ExhibitESoundnessofApproach

Applicant: The State of Connecticut

Filename: ExhibitESoundnessofApproach

Sound Approach Description.

The State of Connecticut realizes that it must institute fundamental change in its policies, practice and governance structure to translate its resilience mission into practice and turn vision into reality. The State is incorporating its mission into the governance structure of the State, it is embarking on an ambitious regional resilience planning effort and it is building two pilots that will catalyze change and create the opportunity for new policies to be crafted, new funding streams to be created and new plans to be put in place to set the State on the path to creating its Statewide Resilience Roadmap.

This application details two transformative solutions to living with climate change in communities where wholesale relocation is not desirable nor is economically feasible. These unique flood prone communities must find a way to live with sea level rise and establish a new paradigm for living with water or risk the untenable but inevitable devolution of the local economy that will ripple outwards into the surrounding urban fabric. We have chosen communities in Bridgeport and New Haven that, should they fail, would cripple two of Connecticut's largest economies. Both suffer from repetitive loss and exhibit post-Sandy unmet need.

The East South End in Bridgeport is struggling to maintain an identity that dates back to a pre-Civil war free black community of merchant marines and oystermen that thrived upon its connection to water. The community desires new development, but a disconnected street network, a lack of community cohesion, insufficient local retail, healthcare and shopping establishments and its large neighbors - the power facilities, baseball stadium and University of Bridgeport - have isolated the community from a downtown that is literally five minutes away. The South End is emblematic of many Bridgeport communities that are experiencing a lengthy economic decline since the industrial heyday of the first half of the 20th century. Connecting these communities to transit opportunity, to each other and to their economic center, downtown Bridgeport and the Bridgeport Train station will be critical to the

revitalization of the City. South End East will be a model for community rebuilding by removing the vulnerability to storm and sea level rise, adapting to a new relationship with water, and reconnecting to the center and to its neighbors.

In our outreach to the communities of New Haven and Fairfield Counties, the City of Stamford noted that the most important resilience project to Stamford would be to protect the New Haven Rail Yard, a recognition of its importance to the regional economy. In protecting this regional asset, we are connecting the disparate and isolated communities of Long Wharf and Hill to Downtown by emphasizing Union Station as the iconic center of the City that it was always meant to be. A public square or plaza opposite Union Station with a connection to the town green has been part of the public discourse and ambition in New Haven since the early 1900s. Frederick Law Olmsted Jr. and Cass Gilbert in their Plan for New Haven noted that the planned "Station...has no proper setting and no adequate line of approach." They offered images of the Plaza in front of the Station and an avenue that in Vincent Scully's words "perfectly complemented the green and connected its pedestrian scale with the transcontinental scale of the railroad." Recently, in its Hill to Downtown Community Plan, the City again identified and visualized these missing components of the urban structure.

The plan builds upon the opportunity created by bringing to grade the Oak Street Connection, a brutal gash that destroyed neighborhoods and severed the connection between green and station. The Downtown Crossing project will re-establish the grid and repair these severed connections. A redesigned Orange Street can accomplish the vital aim of providing a direct and evident connection between station and green, between city arrival and the green that is the central open space of the classic nine square grid of New Haven.

In the current climate, the avenue with a restored network of streets connecting to Union Street and Union Station, bridging the former divide and connecting the surrounding Hill Neighborhood with

the redeveloped Church Street South Housing can not only heal the fabric and rejuvenate the community but also provide environmental and social benefits. As green streets, or avenues with blue-green components, the chronic flooding of the areas in front of the station and along Union Street can be addressed locally, without resorting to pipes and pumps as the only solution to annual-level storm events. These added stormwater management elements can be integrated with landscape, pedestrian and bicycle systems to improve quality of ecological and social life, and enhance local economic opportunities. Altogether these improvements can provide the framework that New Haven has long needed and shift the city towards future achievements that resonate with the aspiration of its forebears as well as residents today. Coupled with a layered approach to coastal flooding and sea level rise that will protect the low-lying district of Long Wharf while preserving and naturalizing the existing edge, New Haven can solve its climate change challenges through a rebirth of "place" and protection that integrates new development with naturalized stormwater.

Exhibit E.a.1. Decreased risk to vulnerable populations and improved community resilience.

Both pilots are designed to meet FEMA Base Flood Elevations (BFE) for 100-year flood events, with one-foot SLR by 2050 and one-foot freeboard (http://www.fema.gov/freeboard) elevation protection. Protection measures are flexibly designed with capacity for the deployment of extensions upon availability of future funding to protect against projected 500-year flood events estimated at six (6) foot SLR by 2100. The properties most damaged by stormwater and upland flooding in both cities are LMI households and industrial businesses. These land use sectors are of critical concern, as they are places of employment and residence for vulnerable populations. This project will reduce the threat of coastal and inland flood damage over an area of 16 million square feet (See Exhibit D - ExhibitDNeed).

Exhibit E.a.2. Project metrics for resiliency, environment, social and economic.

In order to measure long-term project resiliency for the proposed pilot projects, a range of metrics will be used to assess project outcomes periodically. These metrics give municipalities the tools to measure risk towards future climate change conditions. (See attachment F (AttFBCA.pdf) for full list of metrics)

Resiliency metrics

- Reduction in property damage and occupant displacements measured by value of claims and reports submitted to FEMA, Shore Up CT and the CT Division of Emergency Management and Homeland Security (DEMHS).
- Reduction in outages of critical facilities and utilities, such as power, water, wastewater, rail measured by number of hours without service as recorded by service providers, and the reduction in damage to rail fleet at New Haven Union Station and Bridgeport Station as reported by CTDOT.

Environmental metrics

- Improvement in water quality as measured through regular sampling by the municipal Water Commission and CT DEEP and an increase in green infrastructure measured by new area maintained under each municipal department of public facilities.
- Ecosystem enhancement bio diversity protection, as measured by area of habitat breeding ground protected and area of land for new ecosystems created, maintained by CT DEEP and others.

Social and community development metrics

- Improved living environment in target communities measured through property value increase by the department of Community and Economic Development, and addition of pedestrian amenities, community spaces and recreational parkland maintained by municipal planning agencies.
- Savings in household income as measured by the cost of flood insurance not needed and reduction in home repairs due to storm damage in these low-moderate income communities

Economic revitalization metrics

- Regional economic impact as measured by employee income and profit of business maintained due to uninterrupted business operation.
- Jobs created through project construction and maintenance of new facilities, as well permanent jobs created from future anticipated development, as measured by the Department of Community and Economic Development.

These key metrics, and others, are used to quantify project benefits within the Benefit Cost Analysis. Metrics will be reviewed quarterly during project implementation, and every six months, for a period of five years after project completion. Collectively, these benefits will generate opportunities for ecological and economic investment. Within the northeast region, the project will help protect critical rail infrastructure from 100 and 500-year storms, allowing municipal and regional economies between Boston and New York City to continue to flourish.

