplain management, and watershed management relating to water quantity and quality. KDOW's capacity managing programs specific to water-related infrastructure and risk provide a competent technical and regulatory based partner to this effort. These programs constitute the management of over \$23,000,000 annually to programs and projects that share similar technical elements such as; engineering, data analysis, economic revitalization, plans and specifications, inspections, environmental reviews, water quality, monitoring, compliance, enforcement and training. Also included within the KDOW mission is considerable outreach and education about building, restoring, and enhancing the state's communities understanding of risk and resilience. Over the past 5 years KDOW has conducted 25 discovery, outreach and resilience meetings to discuss the

impacts of flooding, mitigation and resiliency. Through the RiskMAP program, many more communities throughout the Commonwealth will be addressed with similar meetings.

In addition to the partners described above, DLG will rely heavily on other existing partnerships to propel them through the NDRC program. These partners will be identified as technical capacity management partners. The University of Louisville's CHR brings the technical capacity of applying the concepts of resilience and has assisted the State and local communities with completing assessments, plans and projects to capture and measure risk, vulnerabilities, mitigation and resiliency. CHR has been a charter member of the Commonwealth's Hazard Mitigation program (co-authoring 4 of the State's Hazard Mitigation Plans and multiple local and university plans) and has been a key partner in developing the CHAMPS system and the CCRR. In addition, the CHR conducts the State's detailed science-based risk assessment models that capture existing and future risks and vulnerabilities. Another key partner that provides specific expertise within engineering, GIS, outreach and program management is Stantec Consulting Services. Stantec, like CHR has been a key member of the development of CHAMPS since inception. They have participated in the planning, design, and technical application development of the system. Stantec also brings forth a great deal of national exposure and partnerships that can be leveraged for the Commonwealth and HUD. Stantec is a member of the Strategic Alliance for Risk Reduction (STARR II) which is one of the two teams selected by FEMA to undertake the Risk Mapping Assessment and Planning (Risk MAP) Architecture and Engineering Contract, which includes the engineering elements of two predecessor contracts, the Hazard Mitigation and Technical Assistance Program (HMTAP) and Technical Assistance and Research Contract (TARC). In addition, Stantec provides Risk MAP, resiliency, community outreach and program support to KDOW's floodplain management

program. These two partners have a long standing relationship with the Commonwealth in developing their current resilience programs and are well positioned to provide technical capabilities and increase capacities with this funding opportunity. The above mentioned members (DLG, KYEM, KDOW, CHR and Stantec) will be codified as the “**Team**”, for the remaining sections of this document.

The chart below shows the technical capacity of the Team members.

Capacity Area	DLG	KYEM	KDOW	CHR	CCRR	Stantec
Data Analysis	X	X	X	X	X	X
Public Works	X	X	X	X	X	X
Affordable Housing	X			X	X	
Environmental Quality	X	X	X	X	X	X
Community Engagement	X	X	X	X	X	X
Design & Engineering	X		X		X	X
Economic Revitalization	X	X	X	X	X	X
Human Workforce Development	X				X	

In order to fully achieve a multi-disciplinary approach, the Team will further rely on the members of the CCRR. The CCRR was established to provide overall leadership and guidance for community recovery and resiliency in the Commonwealth. The 12 members of the CCRR will continue pursuing their mission in providing leadership and guidance during Phase 2 and through the implementation of the projects and programs to be developed through the Regrow Kentucky program. The pre-established council will once again provide the Commonwealth with a leg up and allow our program to get a jump start on implementing project ideas and concepts. DLG (the lead agency of the CCRR) will use this opportunity to task the council with guiding

the NDRC program and projects. Among the members of the CCRR and the Team, these groups will provide specific areas of expertise having a robust history of managing and implementing large complex programs and projects. The robustness of the group also provides our Team with the capacity to deal with fluctuations in participation if needed.

A proven example of general management and technical capacity in direct correlation to building resilience was demonstrated when DLG and its partners recently managed the completion of CHAMPS and the implementation of the CCRR. In 2009, the Commonwealth began the process of developing the capacity to capture and manage resilience with the development of CHAMPS ([Attachment E: CHAMPS Diagram](#)). CHAMPS, was originally funded by the Federal Emergency Management Agency (FEMA) through a Pre-Disaster Mitigation (PDM) grant (\$499,999) and was managed by the Kentucky Division of Emergency Management (KYEM) along with development partners; the University of Louisville Center for Hazards Research and Policy Development (CHR) and Stantec Consulting Services Inc. (Stantec). The original vision for CHAMPS was to facilitate the organization of mitigation planning and provide mitigation project management at the community level.

As CHAMPS was being developed, several agency partners became interested in its capabilities and there was an effort to expand the program. DLG, having been a key collaborator with KYEM throughout the development of CHAMPS Phase 1, wanted to enhance the system for an all-encompassing disaster management tool. DLG worked with KYEM, CHR, and Stantec to fund Phase 2 of CHAMPS. In 2011, Phase 2 of CHAMPS was funded through the Economic Development Administration (EDA) (\$375,000) and HUD (\$447,000), which furthered our collaborative efforts resulting from diversified funding and partnerships. Along with the design and development of Phase 2 of CHAMPS, partners also committed to developing a Community

Recovery and Resiliency program framework which included the completion of state and locally-focused planning guidance and the establishment of the CCRR. These innovative ideas positioned the Commonwealth to manage and promote recovery and resiliency throughout our State.

The Team has been developing application strategies for resilience concepts such as the triple bottom line (economic, environmental, and social) model, and the Four “Rs” of resilience (Robustness, Redundancy, Resourcefulness, and Rapidity). Specifically, KYEM and CHR developed a Community Resilience Assessment model that began with a list of 210 indicators acquired from experts in research and practice. The resilience indicators were categorized into four sections that are common in peer reviewed literature: technical or infrastructure, organizational or institutional, social, environment and economic. Due to the audience and purpose of the assessment, two primary categories were developed: operational capacity and socio-economic capacity; both intentionally focused on building capacities in a multitude of cross disciplinary areas. The assessment templates were created within the CHAMPS system for local use, with the socio-economic capacity assessments populated for the entire State. It is our intention to use this pre-existing infrastructure and data to drive the development of our NDRC concepts and project ideas.

Over the lifespan of the resilience-based effort, the Team will develop a comprehensive framework for capturing, measuring and managing resilience, thus providing the Commonwealth with an advanced position for developing a framework for this very competition. In essence, the Commonwealth was developing their key pillars resilience in the design and implementation of the tool (CHAMPS), while simultaneously building the governance (CCRR) to manage it. The

Team is excited to share our experiences with other members of the competition and HUD representatives in order to further enhance the countries resilience levels during this competition.

In order to achieve a fully successful resilience program, it is essential to have the management capacity along with a cross-disciplinary approach. To build a culture of resilience and develop a sustainable program built around the concept of resilience, the Team will rely on existing partnerships and management capacities to achieve the goals laid out for the Commonwealth's NDRC application and program "Regrow Kentucky: A Path to Resiliency" (Regrow Kentucky). The Commonwealth will create a multi-disciplinary Team to help manage this grant which will provide the State with the flexibility and expertise for successful implementation. Long-standing partnerships with DLG, KYEM, CHR, Stantec, and others via the CCRR and equipped with existing frameworks will prove instrumental to our efforts of building a sustainable State-wide resilience program. .

