North Carolina Enhanced Hazard Mitigation Plan

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Appendix E

North Carolina Hazard Mitigation Plan Appendix E
Enhanced Plan Supplement

I. Introduction

Requirement §201.5(a) **Enhanced State Mitigation Plans.** (a) A State with a FEMA approved Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMGP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding.

Requirement §201.5(b), **Enhanced State Mitigation Plans.** Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in §201.4, as well as document the following:

To achieve Enhanced Plan (EP) status, in addition to meeting all Standard 322 Plan requirements, the state must also demonstrate that it already has a comprehensive mitigation program, must demonstrate that it effectively uses available mitigation funding, and must also demonstrate capability to manage additional funding.

The Hazard Mitigation Planning Staff of the Geospatial and Technology Management Section of NCEM prepared this supplement to the NC 322 Plan adopted September 23, 2013 and approved by FEMA on October 17, 2013 to demonstrate North Carolina's commitment to hazard mitigation and to showcase elements of the program and the 322 Plan that make North Carolina eligible for Enhanced Plan status as described in 44 CFR part 201.5.

The information in this annex is arranged in the same order as the EP requirements set forth in 44 CFR part 201.5. This supplement identifies elements of the Standard 322 Plan that demonstrate "above and beyond" capabilities by reference, and also provides additional commentary concerning enhanced capabilities as deemed necessary.

North Carolina began to develop a robust and comprehensive Hazard Mitigation Program in the months following the devastating impact of Hurricane Fran in September 1996. Seventeen years of successively tighter and more efficient use of available federal hazard mitigation resources and creation of additional capabilities using more state and local resources places the state in a position to effectively demonstrate its capabilities and utilize and manage the additional funds made available through participation as an Enhanced Plan State.

This commitment is demonstrated in the Mission and Vision Statements of the Hazard Mitigation Branch of NCEM:

Mission:
To assist North Carolinians, communities, state agencies, local governments and businesses to become less vulnerable to the impacts of natural hazards through the effective administration of hazard mitigation

grant programs, hazard risk assessments, wise floodplain management, and a coordinated approach to mitigation policy through state, regional and local planning activities.

Vision:
Institutionalize a statewide hazard mitigation ethic through leadership, professionalism and excellence, leading the way to a safe, sustainable North Carolina.

North Carolina's first statewide Standard Hazard Mitigation Plan (322 Plan) was approved by FEMA and adopted in October 2004. Successful updates were completed, approved by FEMA and adopted in 2007, in 2010, and again in 2013. The current 322 plan was formally adopted by NCEM Director Michael Sprayberry on September 23, 2013. Final Approval was granted by FEMA on October 17, 2013. In the final approval letter, FEMA states "In summary, the 2013 Standard Plan update continues to show that the State has a comprehensive mitigation program and is meeting expectations with not only FEMA programs but also state programs." FEMA also acknowledged the State of North Carolina and the State Hazard Mitigation Advisory Group for developing a solid, workable plan that demonstrates commitment to reduce risks from natural hazards and that will guide mitigation activities over the coming years.

(*Please refer to E16 for the FEMA NC Standard Plan APP Letter*). Further commentary and demonstration of North Carolina's capabilities may be found in the following parts of the current 322 Plan:

- *See NC 322 Plan Appendix B, Capability Assessment, Executive Summary and pages 39-51*
- *See NC 322 Plan Section II, Planning process pages 1-11*
- *See NC 322 Plan Section III Mitigation Strategy, goals, objectives and action items*
- *See NC 322 Plan Section VB Plan Monitoring Progress of Activities p. 2 et seq.*

II. Integration with Other Planning Initiatives

Requirement §201.5(b)(1), Demonstration that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) FEMA mitigation programs and initiatives that provide guidance to State and regional agencies.

A. Planning Initiatives

NCEM makes every effort to integrate mitigation planning and project activities across agency and functional boundaries. NCEM participates in all of FEMA's mitigation programs and initiatives.

In North Carolina, land use authority is centered in the municipal governing body. Unincorporated lands within the state are regulated by the county, while the state and state agencies retain selective influence over local environmental regulations.