Exhibit E.a.3. Description of CDBG-NDR Projects

Address URN and Meet National Objective. The two pilot projects address the Unmet Recovery Need. And, as stated in Exhibit B, (Threshold Requirements, ExhibitBThresholdRequirements), both projects meet a national objective with at least 50% of the grant amount expended for LMI families in both pilot communities.

Exhibit E.a.3.a. NDRC Bridgeport *South End East Resilience Network* Project Proposal.

In Bridgeport, the protection of the community will be achieved by setting a new higher datum, which will encourage new development at the higher elevation, to lift the entire ground plane out of the flood plain. The raised street concept stems from the SAFR NDRC Phase 1 application goal of resilient corridors, using the geography along the coast to concentrate development along ridge lines. We have extended that concept forward to using streets as protection, creating a platform for new development to build above the flood zone.

These two new datum create the baseline for the establishment of an urban coastal community that will be protected against future storms and sea level rise, removing the risk to reinvestment and inviting new development to strengthen this extension of downtown Bridgeport. South End East is also a community connected to energy. The industrial edge of South End East contains multiple energy substations and a major power plant. The community is looking to promote new energy technologies, with three new exciting projects that foreshadow a future economy for this community that is tied to energy use and energy production. To rebuild social cohesion and build a stronger social network with downtown, we are proposing a Downtown design center that would partner with a local community center in South End East. Finally, we will look to Bridgeport as a pilot for new flood plain development guidelines, building off the local guidelines developed by the City of Bridgeport in the aftermath of Sandy. Each specific project application is described in the following sections. (See Attachment E – Maps and Drawings (AttEMapsDrawings.pdf) – Bridgeport Map and Drawing List)

Street Raising and Street Improvements: Streets in the South End East neighborhood will be raised and made resilient in order to create a *Resilient Corridor Network*. The corridors will be multi-purpose; serving as complete streets that provide multi-modal transportation options while protecting against future flooding from tidal waters. This network leverages the South End's existing ridgeline along Park Avenue, connecting this naturally elevated street to key lateral streets through strategically designed and landscaped street elevation. Raising sections of the east-west streets will ensure the local community has vehicular and public transit access to the Park Avenue corridor during major storm events and sets a new, higher, ground plain for future long-term development. The initial pilot street raising is anticipated for University Avenue. University Avenue was chosen from a list of potential streets because it presented the best combination of efficient reconstruction, continued access and effective assimilation into surrounding land uses. University Avenue will rise from grade at Park

Avenue to a height of nine feet (9') at its eastern terminus where it will tie into the envisioned residential development at 60 Main Street, providing that development with dry egress. The State sees the street reconstruction effort in Bridgeport as a pilot for the development of Resilient Street Guidelines, improvements such as installing median rain gardens and bio-swales to retain and prevent damage from storm water flooding. The agencies of CTDOT and DEEP will lead the effort to develop resilient street guidelines and each agency has authorized $1 million from existing funds to pilot street redevelopment strategies that can be replicated locally throughout the State.

Earthen Berm. The second integrated resilient corridor is an earthen berm extending from 9.4 feet in height at the outer edge of the South End East neighborhood between Tongue Point to just over two feet in height as it connects into Ferry Access Road in the north. Multiple sites were considered for the berm, with the preferred site running interior to the edge along the shortest and most direct route that also tied into the preservation of key power facilities and proposed developments to maximize economies of scale. The southern section of the berm would tie into the two existing re-development sites; an elevated natural gas fired power plant at the existing site of the Bridgeport Harbor Generating Station (1 Atlantic Street) and redevelopment of the former Remington Shaver facility brown field site (60 Main Street). Both redevelopment plans address climate resilience through raising new industrial and mixed-use residential spaces eight feet above FEMA Mean High Water (MHW) levels. The earthen berm will create an opportunity for relocation and bioremediation of the existing Fuller 4 Combined Sewer Overflow (CSO) outfall, as a landscape feature of the greenway. Extending north, the berm will be integrated into the protection plans for the UI owned power station, a SAFR partner, adjacent to the berm, creating efficiencies in protection. The berm serves as both protection and a new central corridor providing a recreational greenway extending the CMAQ funded Pequannock trail through Bridgeport and direct access to Bridgeport Downtown Station. The berm capitalizes on existing private sector

investment in order to protect all low and moderate income residents within the South End East neighborhood from flood damage, while providing elevated, scenic, pedestrian and bicycle access to downtown Bridgeport, the waterfront, and to the nearby TOD at the Bridgeport Downtown Station.

South End District Energy Infrastructure Study. Bridgeport's South End is home to three discrete energy distribution networks. Public Service Electric and Gas (PSE&G) is a major presence, operating two power facilities, one coal fired power plant and an additional combustion turbine used during peak energy demand periods that burns aviation fuel, with plans to build a gas fired power plant at 12 Ferry Access Road. Bridgeport Energy operates two Siemens gas fired generators and United Illuminating (UI) operates a sub-station in the neighborhood. Each of these entities could incorporate new technologies and opportunities for innovative energy production that could benefit the local community. Downtown Bridgeport Public Buildings have constructed a micro-grid to enable off-the grid power to key downtown government facilities. Nearby, the University of Bridgeport Renewable Energy Research Laboratory is developing a micro-grid from fuel cell technology that provides power to six campus buildings including two residence halls. And recently the Green Bank of Connecticut has partially funded installation of a district heating loop that will capture low temperature heat from the Wheelabrator waste-to-energy plant and re-distribute it to buildings in the South End neighborhood. Green Bank believes there is potential to network discrete systems, creating unique energy ecosystem that provides redundant power in event of emergency or during peak demand, and to use the planned district heating loop for seasonal cooling provision. The study would analyze how new and existing networked energy infrastructure can be housed within the newly constructed berm and raised streets, protecting this critical infrastructure from damage due to tree fall (when elevated above streets) and flooding (when buried underground). The study will investigate new district-wide energy opportunities that could be replicated throughout the region, create stronger communication bonds between energy

producers and users and the community that they serve, consider new ways to generate local employment opportunities connected with new energy technologies and other opportunities to capitalize upon the energy innovations that are beginning to shape this community. The study will establish a collective path forward to community preservation, social cohesion and economic expansion through energy technology as this community rises to protect itself against the impacts of sea level rise.

Community Design Centers. This project would fund the construction/rehabilitation of a primary and satellite design center connecting South End East to downtown Bridgeport and unifying the Rebuild by Design effort to build a resilient Bridgeport. The community center in South End will serve the design center function, operate as a community center and provide a central location for providing information to the community and assist the community in future recovery efforts.

Flood Plain Design Guidelines. Using the 60 Main street development as precedent, the project will build progressively upon existing flood plain design guidelines, incorporating cutting edge technologies and national innovation strategies as permissible design approaches. Additional private building-level retrofits in the project area would establish precedents for the development of new flood design guidelines to ensure that future development is designed as an integral component of the resilient corridor network. Creating these guidelines will serve as the basis for local context sensitive design approaches throughout the State.