The management strategy for the NDRC will follow a proven arrangement with DLG serving as the lead agency along with a Team of key partners that will assist with the general management and technical capabilities of the program. By identifying key management partners, our NDRC program will be more robust and enhance our redundancy for the success of this project for the Commonwealth. Two managing partners (KYEM and KDOW) will be in charge of implementing the proposed activities. First, KYEM, the State's emergency management agency, provides an understanding of our hazards, threats, risks, and vulnerabilities. As mentioned before, KYEM has been the managing partner for the development of CHAMPS, CCRR, and manages the mitigation and recovery programs across the State. KYEM will be relied upon for their expertise in running FEMA's benefit cost analysis in order to determine the cost effectiveness of each project in Phase 2. KYEM's experience in developing region-wide

hazard mitigation plans provides our Team with a partner that understands area-wide comprehensive planning. Recently, this regional model of local Hazard Mitigation Plan development has been recognized as a prototype for other States to follow. This effort has allowed the Commonwealth to perform and meet FEMA metrics of complete State-wide plan coverage. In order to accomplish this effort, KYEM has relied on a variety of partners, such as the Kentucky Council for Area Development Districts (ADDs) who manage and prepare regional hazard mitigation plans and bring multi-disciplinary skills including; workforce development, economic development, water/waste water planning, transportation/infrastructure planning, healthcare/aging services, GIS mapping, agriculture planning, tourism, broadband planning, and hazard mitigation/disaster preparedness planning. Additional mitigation partnerships and resources that will be commissioned for this competition include the University of Kentucky Hazard Mitigation Grant Program Office (UK-HMGP), which provide expertise in project management and benefit cost analysis.

KDOW, the state's technical and regulatory program partner will assist this effort through its vast experience in dealing with water- related infrastructure, hazards and programs across the Commonwealth. The KDOW mission and programmatic responsibilities, include the National Flood Insurance Program (NFIP), Dam Safety, watershed planning, water and wastewater planning and construction review, drinking water, water quality, water supply and drought management. Given the propensity for the Commonwealth to be impacted by shocks and stresses that directly impact water availability and use, KDOW will provide a comprehensive view of the Commonwealth's number one resource and hazard, water. Additionally, KDOW has robust communication tools and networks to assist these efforts.

Community Engagement: As with any complex program, community engagement is critical for success. As mentioned above, the Team and partners have a long history of community engagement. The Team will rely on the internal and external relationships of members of the CCRR. These relationships are not only strong at the state level but with groups such as the Kentucky Associations of Counties, Kentucky League of Cities, Kentucky County Judge/Executive Association, and Kentucky Association of Area Development Districts. These groups provide a direct feed into our local communities and unmet needs. The intention will be to use the CCRR and their connections to help further target unmet needs and to identify and review projects such as water availability, understanding risk and infrastructure improvements in Phase 2.

In addition to leveraging the CCRR, the Team developed and distributed a resilience survey and resilience briefing (<http://www.kymitigation.org/kentucky-resilience/>) to over 1,200 points of contact who were identified through the Kentucky Association of Mitigation Managers (KAMM), a professional association that promotes natural hazard mitigation. The distribution of these questionnaires provided an opportunity to build community awareness on the concepts of resilience and the NDRC competition, and collect public input that is used to influence Phase 1 of the application and continue to influence decisions for Phase 2. Information gathered included the identification of the community's top 3 shocks and stresses, geographic areas and concerns about unmet needs, and the identification of resilience needs, efforts, and outreach. Using the KAMM organization will be a critical component and will be maintained throughout the life of the NDRC process for the Commonwealth. In addition to using KAMM's organizational components for the surveys, the Team utilized KAMM's regional in-person trainings to further educate members on this process; using feedback to frame and select approaches for our Phase 1

application. See “Ideas/Concepts” section for further detail on how our threshold communities will be engaged.

As with any program development process one must empower community leaders with the capabilities to execute their projects. KYEM, KDOW and DLG have direct experience with this process. KYEM provides community members with training and application development assistance with their state of the art Applicant Agent certification course ([Applicant Agent Certification Course](#)). This course, launched in May of 2011, is offered quarterly to all applicants and potential applicants of the Public Assistance (PA) and the multiple hazard mitigation programs. The week-long course covers all aspects of the preparation for, response to, and recovery from disaster events. Attendees are encouraged to participate in rigorous mitigation, recovery, and debris removal planning. In addition to the emphasis on the FEMA programs, other state and federal agencies deliver instruction on various state and federal disaster grants, services, and opportunities.

KDOW is responsible for floodplain and water quality management at a State level but the authority to regulate these programs lies at the local level. KDOW frequently provides training opportunities, workshops and outreach with floodplain managers, stormwater coordinators and treatment plant operators to engage them in improving water quality throughout the Commonwealth. Throughout the Risk MAP process the local communities are engaged and encouraged to openly participate in the process. Examples of this include discovery (held at the beginning of a project to outline the scope), project outreach (held when “draft” products are available) and resilience (conducted at the completion of the project to discuss resiliency and mitigation opportunities) meetings.

DLG provides numerous trainings during the year, including their County Officials Training Program ([County Officials Training Program](#)) that helps empower community leaders with the capabilities to execute projects. Kentucky's training incentive program for elected county officials began with the enactment of House Bill 810 (KRS 64.5275), effective in January 1999. The program offers county judge-executives, fiscal court members, clerks, sheriffs and jailers an annual financial incentive to participate in continuing training relevant to their official duties. Training is offered by a variety of agencies, professional associations, and private vendors. DLG enrolls officials in the program, pre-approves training events, records individual attendance for credit, and authorizes incentive payments. Participating officials may earn one incentive for each calendar year in office by providing documentation of 40 hours of approved training.

The Commonwealth and their partners have a long history of harmonizing the contributions of diverse stakeholders to reach resilience based goals. KDOW, through Risk MAP and other technical and regulatory programs, completes multiple community outreach meetings each year that deal directly with cross-disciplinary stakeholders and with the promotion of resilience based strategy development and risk analysis. KYEM and their partners CHR, UK-HMGP and the Area Development Districts, perform hazard mitigation plan meetings across the State which harmonizes diverse stakeholder groups in identifying prioritized mitigation action items and displaying hazards, threats, and vulnerabilities through state of the art Risk Assessment modeling techniques ([Attachment E: Risk Assessment Maps](#)).

Regional Capacity: The Team has a proven track record in solving regional problems. KYEM, DLG, CHR, and Stantec built CHAMPS as a tool to capture information at the local community level. KDOW also provided input on CHAMPS development through testing and

incorporation of applicable program measures. This process starts locally and then can be assimilated through several levels of geography which allows end users the ability to assess hazard and threats and select solutions that can be measured and managed at the regional level. In addition to analyzing our hazards/threats and identifying the scope and context of solutions, CHAMPS creates a level playing field for local funding by providing users with the same tool to compete with, thus improving the opportunities for underrepresented and vulnerable populations, while simultaneously increasing transparency of state run programs.