The comprehensive plan is a tool designed to assist with development of policy, planning, and action agendas to address land use issues including development. North Carolina state law does not require local comprehensive or land use plans outside coastal counties. State law requires that zoning ordinances be made in accordance with a comprehensive plan, but the law does not prescribe what a comprehensive plan must or should include. In situations where local governments (county or municipal) wish to enact

some sort of zoning ordinance, the state courts have held that "no extrinsic written plan, such as a master plan based upon a comprehensive study, is required…[t]he ordinance itself may show that the zoning is comprehensive in nature. Although not required by state law and/or regulation, many jurisdictions are proactive in the development of comprehensive local land use and zoning plans".

North Carolina Emergency Management continues to be proactive in developing, implementing and sustaining hazard mitigation planning and activities by coordinating with SHMAG members, SERT members, other agencies and local governments. The mitigation staff coordinates through 3 Regional Branches and 15 Area Coordinators to assist in facilitating all mitigation planning efforts. Listed below are some examples of integration between the NCEM Mitigation Branch and other Branches/Agencies:

NC Division of Emergency Management Mitigation Branch
The Mitigation Branch coordinates with the State Planning and Homeland Security Branch to meet the natural hazards requirements and to analyze the response and vulnerability to population, property, infrastructure, and development using the risk assessment from the North Carolina Hazard Mitigation Plan. Additional elements used are: Goals, Risk Assessments, threat assessments, and hazard identification in local communities and statewide.

State Floodplain Mapping Program
This program is the basis by which many communities assess their flood hazards and how the state as a whole looks at flooding vulnerability to existing and future structures and development. Floodplain mapping works across the state to help communities plan for development and to avoid flooding. This is tied very closely to mitigation planning efforts statewide. The efforts made by floodplain administrators have led to changes in the International Building Code to include freeboard for development in floodplains across North Carolina. The risk and vulnerability assessment utilized in this plan identifies areas that are subject to NFIP requirements.

Division of Coastal Management (A Division of NC Department and Natural Resources)
The State Hazard Mitigation Officer provides courtesy reviews of Coastal Area Management Act Land Use Plan updates for the 20 coastal counties upon request from DENR. The review is designed to ensure that CAMA plans and Hazard Mitigation Plans are consistent. Also, the State Hazard Mitigation Branch coordinates with The Division of Coastal Management when it comes to working in designated CAMA (Coastal Area Management Act) counties.

North Carolina Department of Transportation Coordination
The Hazard Mitigation Branch coordinates with NC DOT's Project Development Unit any time there is a potential hazard mitigation project underway to ensure no future conflict with deed restricted property and future road projects.

North Carolina State Geologist
The Hazard Mitigation Branch coordinates with the State Geologist on such projects as the Slope Stability Index Map and the State Hazard Mitigation Officer also serves on the North Carolina Geological Survey Advisory Panel.

Other recent work with the State Geologist has included outreach about the earthquake hazards in the western part of NC. The Hazard Mitigation Branch has worked with the State Geologist to develop a curriculum about earthquake hazards in North Carolina to help communities and the state as a whole plan for earthquakes.

Coordination with Local Governments

Through outreach activity, the Mitigation grants staff provides technical assistance to community officials through scheduled meetings, conferences, and trainings to provide information on the annually available non-disaster mitigation program funding; the Pre Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) program.

Coordination with Local Governments
A tool to help promote mitigation efforts at the local level is to make mitigation staff available to provide outreach, technical assistance, and guidance to local governments in order to ensure that information contained in their individual hazard mitigations plans meet the requirements set forth in the 44 CFR and is consistent with the state's mitigation goal.

Our office has adopted an outreach strategy that helps communities to produce viable and relevant hazard mitigation plans and establish relationships that continue throughout the local and state hazard mitigation plan update cycle.

Through amplified outreach activity, the Mitigation grants staff provides technical assistance to community officials through scheduled meetings, conferences, and trainings to provide information on the annually available non-disaster mitigation program funding; the Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA) program. The outcome of this effort is the development of mitigation activities that may be funded through these programs, thus making communities more resilient to natural hazards.