Exhibit E.a.3.b. *Union Station Resilient TOD* NDRC Project Proposal in New Haven

Union Station and the New Haven rail yard are vital local, regional and national infrastructure assets that must be protected. The Hill-to-Downtown area experiences chronic flooding from rain events when coupled with high tide conditions. This community is home to Union Station and has the potential to serve as the front door and great urban space for a major regional center that has the potential to change New Haven's perception in the region as a destination. Long Wharf is a former

marsh located between I-95 and the New Haven Rail Yard, home to important manufacturing, office and retail uses, and vulnerable to direct coastal flooding. Long Wharf and Hill-to-Downtown are discreet and isolated communities. These distinct neighborhoods are cut-off from downtown and in jeopardy of economic decline, with jobs at risk if the area floods. This project connects these communities by solving for their shared flooding problem and reconnecting the urban fabric in a manner that preserves Long Wharf's valuable coastline for the community and integrates current planning by the City to position the Hill to Downtown as the Union Station transit-oriented district.

The following ***Union Station Resilient TOD*** project application set forth an integrated layered approach to mitigated flooding and storms, build community, increase economic development and jobs and introduce a new paradigm for coastal urban living with water (see Attachment E – Maps and Drawings – (AttEMapsDrawings.pdf) New Haven map and drawing list).

Management of coastal and inland storm water convergence. The solution for downtown flooding starts at the Long Wharf coastline. Every time heavy rains coincide with a high-tide, the stormwater outfalls to the Long Island Sound back-up, flooding the downtown. A significant increase in storage capacity is needed to store rain water and shunt it out of harm's way. At the same time the Long Wharf, constructed on historic marshland using infill, sits at an elevation below Hill-to-Downtown. Redirecting upland rainwater into natural storm water detention basins created in Long Wharf will allow for partial flooding of the neighborhood and set the stage for future development at a higher datum as part of the Long Wharf economic growth plan. Multiple solutions are being studied using CDBG-DR funds. A comprehensive model for stormwater conditions within the 580 acre catchment will be in place by the time we move forward with design. Initial solutions called grey infrastructure solutions, building storage under roads or by-passing critical utility junctions. While storage vaults will still be needed, working with the City of New Haven, we have developed a natural storm water management solution

that generates significant co-benefits: (1) building a rich natural storm water system in the downtown; (2) recreating historic wetlands without reducing development potential; (3) introducing water as a design element into Long Wharf; and (4) creating storm water detention that filters pollutants before distribution back into the Sound. Using an Archimedes screw to lift storm water out of two outflow culverts and into a natural flood canal and irrigation system, the initial Long Wharf storm water management system will revive portions of the historic wetland, relieve 20 percent of flooding in Hill-to-Downtown and improve quality of captured stormwater by 25 percent. The Archimedes screw will draw brackish water during high tide into the flood canal and retention basins as needed, strategically utilizing saline water to manage and activate coastal ecosystems, mimicking tidal inundation. During heavy rain storms, the system conveys upland storm water runoff and high tide brackish water through the canal and into detention basins closing the Church Street sluice gate for the duration of the storm. After the storm the gates will re-open using gravity to release all storm water into the Long Island Sound. During rain storms without a high tide condition upland storm water runoff will flow through the canal and retention ponds, emptying into the Sound without damage to buildings or the New Haven Union Station. The wet-dry storm water detention basins will be integrated into the landscape creating key submergible wetland spaces that protect existing industrial and transportation assets while creating valuable ecological and recreational spaces between storms.

Street and neighborhood improvements. Relieving the storm choke point is only half the flood water battle. Reducing the volume of water entering the system is also critical. Redesigning the local street system to act as “green streets”, incorporating flood retention spaces will add relief. The plan envisions an extensive bio swale network using pervious pavement and other natural catchment techniques to retain storm water runoff from upland areas constructed along local streets. The State, led by DEEP and CTDOT, are looking into advancing design guidelines for resilient streets and would look to pilot street

reconstructions in this district to increase storm water retention, enhance pedestrian connectivity and improve the quality of the public realm in keeping with the goals put forth in the Hill to Downtown study, building the foundation for a new urban fabric that would support a transit-oriented development and create a grand entry to Union Station. This project has the potential to transform this community and set into motion a long-term economic growth plan that could extend throughout the Union Station neighborhood. The project would focus on Union Street, the front door to Union Station, the primary conduit for storm and sanitary sewers and the street where CTDOT is constructing a new garage and pedestrian access into the Station. The project would also look at reconstructing Orange Street, as both streets are being redeveloped as part of Downtown Crossing, the ambitious conversion of Oak Creek Crossing to re-create a downtown boulevard that will knit Union Station together with downtown New Haven. To partner with this effort, we would propose that HUD conduct a design competition to be organized to work with the local community and create a vision to support HUD's existing presence in the community. The competition would generate innovative ideas for design of affordable and mixed income housing units as part of TOD development. This competition could be run as part of the annual *HUD Innovation and Affordable Housing* (http://www.huduser.gov/portal/challenge/home.html) annual student competition.

Protection of New Haven Rail Yard. The third piece to the flood control challenge is the protection of the New Haven Rail Yard and the Long Wharf community from 50 and 100-year storms, such as Hurricane Sandy. Portions of the rail yard are undergoing reconstruction to raise critical infrastructure out of the flood plain, but space is limited and options for protection are few. Our plan takes protection out to the street, raising Vision Trail and Brewery Road to connect directly to the planned raised infrastructure at the MOW facility and the Component Change Out Shop in the rail yard and then extending an earthen berm along Church Street Extension to Church Street to protect New Haven Rail

Yard from flood waters that could enter Long Wharf through Long Wharf drive under I-95. This raised street/berm will double as the conveyance device (dry canal) for upland storm water (see above) and provide a new historic connection between Hill to Downtown and Long Wharf, bridging the gap between these two neighborhoods and beginning the path towards a shared economic future. This secondary berm will be coupled with an inflatable plug/gate sealing the southern two-lane I-95 underpass. In the long-term, as predicted sea level rise takes place, further protection to I-95 will be required and the berm constructed to protect the rail yard will continue to serve as protection against potential overtopping.

Layered Coastal Protection utilizing Green Infrastructure and Living Shoreline Approaches.