Other experiences that represent our strengths for developing and addressing regional based solutions stem from the regional hazard mitigation planning model that was discussed earlier. This model has proven to be a successful way of maintaining Local Hazard Mitigation Plans, while also helping the Commonwealth with identifying and managing regional solutions. KDOW was an early implementer of the watershed risk management approach for the Risk MAP, dam safety, and water quality programs. This approach was derived to leverage regional capacities and once again became a best practice example that FEMA implemented nationwide.

Exhibit D: Need

For this competition, Kentucky is focused on the threat from severe storms, tornadoes, and flooding as each disaster declaration ties-back to these three hazards which are historically responsible for the majority of disaster losses in Kentucky. Kentucky averages \$43,423,504 in flood losses, \$19,249,764 in tornado losses, and \$16,952,816 in severe storm losses each year according to the Kentucky State Hazard Mitigation Plan. ([Kentucky State Hazard Mitigation Plan](#) Pgs. 95, 191, 208). Based on information from the National Climate Assessment, occurrence of these types of events is expected to continue, possibly increasing in frequency and impact as continued development occurs. The hazards selected to be considered in this application were selected for three reasons. First, the Commonwealth suffered losses due to these hazards in the eligible disasters. Second, the Commonwealth has experienced losses from these hazards since the eligible disasters and expects to continue to experience these types of events in the future. Third, these three hazards, according to the state hazard mitigation plan, account for an average of \$79,626,084 in losses each year. If you factor in hail damage, which often occurs with these types of events, Kentucky averages \$98,179,669 in losses each year and these costs are going to increase unless the Commonwealth is able to begin developing wide spread resilience program across the State, such as Regrow Kentucky. Data contained within the Kentucky State Hazard Mitigation Plan is considered to be the best available data because it undergoes a rigorous review process within the state and at FEMA. The risk assessment portion of the plan uses the best available data from national and state sources to identify, quantify, and summarize the risks and vulnerabilities within the Commonwealth.

According to the 2014 National Climate Assessment, the climate in the Southeast, including Kentucky, warmed for a period of time, then cooled and is now warming again.

Interestingly enough, during the relative "cooling" period in the Southeast, Kentucky has endured considerable increases in climatic extremes such as drought, severe storms, flooding and tornadoes. These trends can only be expected to continue which expounds the need for the Commonwealth to embrace a sustainable and resilient solution like the Regrow Kentucky program. In addition, demographic and development trends indicate that the "Golden Triangle" of Kentucky, the area between Louisville, Lexington, and Cincinnati, Ohio and certain areas in west-central and western Kentucky will continue to grow while large portions of Eastern and Southern Kentucky indicate population decline ([Attachment E Grid Population Change](#), [Attachment E Grid Population](#)). Although the Commonwealth is highly unlikely to be affected by sea level rise like the rest of the Southeast, the risks from extreme events resulting from climate change are real. Surface water and groundwater sources provide most of the usable water for agricultural, business, industrial, and personal use throughout the Commonwealth. However, extreme events have caused major disruptions to water supply and delivery. Water supply, coupled with the stresses of severe weather events present the most serious risks for most communities throughout the Commonwealth. In the most impacted and distressed areas, flooding exacerbates these trends considerably and during this effort this will be an area of focus to make more resilient.

The Team will apply a comprehensive risk approach to analyze need in the impacted, distressed, and unmet needs areas to inform the selection of the projects and programs needed to improve resiliency. The Team will utilize the Kentucky State Hazard Mitigation Plan Risk Assessment to help identify which areas within the most impacted and distressed areas with unmet needs are most at risk to future damages based on the recurrence and severity of past damages, the location of assets in relation to those damages, and the expected future impact

based on the changing risk landscape and vulnerabilities. The resources necessary to confirm impacted or distressed areas and unmet are not readily available to many counties across the state. To empower Kentucky communities to record events and damages, CHAMPS is designed to enable state and local officials to identify and track the disaster impact immediately after the event as well as provide a long term record that enables locals to view and analyze their disaster history. Additionally, this system allows local communities, many of which do not have a GIS department or access/expertise to maintain a GIS database, a place to house information on key assets, agencies, and basic demographic information for their community. Currently, the framework to expand this information about communities exists however the Commonwealth needs additional resources to commit to fully develop each community's profile so that in the future these communities can more readily answer the question of if they were impacted, to what extent, is there community distressed, and did the event further stress the community beyond their resources and expose an unmet need. The NDRC will help provide the resources to fully implement this process within the identified threshold communities and build a model that can be replicated across multiple jurisdictions within the State and adjacent jurisdictions. Providing a co-benefit through this program will be to use CHAMPS to build a Threat Hazard Identification Risk Assessment (THIRA) using real data collected at the local and at the State level using past event data to capture even the smallest events to build a complete risk profile that will change with the community and its evolving risks due to development and climate change.

The demographic trends of the Commonwealth have the unintended consequences of considerable differences in the application of regulatory and insurance programs. Most of the more progressive communities, such as Louisville/Jefferson County, have robust regulatory and insurance programs while the more rural and socioeconomically depressed regions of the State

endure greater negative impacts from lack of regulatory and insurance programmatic development. Given this, the "one bite rule" is much more prevalent where the education and outreach components of a communities' everyday functional capacity is lacking. For the most part, flood insurance is considered a federal mandate with few apparent benefits. Of course there are circumstances where this train of thought does not apply, but a comprehensive education and outreach programmatic approach is required. A major component of this approach must explore the overall negative connotations of flood insurance and how to affect a paradigm shift of the benefits of maintaining sufficient insurance coverage. Resilience must be learned and communities and individuals must adapt accordingly.

Addressing the vulnerability to flooding, severe storms, and tornadoes will help the Commonwealth with its future recovery efforts. Recovery is in continual jeopardy of repeat damages especially due to flooding which tends to affect the same areas within a community repeatedly. Each flood threatens to push businesses out of business or the area and residents towards bankruptcy, unable to sell their flood prone homes and unable to afford the continued cost of recovery. These events also place continual stress on the people of the State and the emergency management and public health infrastructure, which is tasked with responding each time an event occurs.

In the Commonwealth, flooding impacts any population group that lives near a river, however, the effect of flooding has a disproportionate effect on the poor. While flood insurance is available in the State it can be very costly so obtaining flood insurance places a higher price burden on the poor if they are able to afford it. Additionally, when flooding does occur, the poor are less able to absorb the costs associated with a flood event, the deductible bears a higher burden on the poor if they are properly insured, if not then their burden is even higher as their

losses are not covered. Additionally they are less likely to be able to afford to mitigate their risks to flooding.