Solving for flooding in Long Wharf must be viewed as a phased remedy. The inland berm to protect the rail yard will need to be coupled with a natural edge that can survive against the forces of sea level rise. Maintaining the coastal edge from eroding will preserve the I-95 corridor from becoming a seawall, preserve a much needed coastal park amenity and reduce the size and cost of long-term protection at I-95 against the future 500-year flood projections. These remedies will all work in concert to construct a layered protection strategy for Long Wharf that is more resilient to the effects of climate change than a single edge protection that could fail during a catastrophic event. Coastal protection measures along Long Wharf will protect against erosion from wave action and the effects of sea level rise and include restoration and enhancement of coastal resources employing a Living Shorelines approach for wave energy dissipation and habitat benefit. The approach includes restoring and creating tidal wetland fringe along the length of Long Wharf Drive incorporated with the potential for on land and in-water structural features such as sills and narrow, linear created islands to provide protection for stable wetland development. More structural elements such as rip rap will be minimized, but are necessary at key locations to protect vulnerable and critical assets such as the sewer pump station. The design of the

coastal edge will be guided by DEEP. In initial conversations with USACE, there is specific interest in coordinating efforts between the NDRC feasibility study and the recently activated Army Corps of Engineers (USACE) General Investigation in New Haven and Fairfield counties. USACE is looking to select key pilot locations for analysis, will monitor the design effort along Long Wharf and will continue to coordinate with DEEP as the study progresses. The proposed NDRC project recognizes the critical position of New Haven Union Station and associated rail yard in the regional economy and it advocates for a hybrid of passive, green infrastructure and mechanically engineered solutions in adapting the surrounding neighborhood to be more resilient to future natural disasters and long-term change along the Northeastern United States seaboard.

Exhibit E.a.3.c. *Connecticut Connections Coastal Resilience Plan* NDRC Planning Activity

The State of Connecticut proposes to continue the planning process with the 13 remaining coastal Sandy-impacted municipalities in the MID New Haven and Fairfield Counties with URN with the goal of providing accessible downscaled inland and coastal flooding information at the watershed scale for inland and coastal municipalities. Connecticut's coastal municipalities experience flooding challenges from both riverine and coastal flooding. There are no maps available that show the impacts of these combined flooding sources during storms. The National Climate Assessment shows both an increase in the frequency of 100-year precipitation events, increased rain during hurricanes, and a rise in sea level. These combined impacts are especially important to evaluate for Connecticut's coast. These flooding events will impact shoreline change, including sediment transport and wetland migration. These flooding scenarios will be overlain with locations and elevations (where available) of critical infrastructure and housing. This dataset will ensure a forward-looking, risk-based analysis to address recovery, resilience, and revitalization needs.

The State will create a regional coastal resilience plan for New Haven and Fairfield Counties to establish resilient coastal communities where structures and critical infrastructure in the flood zone are adapted to withstand occasional flooding and protected by healthy buffering ecosystems, where critical services, infrastructure and transport hubs are located on safer, higher ground, and where strong connections exist between the two. Increasing investment in identified resilience zones provides an opportunity to increase economic resilience by strongly tying back to the regional transportation network and regional economic opportunities. Given the identified major barrier of lost tax base to moving forward on resilience measures, the plan will address this need with modeling economic impacts on municipalities under various scenarios and provide strategies and action programs to implement plans, including the development of codes, ordinances and regulations.

The plans will identify implementable resilience projects for each municipality or cross-municipality challenge using urban environmental design to create neighborhood plans, conceptual designs and actions for funding by State and Federal programs. The leverage section of this application details the many statewide funding programs that could fund micro grids, housing elevations, green infrastructure and wastewater treatment plant resilience, transit oriented development projects, and many more.

Exhibit E.a.4. Address current and future risks from identified vulnerabilities and other community development objects.

The pilot projects are designed to mitigate future risks from 50, 100 and 500-year storms and significantly increase the resilience of the MID-URN target areas in Bridgeport and New Haven. These projects are not just building protection, they are building communities. **Based on conservative assumptions** in the Benefit Cost Analysis, the New Haven ***Union Station Resilient TOD*** pilot project interventions (without monetizing environmental benefits) are expected to generate an annual resilience

value of $5.4 million, annual community development value of $7.3 million and an annual economic revitalization value of $3.3 million.

In Bridgeport, the ***South End East Resilient Network*** interventions are expected to generate annual resilience value of $1.85 million, annual community development value of 27.4 million and an annual economic revitalization value of $1.6 million.

The projects create opportunity for transformative community growth, expansion of economic opportunity and connectivity to economic centers and critical social cohesion benefits. Infrastructure improvements combine with co-benefits – natural features, community amenities, and economic enhancements - to provide a holistic plan for a resilient community of the future. University Avenue in Bridgeport will become a great new urban space linking the University to South End East through a new public walkway and a raised platform for viewing sporting events at the sports field. The earthen berm also serves as a raised greenway with an extensive natural stormwater treatment park. The new community centers become places for gathering, community dialogue and community capacity building. In New Haven, the stormwater management strategy is a community beautification strategy to create great urban places that will attract new opportunities for housing, mixed-use and other economic growth. Extending connections to Long Wharf generate opportunities to transform the growth of Long Wharf as a Transit-Oriented district. These projects solve for the vulnerability of community loss from loss of cohesion by building into protection the opportunity for these communities to realize their potential, attract new residents and grow their economies.

Exhibit E.a.5. How does project benefit vulnerable populations? How will we train and employ Section 3. Persons and contract with section 3 business? (HUD Rule 24 CFR 135.9)

The pilot projects will directly benefit 7990 residents in the Union Station neighborhood who are below LMI. In this neighborhood, there is currently a 16% unemployment rate and the average

household income is $34,998, which is significantly below the Statewide MHI of $69,461. Project applications in New Haven will create new employment opportunities and protect existing employers located in Long Wharf. Storm water management around the New Haven Union Station will allow for future Transit Oriented Development (TOD).

In Bridgeport, the ***South East End Resilience Network*** pilot project will protect 3,740 people who live below LMI from damage of future flooding. These households in the target area have a median household income of $21,103, which is significantly below the Statewide MHI of $69,461, and a 21% unemployment rate, with 65% of the residents above the age of 65. The project will provide egress in times of emergency and protect these low-income properties from flooding, in addition to increasing pedestrian and public transit connections to downtown Bridgeport through restoration of community centers and physical raising of streets.

The applicant will train and employ Section 3 persons and will contract with Section 3 business concerns as per HUD's rules at 24 CFR 135.9. We have attached our certification (See Attachment C – Consultation summary (AttCCDBGBDRAppCert.pdf)).

Exhibit E.a.6. Approach Model for future development that is replicable and holistic.