The Commonwealth as a whole, including each area with unmet need previously identified is at heightened risk due to some preexisting conditions that exacerbate vulnerability. The Louisville/Jefferson County sub county area is at a heightened environmental risk, as there are 31 brownfields in the most impacted and distressed areas in Louisville/Jefferson County. Additionally Louisville/Jefferson County is an economically and socially segregated city, so while parts of the city are more fortunate, 59 of the 159 tracts in the census place have an unemployment rate over 125% of the 2009-2011 ACS national average. 62 of the 159 tracts have over 50% of the population with low and moderate income, and 36 of the 159 have an affordable housing shortage. The Bell County sub county area is also at a heightened environmental risk, with 2 brownfields in the area. In addition to the brownfields, the Bell County sub county area has an unemployment rate over 125% of the national average, and nearly 57% of the population is low or moderate income. Johnson County sub county area's vulnerability is exacerbated by the presence of two brownfields in the area that provide environmental stress to the area. Magoffin County sub county area has multiple exacerbating conditions as well. There is a high unemployment rate over 125% of the national average that makes the population extra vulnerable to additional stresses.

Louisville/Jefferson County has had a long standing program to address the risk from flooding. In 2010, Louisville MSD obtained funding to acquire 128 flood prone homes in the targeted sub county area; however, these homes did not include any of the homes identified in our application. Additionally, of the Louisville-Jefferson County SRL/RL properties that were

damaged during DR 1976 two of them have been demolished, which is the best form of mitigation as it provides a permanent mitigation solution.

There are approximately \$70 million dollars' worth of applications for property acquisition to remedy flooding concerns in CHAMPS , that have not been met due to a lack of funding, with over \$21 million of that amount located in most impacted and distressed areas with unmet need. It will be the intention of the Team to target flood related projects such as flood acquisition and elevation projects, flood protection enhancements, and flood related educational programs and hazard analysis geared toward enhancing the resilience of our communities that experience flooding. Completing these types of projects with the funding for the Regrow Kentucky program will directly tie back to the hazards causing our Presidential Declared Disasters.

Exhibit E: Soundness of Approach

Ideas/Concepts: The Team will build upon the successes that the Commonwealth has achieved and enhance and expand upon those efforts through the available NDRC funding to build the Regrow Kentucky: A Path to Resiliency program. Kentucky has demonstrated capabilities to maximize this opportunity for the Commonwealth and HUD. The Commonwealth will sponsor and cultivate a statewide resilience program that helps communities identify their most impacted and distressed areas as well as categorize and implement projects that mitigate unmet needs. The Team will build a program that can be sustainable beyond this grant and help stimulate a culture of resilience.

The Regrow Kentucky program will be achieved through 4 Regrow Phases:

Regrow Phase 1: Assess and identify pilot communities, develop framework and develop educational information.

Regrow Phase 2: Develop project selection criteria and financing program.

Regrow Phase 3: Select and manage project implementation; continue education.

Regrow Phase 4: Evaluate and measure program outcomes; develop best practices.

Regrow Phase 1, will start with assessing and identifying pilot communities which will be chosen from the threshold process of the NDRC. Currently those locations are located within the counties of Louisville/Jefferson, Magoffin, Johnson, and Bell county which provide a variety of shocks/stresses and diverse populations to implement the program. The pilot communities will be used as a test ground for the development of new modules within CHAMPS, such as a geo-spatial enabled Community Profile Dashboard function that will display community-specific data for each community in a mapped geo-spatial dashboard format. With this information, each community can track progress towards becoming a Smart Resilient Community employing best

practices of situational awareness, risk identification and understanding, hazard mitigation, economic resilience and others). New functionality and governance will be developed to capture key resilience measures and opportunities based on data inventories that will help capture most impacted and distressed while also considering future opportunities beyond the purpose of the NDRC. Another step of Regrow Phase 1 is to develop a Resilience Education Program (REP) that promotes the concepts of resilience while simultaneously identifying key data elements that are needed to be captured within CHAMPS. Coupled with interactive formats for course delivery, REP will include the identification of data elements needed to capture the concept of **most impacted** which in turn captures hazard vulnerability and risk. In addition, data elements will be identified to capture **most distressed** which will identify social, environmental and economic vulnerabilities. In order to fully understand one's resilience, the Team will identify strategic capacities that will be used to build a baseline resilience within governance, establish beneficial partnerships between public and private sectors and provide avenues to share experiences regionally and across the nation.

In addition to identifying key data elements and developing new modules within CHAMPS to capture them, the Team will use REP to define what resilience is for the Commonwealth, including a suite of cross-disciplinary best practices on project ideas. This process will involve the review of potential co-benefits and collaborations the Regrow Kentucky program can promote such as hazard mitigation planning, NFIP, Community Rating System (CRS), economic and workforce development, environmental and public health, and other resilience based programs. To build the education program, the Team will craft educational materials in the form of written technical documentation, webinars, and videos. These materials

will supplement and complement previously created materials for the other existing programs promoting resilience throughout the Commonwealth.

The next step will be to identify additional unmet needs within our threshold communities through project identification from information gathered and other existing programs on most impacted and distressed areas. This process will provide co-benefits across the board, from improving the communities understanding of their hazard and social vulnerabilities, environmental status, public health, and economic development factors. Developing and enhancing CHAMPS to capture most impacted and distressed characteristics and unmet needs will allow the Team to augment the system to specifically capture what is required of the NDRC. In addition, this effort will provide a long-term resilience solution that can be used within our identified threshold communities, which could also increase during the Regrow Phase 1 process, and can also be replicated across the Commonwealth with the use of CHAMPS.

In order to further enhance the viability and sustainability of the Regrow Kentucky program the Team will develop resilience metrics that will be used to measure a community's resilience level. This will be achieved through the assimilation of information gathered during this Phase of the project as well as utilizing our resilience assessment methodologies.

Regrow Phase 2, will develop the criteria utilized to select projects and develop a financing program. In order to create a selection process that considers co-benefits to multiple disciplines and transparency of project selection, a resilience project metrics system will be developed that the CCRR will follow to select projects for implementation. The Team will rely upon the breadth of interdependent knowledge the members of the CCRR possess to create these metrics that at a minimum captures the general administrative and technical capabilities of the applicants and ensures that they have the capabilities to engage the community and provide a

project that shows regional collaboration. In addition, the Team will rely upon the Team's expertise to provide assistance with completing a Benefit Cost Analysis on each selected project.

During Regrow Phase 2, the Team will investigate and develop the Regrow Kentucky Revolving Loan Fund to award sustainable projects to qualified sub-applicants based upon resilience assessment data captured within Regrow Phase 1. DLG and several of the partners within the CCRR (KACO and KLC) have had direct involvement in creating and managing revolving loan funds in the past and the Team will look to their guidance to help create this loan program. The Regrow Kentucky Revolving Loan Fund will provide communities with the funding mechanism to promote resilient thinking and economic development across the State and help increase the resilience levels of the residents identified as our most vulnerable to current and future risks caused by the changing climate patterns and economic hardships.

Regrow Phase 3, will select and manage projects within the four target communities. Projects are anticipated to include; elevation of structures in the floodplain, construction of community tornado shelters, home buyouts, floodplain restoration, restoration of steep slopes, restoration of strip mines for agricultural purposes, community education and outreach. The CCRR will manage the implementation of the projects. The Team will develop a set of metrics that will monitor, track, and evaluate the performance of the resilience project/action through each step of the process. In order to create a sustainable project management process, the Team will enhance the CHAMPS "Projects" module with project milestones and reporting requirements. This will not only allow for this process to be replicated in other jurisdictions and regions but will also allow the CCRR and the Team to capture the long-term benefits of each project. Housing the projects in CHAMPS allows the Team to track the regional economic,

environmental and social benefits that these efforts stimulate in both the short term and long term, such as capturing losses avoided and observing economic development and housing trends.

Regrow Phase 4, will evaluate the outcomes and effectiveness of the Regrow Kentucky: A Path to Resiliency program from what the Team has learned during this process. Evaluation criteria will be applied to each of the piloted communities in order to measure increased resilience on both a local and regional level.

It is the goal of the Team to create a sustainable culture of resilience through the tools and governance that are developed, establishing a program that can be replicated and HUD can promote. Sustaining this effort is a key component for the Commonwealth and we have three major components that can achieve this. Using the NDRC funding opportunity, the Team will enhance an existing tool to be able to capture and measure resilience data through CHAMPS and its modules (Community Profile, Assessments, etc.). Through this process it is our intention to create a back log of unmet needs through Regrow Phases 1 and 2. This back log of resilience projects/actions will be maintained and could be referenced for other resilience initiatives and programs across disciplines and regions. Finally, the creation and application of the Kentucky Regrow Revolving Loan Fund provides a sustainable funding mechanism to promote and implement resilience for years to come. These efforts along with our current resilience mechanisms will position our stakeholders and community members as empowered, strong, and resilient communities.

Stakeholder Consultation: Kentucky has a long standing history of disaster recovery planning and response which has been enhanced with substantial cross-jurisdictional cooperation and consultation. The range of issues that arise as a result of shocks and stresses are best addressed by cross-disciplinary resilient thinking that can be achieved through education and community

engagement. Incorporating public-private partnerships and communicating risks and vulnerabilities, the Team plans to address both the physical and intangible needs of its vulnerable residents. Through a broad based approach of stakeholder consultation, the Team plans to harness the diverse resources of the State and create communities that are economically, socially, and environmentally more resilient through the Regrow Kentucky program.

To ensure long term community preparedness, response and recovery from regional shocks and stresses, the Commonwealth of Kentucky formed the CCRR in July 2014. This Council is comprised of members from a range of agencies with expertise in areas such as finance, emergency management, energy and environment, transportation, housing, and health and family services. In the event of a disaster, the CCRR supports communities to employ the best methods to recover resiliently. In addition to disaster recovery, the Council is responsible for improving insurance programs, strengthening building codes, and establishing a community recovery and resilience planning strategy. Although the Council is new, many members have long standing relationships and have effective partnerships that were relied upon during the disasters of 2011-2013. The Regrow Kentucky program will use the Council to govern the program and will rely upon each member as a source for collaboration, outreach, and communication.

Leveraging the Council's established relationships allows for effective dissemination of information and resources to a vast network throughout the Commonwealth. The agencies which comprise the Council have strong affiliations with targeted populations such as low/moderate income residents, small businesses, accredited investors, utility providers, contractors, engineers, and state and local agencies. Members of the CCRR and the Team also have strong relationships with many organizations and associations that can provide leverage for the Regrow Kentucky

program. In order to reach as many stakeholders as possible the Team has reached out to members of multiple organizations and associations and intend to use them for outreach and collaboration. This targeted consultation effort will continue to help frame the Regrow Kentucky program and enhance our cross-disciplinary approach. The Team will use the following groups to help with this effort: Shaping our Appalachian Region (SOAR), Appalachian Regional Commission (ARC), Kentucky Association of Mitigation Managers (KAMM), Kentucky Association of Electric Cooperatives, Kentucky Municipal Utilities Association, Kentucky Rural Water Association, American Public Power Association, Kentucky Gas Association, Kentucky Chapter of the American Planning Association (KAPA), Kentucky Society of Architects, Kentucky Small Business Development Center, Kentucky Emergency Management Association, Kentucky Stormwater Association (KSA), Kentucky Chamber of Commerce, Kentucky Voluntary Organizations Active in Disaster (KY VOAD), Tourism Arts and Heritage Cabinet, Public Protection Cabinet, National Association of Insurance and Financial Advisors, Kentucky Bankers Association, Kentucky Emergency Response Council (KERC), Kentucky Association of Mapping Professionals (KAMP), Kentucky Association of Electric Cooperatives, and Kentucky Association of Professional Surveyors (KAPS). The Team partners, along with the associations and organizations mentioned above will provide a group of diverse stakeholders with the knowledge and skills to implement the Regrow Kentucky program.

The message delivered by the formation and actions of CCRR has been echoed through the work of the KDOW Risk MAP program. KDOW has led the attainment of the Risk MAP vision of increasing awareness and resilience by working to expand outreach beyond the traditional audience of floodplain managers and engineers to a greater community including local officials, emergency managers, planners, surveyors, GIS/mapping professionals, and mitigation

personnel. The Regrow Kentucky program will utilize this established network as an additional mode for communication and outreach.

The Risk MAP goal is ultimately to inspire communities to take action to reduce and mitigate risk by delivering quality flood risk data and increasing public awareness. Completed Risk MAP projects deliver datasets which allow communities to more effectively communicate risk with constituents. By having KYEM participate in Risk MAP, KDOW has been able to guide communities on how to utilize the best available data created through Risk MAP in local Hazard Mitigation Plans. One of the deliverables of the Risk MAP program is documenting community needs and collecting “actions” or potential projects or policies the community would like to pursue to address multi-hazards regardless of funding capabilities or data limitations. These “actions” help summarize regional vulnerabilities to threats and hindrances to achieving resilient communities. The Risk MAP program was considered when developing the Regrow Kentucky program goals and potential project ideas.

KYEM and partners (CHR, UK-HMGP and the ADDs) have developed local hazard mitigations that cover the entire State. Currently, several communities are updating these plans and the Team has seen an opportunity to integrate a discussion about resilience and the opportunity to pursue the Regrow Kentucky program. The Hazard Mitigation Plan update meetings help reach the stakeholder community for the Regrow Kentucky program including members of the community that are considered vulnerable populations and areas with identified environmental issues such as contamination and brownfield issues. The integration of these two programs also provides the Team with an avenue to leverage information sources such as Risk Assessment data that is collected for the plan development process, the identification of

resilience/mitigation project ideas that are listed within CHAMPS, and lastly, the opportunity to promote collaboration and conduct outreach/education on resilience concepts.