Both pilots build off the key mission introduced by SAFR, rebuild existing communities and tie them to mass transit networks and downtowns in order to build a stronger economic foundation. New Haven takes two disparate communities surrounding transit and ties them together with transit to build a single shared place with a stronger economic base, tied into the downtown. Bridgeport converts an isolated community into the next expansion of downtown Bridgeport by re-activating the connections to the downtown and building in new connection corridors for pedestrians and an expanded mass transit network. Both strategies are highly replicable throughout the corridor and across the entire State as Connecticut invests in its $10 Billion LetsGOCT! Plan. Both projects create resilient corridors. In

Bridgeport, the University Avenue corridor is a highly replicable street lifting that creates the legal authority to develop by creating dry egress. More importantly, it creates a new physical platform for redevelopment in a community that has the space to expand. In New Haven, raised streets will become the new datum for future growth that will encourage new construction to raise above the flood plain for construction, while allowing sections of the property to continue to serve as flood management space in a low-lying community condition. Both are highly replicable to conditions along many communities along the coastline as was demonstrated by the vulnerable coastal typologies (Phase 1, Exhibit D Need, pp.22-23 and Att E Maps & Drawings, pp. 175-176) that repeat along Connecticut's entire coastline and in other parts of the eastern seaboard. Finally, by creating innovative strategies for maintaining a relationship with water, both pilots create long-term sustainable growth models that counter-act the forces of slow community decline that would ensue if no flood protection were developed or if flood protection substantially reduced quality-of-life by removing access to the most important amenities, its waterfront. This is the fundamental goal of the Connecticut project.

Using these pilots, SAFR will look to replicate this mission through the ***Connecticut Connections Coastal Resilience Plan*** for the 13 remaining coastal municipalities in the MID-URN New Haven and Fairfield counties that will each, in their own manifestation, begin to expand the opportunities for resilience across the State. The plan builds upon the concept developed in Phase 1 that looked at a strategy for the entire Connecticut coastline, extending all the way to the Rhode Island border. Amtrak serves the entire northeast corridor, and therefore this concept can provide a model for the entire northeast region. These repeating patterns and the regional transportation network allow projects in Fairfield and New Haven counties to serve as models for the entire region. As demonstrated by the project in Meriden (Exhibit C), an inland riverine community in Connecticut, resilient TOD development also applies to those communities that connect to the Hartford-Springfield line and

expanding commuter train between New Haven and Springfield, Massachusetts. The coastal resilience plan will build upon resilience planning work in municipalities that were awarded under CDBG-DR as well as the regional and local FEMA Natural Hazard Mitigation Plans and the Plans of Conservation and Development (POCD), which now states that plans consider risks associated with increased coastal erosion caused by a rise in sea level.

Exhibit E.a.7. Feasible and implementable by project partners.

Both pilot projects are based on feasible, effective, and practical designs that will perform their intended goals. The concepts for the projects were developed in meetings and in close consultation with multiple involved agencies, local municipal representatives and residents/businesses in the affected areas. The formation and continuation of SAFR plays a critical role in the implementation of project components. In New Haven, necessary planning and construction infrastructure is in place to support this plan. The projects will build off the active HUD CDBG-NDR funded feasibility study to build a comprehensive model for stormwater management to test solutions and the effectiveness of "green street" and stormwater management strategies proposed through this application. CTDOT is coordinating three major capital projects that will support this effort, New Haven Rail Yard resilience improvements, Route 34 / Downtown Crossing and the Garage and pedestrian bridge at the station. The City has already undertaken a 10% feasibility study for Union Street reconstruction and the "green streets" design effort will be predicated on the community-led Hill to Downtown planning effort. DEEP and the City are both committed to the development of a coastal strategy and the team will focus on permitting and environmental issues at the outset of the effort to understand the critical path for the project. DEEP and USACE have already begun discussions to coordinate the potential design approach.

In Bridgeport, the ***South End East Resilient Network*** project is building upon two years of study through HUD RBD and follows on initial conceptual investigations made by the RBD team. The

project is designed entirely on inland locations to avoid coastal permitting issues and builds upon the HUD RBD concept of raised corridors for Singer Street that were widely viewed and analyzed. The State has relationships with key partners, including UI, in Bridgeport and has selected locations that are conceptually feasible for implementation.

Exhibit E.a.7.i. Increased resilience to current and future disasters.

The pilot projects have been developed with a consideration towards the variability of future climate change conditions. In Bridgeport, the ***South End East Resilient Network*** project's applications include elevation of University Avenue at the cost of $5.7 million dollars and construction of a greenway berm that will protect downtown Bridgeport and the train station from 100-year storms at the cost of $29.4 million dollars. In order to plan for 500-year storms and sea level rise by 2100, these key project components will be increased in both scale and scope. The berm and raised road will be built to incorporate a 4' sea wall that can be installed on top of these interventions to prevent against future storm surge within the boundaries of our 2100 SLR projection. The northern end of the berm will be designed to be extended to Stratford Avenue transitioning to a sea wall outboard of the railroad platform (see Attachment E – Maps and Drawings (AttEMapsDrawings.pdf) Long-term protection for Bridgeport Downtown Station).

In New Haven the $ 37 million storm water management eco-system in the Long Wharf neighborhood east of Church Street, will be replicated west of Church Street to Hallock Avenue. The inland berm and coastal erosion improvements represent two vital elements of a long-term layered urban protection strategy. As sea level rises, the extended coastline will reduce the costs of the intervention along I-95 that will need to be built to prevent against major storm events. The inland berm, which forms the first line of protection in the near-term, will then be in place as a failsafe against overtopping in the extreme 2100 SLR scenario. Interstate 95 will be retrofit to serve as a flood barrier

during 500-year storms through addition of a 700 foot long, 3’ tall sea wall at the lowest elevation near Church Street, along with a more permanent solution for the roadways that currently pass through I-95 at Canal Dock and Long Wharf roads (Attachment E, Maps and Drawings (AttEMapsDrawings.pdf) – Vision for future of Union Station District).

The ***Connecticut Connections Coastal Resilience Plan*** will identify at a municipal-scale the current and future risks to the impacts of climate change for the coast of Connecticut as well as utilize economic resilience as a tool to measure overall resilience. Quantifying the impact of the planning project will depend on the implementation of projects. A suite of projects has the potential to adapt nearly $480 billion in insured assets within 35 miles of Connecticut’s coast. Had a plan been implemented prior to Sandy it could potentially have prevented power outages for the 650,000 people, kept the jobs of 78,000 people who claimed unemployment, prevented the overflow of 20 million gallons of raw sewage to Long Island Sound, and saved the $360 million in estimated overall loss to Connecticut from the storm.

Exhibit E.a.7.ii. Design Practices, Codes, Standards.

The projects address, and when relevant, proposes recommendations to related existing policies and programs. The design practice of raising streets will conform to applicable State and federal codes and standards for street and utility design. Berm construction is envisioned as inland construction and will similarly follow establish codes and standards. The reconstruction of streets to become more effective stormwater management conduits will test current standard practice, but DEEP and CTDOT are prepared to monitor the design approach to resilient streets and develop pilots that take current practice and introduce reasonable next generation designs. The purpose of using pilots is so that permitting and management agencies can “test” their ability to manage new design approaches and incorporate them into their best practices. For Resilient Streets, the agencies are prepared to manage these pilot

approaches. Along the coast of Long Wharf in New Haven, the living shorelines approach is expected to be more easily permitted under unique forward-looking authority granted to DEEP in 2012 by the state legislature. As stated on DEEP's website, PA 12-101 exempts "any activity, including living shorelines projects, for which the primary purpose or effect is the restoration or enhancement of tidal wetlands, beaches, dunes or intertidal flats" from the definition of "shoreline flood and erosion control structure." These coastal resource enhancement projects therefore are not subject to the additional municipal procedural requirements that apply to coastal flood and erosion control structures, such as a mandatory coastal site plan review and referral to OLISP, so as to encourage waterfront property owners to prioritize resource restoration projects over structural solutions. Seawalls, groins, bulkheads, and similar armoring approaches are strongly discouraged under current State policies, in keeping with the Coastal Management Act. Moreover, Connecticut is becoming a national leader in showcasing coastal green infrastructure approached to resilience like Living Shorelines. CIRCA and its UConn collaborators are charged with developing guidelines for site selection of Living Shorelines, and CIRCA is hosting the first national conference on Living Shorelines in December 2015.

Exhibit E.7.iii. Resources and O&M Needed to Maintain the Projects

Due the varied nature of the project elements, the operations and maintenance required for the projects post construction was considered as a percentage of the construction cost, estimated using an assessment of the operations cost, expected maintenance activities, frequency of maintenance activities and the expected lifetime of the project elements. For each pilot project application, the maintenance scopes were rated low (limited operations oversight, simple testing/inspection and minor part replacement), medium (periodic operations oversight, system testing/inspections, secondary system cleanouts/replacements, repaving/regrading) or high (active operations oversight, system testing/inspections, requiring full system cleanouts/replacements, structural modifications including

reshoring, or resloping beyond simple regrading or repaving). For each pilot project application, the maintenance frequencies were rated low (annually or per major event), medium (quarterly) or high (monthly). For each pilot project element, the lifetimes were rated short (1 to 10 years), medium (10 - 25 years) or long (25 years plus). The ratings in each assessment category were then used to modify a base ten percent operations and maintenance cost per item. For example, in the New Haven ***Union Station Resilient TOD*** Pilot project, the rail yard protection berm would be rated low for cost of maintenance activities (some mowing of grasses, sounding of berms), low for frequency (annual sounding inspection of berms, mowing only in spring/summer months), and would have a long lifetime. This would result in an operations and maintenance percentage of 2% of the element construction cost wherein deductions were made for each low rated event.

Exhibit E.a.8. Consultation and coordination with other jurisdictions.

The proposed ***South End East Resilient Network*** in Bridgeport and ***Union Station Resilient TOD*** in New Haven (see Exhibit E.a.3) represent the culmination of an integrated and thoughtful process coordinated by the State of Connecticut during Phase 1 and Phase 2 of the NDRC application. The applicant consulted in depth with government agencies at municipal and state levels of governance as well as resident stakeholders, small and large business owners, and professional experts. Forty six (46) agencies and organizations were consulted within Phase 1 of the application process. The purpose of these consultations was to identify communities within Connecticut that had unmet need after Hurricane Sandy and to develop optimal policy and programmatic approaches that would alleviate the remaining unmet need while addressing future climate risks within the region. An additional 50 consultations were made during Phase 2, with the goal of soliciting feedback about project and program design from residents within the target communities and from subject matter experts. The Phase 2 application included active design and planning participation from the municipalities identified during

Phase 1 and a rigorous selection process to identify the target areas. Kicking off the Phase 2 application, each municipality in Fairfield and New Haven counties was invited to a Webinar in which SAFR described the NDRC competition in detail and requested all municipalities interested in being a part of the NDRC proposal to submit a Letter of Interest (LoI). Every municipality that submitted this LoI was invited to a day-long design charrette in which eleven municipalities and state agencies worked together to map needs and assets in each community. During the process, each municipality developed a short list of potential resilience projects that could be united and combined together to form a coordinated and cohesive network of solutions for resilient corridors and resilient TOD. Municipalities were evaluated on the following information factors: (1) portion of the municipal population with low or moderate household income (LMI); (2) Government commitment to and engagement with resiliency values; (3) unmet need and social or environmental distress as result of hurricane Sandy; (4) community interest; (5) existing opportunities for leverage within the municipality; (6) soundness of approach. The two selected pilots strongly exhibited the conditions necessary for a sound and successful NDRC project application.

With the selection of pilots, SAFR reached out directly to both communities to engage in dialogue, generate interest and build consensus. SAFR held *Pop-up Presentations* at central locations in each community. During this outreach, SAFR found a disconnect between community knowledge of some programs such as Shore Up CT, discovered many individual stories of undocumented unmet need, and found strong community support and desire to expand programs such as the *Micro-Grid Grant and Loan Program*. In working with municipal leadership, SAFR held five design working sessions with stakeholder groups, architecture firms and municipal technical staff in Bridgeport and New Haven, presented project ideas to city council committees on four occasions and met with the Army Corps of Engineers (USACE) to discuss project feasibility and technical soundness of approach.

SAFR organized two public meetings on October 12, 2015 in Bridgeport and October 13, 2015 in New Haven, in which the final draft NDRC application were presented and public comments were solicited. These efforts have provided multiple venues for citizen participation before submission of the project application to HUD on October 27, 2015. A notable outcome of these Phase 2 consultations is the *Municipality Regional Resiliency Planning Guidebook*; a booklet that documents unmet need and opportunities for resilient development beyond the pilot intervention areas in New Haven and Bridgeport, and throughout many coastal and riverine municipalities in Connecticut.

Exhibit E.b. Benefit Cost Analysis (BCA)

The BCA Report, the project schedule, budget and analyses of costs, benefits, net present values, and benefit cost ratios are included in Attachment F (AttFBCA.pdf). For the ***South End East Resilient Network***, for a 7 percent discount rate, the proposed infrastructure investments yield a net present value of $8.2 million, and a benefit-cost ratio of 1.2. For ***Union Station Resilient TOD***, for a 7 percent discount rate, the proposed infrastructure investments yield a net present value of $26.4 million, and a benefit-cost ratio of 1.52.

Exhibit E.c. Opportunities for scaling, scoping and phasing proposed project

The applications for the ***South End East Resilient Network*** and the ***Union Station TOD District*** have each been phased for implementation with specific pricing, schedule and milestones broken out according to the tasks required to implement each application (see Exhibit 3.d Program Schedule). A summary of that phasing is described in Program Schedule, and a detailed schedule and budget is included in Attachment F (AttFBCA.pdf) Benefit-Cost Analysis. The pilot projects have been designed to be scaled to provide long-term protection from future climate change conditions (see Exhibit E.a.4). These pilot projects can be scaled as model resilience projects as they represent models for other Connecticut communities and contexts (see Exhibit E.a.6). The pilot projects are intended to be scaled

geographically throughout the coastal region and the entire State through the ***CT Connections Coastal Resilience Plan***.