Through CHAMPS, outreach with communities is performed to inventory needs, assets, support infrastructure, and resources; all of which are captured in a community's profile. Additionally, following a disaster or smaller emergency, incident information such as affected infrastructure is gathered from communities and compiled in the tool known as Significant Incidents and Events (SIEs). At least 30 significant incidents have been reported and are logged to date. Community profiles contain contact and organizational capacity information for more than 700 civic agencies as well as over 1,300 pieces of infrastructure, and nearly 1,000 critical facilities, that all are mapped geospatially. Criteria to prioritize targeted areas, such as most impacted or distressed communities can be used to rank potential mitigation projects. For the purpose of project management, implementation, monitoring, and evaluation, CHAMPS also tracks initiated projects and completed projects which has been used to examine mitigation successes and gather best practices to apply to other regions within and beyond the State. Currently, there are over 650 pre-identified projects and over 20 initiated projects in CHAMPS.

KAMM is a professional association that has over 100 members across the Commonwealth and a large multi-disciplinary network of floodplain administrators, engineers, emergency managers, meteorologists, code enforcement officials, surveyors, and GIS analysts. The organization meets quarterly to gain knowledge, network on issues, and raise awareness of floodplain management, mitigation, resilience, and disaster recovery. KAMM provides educational seminars and disseminates pertinent information to both the public and professional communities both online and through in-person trainings. The Team will continue to use this

organization as an avenue to better understand recovery needs, community development issues and vulnerabilities of our stakeholders.

In preparation for the NDRC, the Team created a questionnaire with resilience-based questions and shared it with over 1200 stakeholders through the KAMM network. The questionnaire asked for specific input related to the top shocks, stresses and unmet needs within communities and identified opportunities to improve resilience through existing planning mechanisms, public engagement, and disaster preparedness. Responses were received from stakeholders representing 7 of the 15 Area Development Districts (ADDs) across the Commonwealth, which represented the most impacted and distressed areas as well as areas that tie-back to our three disasters (1976, 4008 and 4057). Respondent groups included emergency management/public safety officials, floodplain managers, planning and zoning officials, mitigation coordinators, engineers, and GIS/mapping professionals.

Based on stakeholder input, the following was noted:

- 1) The tops shocks in Kentucky communities include flooding, severe storms, tornadoes, infrastructure failure, karst/sinkhole, and earthquakes.
- 2) Top stresses include poverty, unemployment, aging infrastructure, economic shift, quality housing, crime and drugs, and lack of leadership within communities.

Stakeholders were asked to provide input regarding resilience needs and unmet disaster recovery needs within their communities. The unmet and resilience needs focused on making infrastructure more resilient, providing quality housing to vulnerable populations, making local economies more diverse and resilient, and preventing environmental degradation.

Input was received on how resilience-based measures may be affected within communities. Of particular note, the stakeholders indicated that resilience opportunities should

focus on people, communities and infrastructure. Specifically, infrastructure should be upgraded so that utilities, water, and wastewater treatment and delivery facilities function properly during and after shocks are introduced into a community. The respondents noted that existing laws and regulations should be adhered to so that public/private partnerships worked seamlessly and in the best interest of communities and citizens. Additionally, the engagement of local officials should be enhanced so that local leaders have “buy in” to resilience measures. Finally, it was noted that primary education systems should also be engaged so that school age children are aware of the basic concepts of resilience and become part of the resilience-building equation across the Commonwealth.

Responses to the resilience questionnaire highlighted the need to supplement investments across the board in dealing with climate change, assisting vulnerable populations, and infrastructure needs. Based on this input, the Regrow Kentucky program will provide a meaningful opportunity for communities and citizens to not only better understand their top shocks and stresses, but also to become a major influence on the solutions.

Eastern Kentucky encompasses some of the most vulnerable and impacted populations within the Commonwealth. Both SOAR and ARC represent this region. SOAR seeks to improve education, health, and economic outcomes. Workgroups within SOAR have met often and frequently engage communities in the region to prioritize actions such as diversify the economy, obtain funding, improve infrastructure and agriculture for the next several years, which all lend themselves to the concepts of resilience. ARC, established in 1965, funds projects that address the four goals identified in the Commission's strategic plan which are to increase job opportunities, strengthen the capacity of the people of Appalachia to compete in the global economy, improve Appalachia's infrastructure, and build the Appalachian Development

Highway System to reduce Appalachia's isolation, which also lend themselves to the concepts of resilience. Members of the CCRR are also members of these two influential groups. The Team plans on further engaging these two groups during Phase 2 and beyond to promote the concepts of resilience and help identify unmet needs and potential projects. The participation of these key stakeholders will be critical to this program in order to reduce stresses in the most susceptible areas in the region.

Combining the findings of the KAMM questionnaire, data within the CHAMPS tool, vulnerable population interest group initiatives, local hazard mitigation plan development and information gathered from Risk MAP, the key threats the Commonwealth sustains include flooding, tornados, severe storms, water availability, and degraded water quality. In Phase II, CCRR will identify potential projects by using prioritization criteria and will apply this criteria to targeted areas, such as most impacted or distressed, to help rank potential resilience projects and close the gap of unmet needs. When funding becomes available as a part of Phase II, prioritized needs such as the improvement of water infrastructure, job creation initiatives, understanding risk will be readily available and project management for CCRR and will be simplified through the use of CHAMPS. Funding will be made available to prioritized projects as selected by the Council.

Exhibit F: Leverage

Leverage: In order to sustain Regrow Kentucky long term solutions for funding will be necessary. The NDRC grant will provide a mechanism to jump start the program, establish frameworks, develop projects and heighten awareness throughout the Commonwealth. However, it is crucial for long term success to leverage planned, existing, and future funding mechanisms for sustaining the program. The exploration of co-benefits is also a large consideration and the potential for adjusting how public and private investment can occur as influenced by the Regrow Kentucky program. As described in great detail CHAMPS, a program that has received over \$1.5 million in federal and State investment will be leveraged during this project. In addition, the following programs managed by State and non-profit partners have the potential to lend expertise and resources to the implementation and maintenance aspects of our response to the states vulnerabilities.

The Cabinet for Economic Development was established to network small businesses and has a new KY Innovation Network office in eastern Kentucky where information and resources are easily disseminated to the small business community. This entity also manages the Kentucky Small Business Credit Initiative which is a program designed to mitigate the risk associated with small business lending. When a disaster occurs they have the ability to make direct loans and are familiar with dealing directly with businesses during an emergency. They have policies in place to require businesses to rebuild more resilient and energy efficient. In addition, the Kentucky Angel Investment Act Program allows security exchange commission (SEC) accredited investors to make capital investments in Kentucky small businesses. Tax credit maximums are 40% for non-enhanced and 50% for enhanced communities (enhanced dealing with an unemployment threshold). There is a total of \$300M in tax credits available each calendar year.

Through DLG, funds that are administered for affordable housing and CDBG can include preferences and possibly criteria to mitigate federal disasters. The Affordable Housing Program is a trust fund independent of state government funding and may serve only low/moderate income populations, and funds are also given to local nonprofits; a relationship of which have an opportunity for leveraging. DLG also manages a flood control program with state money of \$5M and \$6M in unreleased state bonds that displays a direct financial commitment for leverage for the NDRC. Money can be used with federal partners, generally post disaster to build back resiliently.