The ***Connecticut Connections Coastal Resilience Plan*** will include additional municipalities affected by riverine and coastal flooding, focusing initially on all 15 coastal municipalities in New Haven and Fairfield counties and eventually on all municipalities in the State of Connecticut, in partnership with the Connecticut's 3 council of regional governments. The initial portion of the ***Connecticut Connections Coastal Resilience Plan*** will be funded through NDRC and staggered over the period out to 2019 with 4-5 municipalities per year. If necessary plans will be prioritized for municipalities who participated in the Solicitation of Interest process during the Phase 2 application, and who are priority areas as CDBG entitlement communities with LMI. Long-term support for this program will come from state agency funding programs that align with resilience measures.

Exhibit E.d. Project Schedule and environmental review, procurement, state or local permits and any other bureaucratic required for your project.

This section lists the major tasks and activities for each of the projects. The complete schedule for implementation of all pilot project applications and the planning program, with approximate start periods and durations, can be found in the BCA, Attachment F (AttFBCA.pdf). The following narrative summarizes the project schedule for ***Union Station Resilient TOD***. The development of the stormwater system will follow from the active feasibility assessment, which is developing alternatives. Once completed, the project will move directly into design and construction. The complete streets effort in the Hill to Downtown community will commence with a feasibility assessment that builds upon the Hill to Downtown study, coordinates with the active design for the Downtown Crossing and considers the design for Union Street which has been progressed to 10% design level. The feasibility assessment for the rail yard protection berm and raised road pilots will run parallel to the already funded stormwater

management alternatives study being undertaken by the City of New Haven. This feasibility study will be coordinated with the active design for Brewery Road and the MOW facility being conducted by CTDOT and protection heights will be coordinated between the two efforts. The preferred alternatives for the berm and the stormwater management system will be combined into a single environmental assessment to refine the design. The design for all elements will run in parallel to the EIS to inform the EIS and compress the schedule. It is intended that a single construction contract will be let to build the rail berm and the stormwater management system.

The protection plug/gate under I-95 will be designed based upon the findings of the separately funded I-95 resilience study. Because the highway underpass at Canal Dock Road is essential for both continued economic activity at Long Wharf Park, and as a public service to residents visiting Long Wharf Estuary, Long Wharf Park, boathouse and other marina related commercial destinations, permanent installation of a deployable plug at this location is considered an eligible CDBG-NDR activity. The deployable plug/gate will be installed into the arch of the highway underpass and in normal circumstances it will allow both private and public commerce at this Right-of-Way. In storm conditions the plug can be inflated for the duration of the flooding event, and then deflated as appropriate. This flood prevention measure is a permanent, unobtrusive, infrastructural adaptation to the existing underpass; an appropriate strategy to prevent coastal inundation from entering the Long Wharf neighborhood and eventually the Union Station neighborhood. Design and construction would likely be conducted for the plug as a separate effort from the berm and coastal edge protection, since I-95 is an interstate highway.

The coastal protection application will undergo a feasibility study guided by DEEP and the City of New Haven to build upon recently completed concept studies. The findings will inform the EIS and

a parallel design effort will further inform the EIS and compress the overall schedule so that the project can be constructed within a four-year period.

Key management agencies for the ***Union Station Resilient TOD*** project will be CTDOT and DEEP as the project involves new road construction and integrated stormwater management strategies. The City of New Haven will be a key participant, as they are managing the initial alternatives study and building the flood model that will serve as the tool to analyze the effectiveness of stormwater management strategies that will lead to the development of the preferred design.

The following narrative summarizes the project schedule for the ***South End East Resilient Network***. The raising of University Avenue to a new datum builds upon initial concepts developed during the RBD competition. CTDOT, DEEP, working with the City of Bridgeport will conduct a detailed feasibility assessment and include key stakeholders, including the University of Bridgeport, PSE+G, UI and the developers of 60 Main to analyze options and develop a preferred option for the integrated raised street and berm concept. DEEP/CTDOT would then guide an environmental assessment of the berm and raised street with the City of Bridgeport as a key partner. EIS and design will run parallel to inform both processes and compress the overall schedule. The team will determine whether a single contract or multiple contracts will be let to construct raised road and berm. Structural analysis of existing tie-in facilities (Ferry Access Road, Railway Elevated Right-of-way, Bridgeport Station, improved/existing UI substation will be undertaken during feasibility assessment as well as any site conditions (aka condition of outfall) to inform the design approach. The community center reconstruction and the energy study will both be scheduled as early start initiatives. The community center feasibility study will be undertaken in partnership between DOH and DECD with assistance by the City of Bridgeport and will lead to design and construction (rehabilitation) of both the downtown Design Center and the satellite facility. DOH would establish guidelines for selection of candidate

community facilities and let an RFP to solicit designs and identify construction costs for each location. The energy study will be guided by DEEP conducted in year one with targeted recommendations for further implementation.

Key management agencies for Bridgeport will be DEEP, CTDOT, DECD and DOH, as the project involves new road construction, an inland protection berm and integrated stormwater management strategies. The City of Bridgeport will be a key participant in the development of the design as they have been heavily involved in the development of concept designs through the HUD RBD effort.

Environmental activities. The two pilot projects in New Haven and Bridgeport require coordination, funding assistance, environmental review, and permitting with the following agencies: DEEP, CTDOT, DPH, DECD, OPM, CTCEQ and USACE. To comply with the Connecticut Environmental Policy Act (CEPA), project measures in both target areas would require an Environmental Impact Evaluation (EIE). The lead State Agency would prepare the EIE, which would then be reviewed and approved by the Office of Policy and Management (OPM). To adhere to the National Environmental Policy Act (NEPA), some projects may require an environmental impact statement (EIS) in lieu of the EIE.

Additional state permitting that may be required includes: Beach Grading Permit; Maintenance of Catch Basins and Tide Gates (DEP-LIS-GP-010); Residential Flood Hazard Mitigation (DEP-LIS-GP-005, For elevation and flood proofing of existing inhabited houses to FEMA standards, where the houses are within state permit jurisdiction but outside the state-owned public trust area); Domestic Sewage (DEP-WPED-GP-018); Groundwater Remediation Wastewater Directly to Surface Water (DEP-PERD-GP-020); Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-

WPED-GP-015. For discharges of stormwater from construction activities which result from the disturbance of *one or more* total acres of land area on a site regardless of project phasing.)

Exhibit E.e. Budget. The project budget was determined using precedent research from HUD Rebuild by Design, New York Rising project design cost estimates for precedent projects and past experience of WSP | Parsons Brinckerhoff in infrastructure design and redevelopment projects located in Connecticut cities and throughout the region.