Another initiative through HUD sets aside Section 1-8 vouchers to use in the event of a disaster to fund the Kentucky Home Performance Energy Program to improve housing energy. This initiative replaces manufactured housing pre 1976 with Energy Star manufactured homes. This program not only has committed to supporting and providing data for Phase 1 implementation, but also could be used as a partner program through Regrow Kentucky to ensure that homes cannot be placed in the floodplain and on a permanent foundation, which lessens future risk.

The Kentucky Housing Corporation (KHC) is in the process of chartering the Commonwealth of Kentucky Disaster Housing Resource Council, also known as the Disaster Housing Task Force, whose mission is to work collaboratively to develop partnerships and joint strategies among various state agencies, federal agencies, local governments, and for-profit and non-profit partners in the local communities necessary to carry out the Kentucky Disaster Housing Plan. The goal is to quickly provide assistance and resources to residents needing immediate shelter, to retain residents in interim housing, and to expedite the restoration of permanent housing following a disaster. By aligning efforts between the CCRR and the Disaster

Housing Task Force, co-benefits will be achieved through the Regrow Kentucky effort and ensure that it is targeting both pre- and post-disaster efforts so if structures are not built to withstand an event before, structures can be rebuilt better or relocated in the future.

Basic infrastructure is a necessity for economic growth and through Regrow Kentucky, critical infrastructure will be further identified for the sake of identifying risk reduction projects that harness the ability for co-benefit of economic growth. The Kentucky Infrastructure Authority (KIA), another state-level entity was created in 1988 to provide the mechanism for funding construction of local public works projects. KIA manages local financing needs through revolving loan fund programs (similar to the intended Regrow Kentucky Revolving Loan Fund) that offer communities the opportunity to apply for improvement funds. These include the Federally Assisted Waste Water Revolving Fund, Infrastructure Revolving Loan, Governmental Agencies Program, Federally Assisted Drinking Water Revolving Fund, and the Clean Water State Revolving Fund.

The Kentucky Division of Water (KDOW) also has funding and resources to lend to the Regrow Kentucky program, as the department directly addresses the management, protection, and enhancement of the quality of water resources throughout the Commonwealth. This is completed through voluntary, regulatory, and educational programs. Currently, KDOW is in the process of implementing LiDAR for risk assessments; approximately \$3 million in leverage. Additionally, Risk MAP products contribute approximately \$6 million in risk identification and communication leverage. The State Owned Dam Repair (SODR) is a legislative appropriation to assess and mitigate risks associated with state owned dams. Over \$10 million in project planning, mapping, construction and mitigation has been identified through SODR.

With several initiatives through the Kentucky Association of Counties (KACO), and the Kentucky League of Cities (KLC), there has been extensive conversation about how issues and vulnerabilities might affect risk considerations or attract incentives from insurers. KACO and KLC are large providers of local public facility insurance, provides local communities with Disaster and Loss control Teams, which in turn are used for loss control and risk management. The organization also provides multiple short-term lending, bonds, and leasing ranging from hundreds to millions of dollars. Discussions with these two particular agencies have included conversation on finding opportunities for incentives to qualify for lower insurance rates based on understanding risks and vulnerabilities. The potential leverage point through the Regrow Kentucky program will be to create an incentive program with KACO and KLC to consider lowering rates based on the resilience a community is completing.

With Eastern Kentucky and the central Appalachia representing some of the most economically distressed and vulnerable populations of the Commonwealth and the nation, there are organizations working toward the revitalization of this region. SOAR and ARC are focused on economic development, that could potentially support and address aspects of the implementation and maintenance in response to identified vulnerabilities of the Regrow Kentucky program. SOAR seeks to improve education, health, and economic outcomes. With workgroups focused on increasing access to broadband, business incubation, and agriculture, regional foods, and natural resources, this organization has prioritized actions to diversify the economy for the next several years. ARC is another regional entity whose strategic goals and programs are in alignment with the outcomes sought through the Regrow Kentucky program. Another worth mentioning is the Appalachian Development Alliance (ADA) that joins nontraditional, multi-county business lenders that are focused on the collective success of eastern

Kentucky and its business interests. Member organizations operate revolving loan fund programs with capital obtained from public and/or private sources and couples that with technical assistance to help regional businesses thrive. These are just a few of the many programs and organizations that are potential local and regional partners that can lend funding and financial resources for resilience building in the Commonwealth and contribute to the expansion of the Regrow Kentucky program upon implementation.

The Commonwealth will work with University partners to complete research on resilience planning, produce policy guidance, offer technical assistance, and deliver trainings on related topics. These universities are key partners to producing innovative methodologies that assist the Commonwealth with resilience building initiatives at the regional and local levels. The first example is the University of Louisville CHR provides assistance through the HUD Sustainable Communities Learning Network; a network that connects local representatives with the resources and tools to building sustainable initiatives and programs. The University of Kentucky Hazard Mitigation Grants Program (UK-HMGP) continues to provide staffing and support to assist communities with FEMA grant application and benefit cost ratio calculations. Western Kentucky University provides guidance and resources on karst related resilience planning, and just announced the first 4-year degree program in floodplain management in the United States. Recently, the Kentucky Geological Survey housed at the University of Kentucky met with the CHR to discuss their potential role within the Regrow Kentucky program through providing risk and hazard geologic maps, geologic suitability identification, and assessing the redundancy of the water system through ground water mapping as an alternative water source. The above educational institutions operate existing and planned programs that have leveraging potential to implementing the objectives of Regrow Kentucky.

Outcome: This proposal outlines the first steps of a long-term vision of building more resilient communities in the Commonwealth of Kentucky. It is understood that this cannot be achieved through one stand-alone program, but through a combination of efforts that, when combined, will cause long-lasting sustainable projects and effects. Regrow Kentucky will serve as the catalyst for resiliency efforts within the Commonwealth. where our residents and business owners are educated about natural disasters, where homeowners have options for to protect their assets or chose to participate in a buyout, where floodplain restoration and management takes place and isn't considered trend, where our communities are provided safe shelter from tornadoes, and where economic growth in impoverished areas is enhanced and where resiliency isn't just a term but a way of life.

CHAMPS will serve as a tool to help measure success of the program. This component to our program will capture the initial inventory, assess, measure, and evaluate the short- and long-term results of the Regrow Kentucky program. Such measurements might include an increase in the number of affordable housing units produced outside of areas that are vulnerable to hazards, or the number of structures and parcels acquired and converted to recreational land thereby resulting increased quality of life and other measurable benefits. It could be through the areas where mitigation measures have been implemented, that are resulting from the Regrow Revolving Loan Fund program and other financing programs available to these areas. Based on resilience assessments and re-assessments throughout the Commonwealth as completed in CHAMPS and with the leadership of the Team and the CCRR, marked progress could be shown through the completion of resilience-building initiatives, especially targeting at-risk and economically depressed communities.

Exhibit G: Long-Term Commitment

The Commonwealth has been taking significant steps, particularly within the last decade, towards creating a state more resilient from disasters. Due to the number of frequent disasters and an alarming number of lost mitigation opportunities, the state desired improved preparation to enhance response and recovery and ultimately mitigate the effects of disasters. The needs outlined by the Team representing the Commonwealth to accomplish these goals are improved coordination, inventory, asset management, streamlined communication and long term recovery and resilience planning and management. Actions to address these needs have been implemented at the local, regional and state level to provide long term sustainable solutions and commitments.

To improve coordination, streamline communication, and ensure long term community resilience management the Commonwealth of Kentucky formed the Council on Community Recovery and Resilience (CCRR) in July 2014. This Council is comprised of members from a range of agencies with expertise in such areas as finance, emergency management, housing, and health and family services. Before, during, and after the event of a disaster this resource supports communities to employ the best methods to prepare, respond, and recover resiliently. CCRR reviews community recovery and resilience plans, improves insurance programs and building codes, reviews determinations made by FEMA and KYEM following a disaster, provides technical assistance, and identifies funding opportunities available to communities. If NDRC funds are awarded this Council would be responsible for managing the overall mitigation and resilience effort of Regrow Kentucky and prioritizing and implementing potential projects. The Council will also capitalize existing communication networks including but not limited to organizations mentioned in the Stakeholder Consultation section (p.34).

CHAMPS, was initiated in 2009 to meet the needs outlined by the Commonwealth and house community data in a single source available to the public. This tool has the capability to store points of contact for agencies providing aid, inventory significant infrastructure, record hazard occurrences and losses, and provide benefit cost analysis to seek funding opportunities. Initially, prior to a disaster, outreach with communities is performed to inventory needs, assets, support infrastructure, and resources; these are captured in a community profile. Following a disaster, or smaller emergency incident, condition assessment of affected infrastructure is gathered from communities and compiled in the tool. Criteria can be applied to community needs to prioritize potential mitigation/resilience projects. This tool also tracks initiated projects and completed projects which has been used to examine mitigation successes and gather best practices to apply to other regions. To make the tool more accessible and practical a large outreach effort was made to train communities on how to use CHAMPS through in person trainings, posted videos, and tutorial documents available on the KYEM website. The Team plans to continue to perform outreach to build this tool and will continue to utilize it to select mitigation/resilience projects for implementation when funding becomes available. NDRC funds would be used to support this system.

Due to the unique geography and economic decline, the Appalachian region which is comprised of a significant portion of eastern Kentucky and locations to some of our threshold communities, is one of the most impacted and distressed target areas. The hilly and isolative terrain intensifies the impacts of shocks such as severe storms, flooding, and tornados and makes disaster response much more challenging. The Appalachian region has a greater presence of poverty, unemployment, and aging infrastructure when compared to other areas of the state, making eastern Kentucky most vulnerable and at risk for greater losses from disasters.

The Appalachian Regional Commission (ARC) was established to improve the economy of the Appalachian region by addressing the four goals identified in the Commission's strategic plan which are to increase job opportunities, strengthen the capacity of the people of Appalachia to compete in the global economy, improve Appalachia's infrastructure, and build the Appalachian Development Highway System to reduce Appalachia's isolation. The state and local leadership has played an active role in this commission and has seen encouraging results but will continue to address the remaining challenges and stressors.

The Shaping our Appalachian Region (SOAR) seeks to improve education, health, and economic outcomes. Workgroups within SOAR have met often and frequently engaged the community to prioritize actions such as diversify the economy, obtain funding, improve infrastructure and agriculture for the next several years. Members of the CCRR are also members of these two influential groups. If the Commonwealth of Kentucky were awarded funding ARC and SOAR would advise CCRR as to which actions, policies, and/or projects which would create the greatest resiliency in this region.

Severe storms, tornadoes, and flooding are some of the top shocks in the Commonwealth. One of the most impacted areas by these shocks is Louisville/Jefferson County, the most populous county in Kentucky. On June 17, 2013, Louisville Mayor Greg Fischer was one of the inaugural Signatories of the Resilient Communities for America Agreement. In keeping with that agreement, Louisville/Jefferson County is committed to resilience-building and is placing an emphasis on maintaining quality of life for our citizens following disasters or other impactful events. Louisville/Jefferson County is coordinating our traditional hazard mitigation program, which focuses on preparedness, response and physical mitigation initiatives such as sirens and levees, with programs that provide education and promote environmental stewardship, access to

healthy food and active living. Sustain Louisville, the city's first comprehensive sustainability plan, was adopted by Mayor Fischer and published in March 2013. Sustain Louisville includes a focus on city adaptation and resilience. Sustain Louisville establishes the connection between sustainability and resilience and affirms that achieving our "triple bottom line" sustainability goals - focusing on people, prosperity and planet - equally supports the city's resilience-building efforts. Louisville/Jefferson County has also applied for the two previous Rockefeller 100 Resilient competitions which demonstrate their efforts toward becoming more resilient.

On March 2, 2012, the town of West Liberty, Morgan County, Kentucky suffered a massive tragedy. An EF3 tornado ripped through this community of about 3,400 residents, killing seven, devastating nearly 400 homes, businesses and government structures, and destroying much of the downtown area. This disaster followed an EF2 tornado on February 29, 2012 that caused property damage but no loss of life. In response to these two disasters Morgan proactively created two entities, the Morgan County Long-Term Recovery Committee and B.E.G.I.N Again.

The acronym B.E.G.I.N Again stands for Building Entrepreneurial, Green, Innovative and Networked-communities and enterprises. Based on its mission and purpose, its goals are:

1. Empowering Entrepreneurial Small Businesses: Establishing a dynamic initiative of first-class business mentoring, technical assistance and innovation-immersion grant programs that will help rebuild area businesses and create new innovation-based and high tech enterprises.
2. Building Affordable and Highly Energy Efficient Replacement Passive Housing: Constructing new family residences to replace those that were destroyed or severely damaged by using the ultra-low energy principles of passive housing, a process that is quickly becoming the gold standard of energy efficient residential building, while enabling the creation of a Kentucky

based green manufacturing industry, partnering with nascent programs in Lexington and Monticello, Ky.

3. Developing Clean Energy, Sorghum & Energy Park: Taking advantage of West Liberty's access to affordable water and building on West Liberty's status as the sorghum capital of the world by seeding a demonstration bio-energy project around this breed of sugar cane with enormous energy potential due to its particularly strong sugar content, and a crop that can be grown in hilly areas that aren't typically conducive to agriculture. Also promote the incorporation of renewable energy technologies, such as solar PV, solar thermal, and micro-wind turbines, when economically feasible and strategically beneficial.
4. Establishing a World Class Data Recovery Center: Supplementing existing technological and infrastructure resources, and building on IT synergy in the community, enabling West Liberty to emerge as an international leader in IT data backup.
5. Developing a twenty-first Century Model for Rural Health Care: Ensuring a highly efficient West Liberty medical services community by leveraging information technology, electronic medical records, and IT support; and in the process creating the seeds for high tech job growth in Morgan County.

Our primary target for resiliency will be areas with the greatest number of unmet needs; the eastern areas will include Bell, Magoffin, and Johnson counties and Jefferson County in central Kentucky. The continued development of the CHAMPS system and additional funded initiatives selected by CCRR will benefit the Commonwealth.