New Haven *Union Station Resilient TOD* NDRC project components	
Stormwater System Long Wharf Canal and Rail yard Protection Berm and I-95 Plug	$36,828,916
Street and neighborhood storm water improvements	$3,501,200
Coastal Protection Strategy, living shoreline with stone revetment edge	$18,228,600
New Haven Estimated Total	**$58,558,716**

Bridgeport *South End East Resilient Network* project components	
University Avenue, elevated street with integral multi-functional wall	$5,264,000
Community Center Restoration	$1,000,000
Earthen berm extending to Ferry Landing, onshore CSO treatment park and viaduct reinforcement	$35,630,0356
Flood Design Guideline recommendations	$330,000
District energy feasibility study	$350,000
Bridgeport Estimated Total	**$42,574,036**

General Administrative Costs

State Agencies Fostering Resilience (SAFR) staff management	**$5,585,609**
Planning Activity Costs	
Connecticut Connections Coastal Resilience Plan	**$8,203,323**
Total Estimated Budget	**$114,921,684**

CTDOT public BID reports were also referenced for cost estimation. Project implementation will be cost-effective, and the costs reported below are in line with industry standards and are appropriate for the scope of the project.

Exhibit E.f. Plan Consistency with other Planning Documents.

The concept of this proposal is consistent with existing state and regional goals and has been developed with input from the areas' citizens and guided by State plans and data including Connecticut's *State Plan of Conservation and Development Policies Plan Update 2013-2018*, and the 2013 *Natural Hazard Mitigation Plan*. These plans and assessments, and ultimately our proposal, seek to increase resiliency in physical, environmental, social, and economic dimensions.

Exhibit E.f.1. Consistency with Consolidated Plan and/or Regional Sustainability Plan

The State **Conservation and Development (C&D) Policies Plan 2013-2018** was adopted by the Connecticut General Assembly on June 5, 2015. The State C&D Plan seeks to improve resiliency and serves as the official policy for the Executive Branch in matters pertaining to land and water resources conservation and development. The 2013 update identifies six Growth Management Principles to reach that end.

1) Redevelop and Revitalize Regional Centers and Areas with Existing or Currently Planned Physical Infrastructure; 2) Expand Housing Opportunities and Design Choices to Accommodate a Variety of

Household Types and Needs; 3) Concentrate Development Around Transportation Nodes and Along Major Transportation Corridors to Support the Viability of Transportation Options; 4) Conserve and Restore the Natural Environment, Cultural and Historical Resources, and Traditional Rural Lands; 5) Protect and Ensure the Integrity of Environmental Assets Critical to Public Health and Safety; and 6) Promote Integrated Planning Across all Levels of Government to Address Issues on a Statewide, Regional and Local Basis. (http://www.ct.gov/opm/lib/opm/igp/org/cdupdate/2013-2018_cd_plan.pdf) The projects outlined in this proposal, are consistent with Growth Management Principles outlined in the C&D Plan and takes significant steps towards all of these principles. The C&D Plan also requires state agencies to be consistent with the State C&D Plan. The Plan includes a list of plans prepared by state agencies under state or federal law, that are required to be submitted to OPM for a review of consistency with the State C&D Plan prior to their adoption. These include:

- **Master Transportation Plan** (DOT) http://www.ct.gov/dot/cwp/view.asp?a=3529&q=430714
- **Economic Strategic Plan** (DECD) http://www.ct.gov/ecd/lib/ecd/connecticut_esp-final.pdf
- **Comprehensive Energy Strategy for Connecticut** (DEEP)
- **State Long-Range Housing Plan** (DECD)
- **Annual Action Plan for Housing and Community Development** (DECD)
- **Strategic Long-Range Transportation Plan**, 2009-2035 (CTDOT)
- **Natural Hazard Mitigation Plan** (DEEP)
- **Connecticut Climate Change Preparedness Plan** (DEEP)
- **State Natural Disaster Plan** (DESPP)
- **State Rail Plan** (DOT)

Exhibit 7.f.2. Consistency with Mitigation Plan and/or Transportation Plan

During the 2014 plan update process, of the **Natural Hazard Mitigation Plan**, the States' planning team met on multiple occasions to discuss goals, objectives, strategies, and activities required to minimize identified natural hazard risks. The Plan presents a detailed mitigation strategy based on goals and objectives that includes specific strategies for each goal as well as prioritized implementable actions. The first goal is to promote implementation of sound floodplain management and other natural hazard mitigation principals on a State and local level. The objective is to increase general awareness of Connecticut's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property. Specific strategies to achieve this goal and objective include providing technical guidance, supporting and enhancing State policy to mitigate the effects of natural hazards, and increasing coordination and leverage across State agencies by integrating hazard mitigation principles into program activities.

The second goal is the implementation of effective natural hazard mitigation projects on a state and local level. The objective is to enhance the ability of State agencies and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects. The strategies for Goal 2, includes identifying, developing, and prioritizing hazard mitigation projects. The Plan illustrates estimated flood loss by count and a relative ranking of the communities in Connecticut for flood hazards. New Haven and Fairfield counties rank the highest at $2.5 billion to $4 billion, and Bridgeport and New Haven are located in the high hazard ranking. The projects in this proposal in New Haven and Bridgeport are consistent with the goals and objectives in the Natural Hazard Mitigation Plan and take significant steps towards implementing its strategies.

South End Neighborhood Revitalization Zone Strategic Plan (2014). The City of Bridgeport and the South End Neighborhood Revitalization Zone (NRZ) Planning Committee worked to create a comprehensive NRZ designation and strategic plan to foster and guide the revitalization of the South

End. The plan aims to attract development, improve the overall neighborhood quality, increase local employment opportunities, and invest in mitigation to reduce climate risks. The proposed project, and in particular, the ***South End East Resilient Network*** NDRC pilot project, is consistent with the NRZ plan. The pilot project includes coastal protection interventions, storm water management strategies that directly tie into and redevelop the overall quality of neighborhood development and street network. https://www.bridgeportct.gov/filestorage/89019/89751/94961/103639/FINAL_Design_0212.pdf

Hill-to-Downtown Community Plan. The Hill-to-Downtown Community Plan summarizes the challenges and opportunities facing this New Haven neighborhood. The plan builds on a strong foundation of market research and community input, which recognizes Downtown New Haven's growing appeal as a location for new homes, businesses, and recreation. The plan lists the following goals for this neighborhood: 1) Encourage Development of Commercial, Residential, and Retail Space in the Areas Around Union Station and within the Medical District Areas; 2)Strengthen the Existing Neighborhood; 3) Improve Connectivity within the District and to Downtown; 4) Create New Job Opportunities for Residents; and 5) Expand the City's Tax Base.

The proposed project's ***Union Station Resilient TOD*** pilot project directly addressed the goals included in this planning document. The pilot projects includes street and neighborhood improvements at Church Street Village Housing, the reconstruction of Union Avenue, and protection for the New Haven Rail Yard that will extend bicycle and pedestrian connections and knit together Long Wharf, Union Station The Hill and Downtown New Haven.