NCEM, FEMA, and various state and local government officials work in concert to develop and implement mitigation interventions across North Carolina. This coordination effort provides an opportunity for the Mitigation Branch to share information to help expedite mitigation and recovery projects.

B. FEMA Mitigation Programs

The North Carolina Division of Emergency Management has and will continue to seek partners that can assist the state with improving the quality of life for its citizens through administration of mitigation programs and activities. We believe that coordination and planning with federal, state, and local governments can and will help make our state resilient to all hazards.

The programs that we administer and/or provide assistance include:

- ⇨ Hazard Mitigation Grant Program (HMGP)
- ⇨ Flood Mitigation Assistance (FMA) Program
- ⇨ Pre-Disaster Mitigation (PDM) Program
- ⇨ *Severe Repetitive Loss (SRL) Program (now part of FMA)
- ⇨ *Repetitive Flood Claim (RFC) Program (now part of FMA)
- ⇨ Earthquake Consortium Grant
- ⇨ Emergency Management Performance Grants (EMPG) Program
- ⇨ Increased Cost of Compliance (ICC)
- ⇨ National Flood Insurance Program (NFIP)
- ⇨ Homeland Security
- ⇨ Public Assistance
- ⇨ Individual Assistance

C. Other Initiatives

Additional programs or activities the Hazard Mitigation Branch is actively involved in:

Emergency Management Accreditation Program (EMAP)
The North Carolina Division of Emergency Management earned EMAP accreditation in November of 2008 and earned re-accreditation in 2013.

The National Integrated Drought Information System (NIDIS)
Mitigation staff also participates in National Integrated Drought Information System (NIDIS) workgroups to help develop mitigation activities to lessen the effects of drought on people and property. NIDIS is an essential piece of a national Drought Early Warning System in the United States.

NCEM Recovery Plan (NCESF 14)
The North Carolina Division of Emergency Management's Recovery Section *Recovery Plan Concept of Operations* uses the National Incident Management System (NIMS) and the Incident Command System (ICS). These systems are used during all incidents, regardless of size and incorporate all phases all Emergency Management to include Hazard Mitigation.

The NC Recovery Plan (under NCESF-14) confers the responsibility on the NCEM Recovery Section to administer pre-and-post disaster mitigation grant programs and to support the development of local mitigation plans (*see E14 in attachments*). To support the Recovery Plan, the Mitigation Branch participates in the following funding streams:

Table 2.1: Funded Planning Grants since 2009

Non-Disaster Grants		
Funding Stream	**Number of Awarded Subgrants**	**Funding Total (Fed + Non-Fed Share)**
PDM FY09	8	$1,002,600.00
PDM FY10	2	$46,000.00
PDM FY11	1	$500,000.00
PDM FY12	9	$1,696,667.00
Disaster Grants		
HMGP-1871	3	$193,750.00
HMGP-1969	4	$297,500.00
HMGP-4019	4	$290,000.00

Further commentary and demonstration of North Carolina's capabilities may be found in the following parts of the current 322 Plan:

- *322 Plan Section III Mitigation Strategy p 8-10 (cf)*
- *322 plan Section III Mitigation Strategy, Table III-1 p 13-54 (cf)*

III. Project Implementation Capabilities

***Requirement §201.5(b)(2)(i-ii),* Documentation of the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:**

(i) Established eligibility criteria for multi-hazard mitigation measures.

(ii) A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, and [A system] to rank the measures according to the State's eligibility criteria.

A. Established Eligibility Criteria & Ranking Measures for Multi-Hazard Mitigation Measures

NCEM will consider project proposals for any mitigation planning or project activity that is not specifically prohibited in 44 CFR 78.12, Part 206.434(c) and (d), Part 206.435, annual Unified Hazard Mitigation Assistance Guidance, and any other applicable FEMA guidance. The State will prioritize use of funds for each funding source based upon current needs and consistent with local and state mitigation plan guidance and any priority ascribed to a particular funding source.

All proposed mitigation projects must meet the Internal Policies outlined in *Appendix I –External Policies and Internal Policies* within the State's 404 HMGP Administrative Plan, which requires demonstration of cost effectiveness, technical feasibility, environmental soundness, and compliance with all appropriate federal, state, and local laws before implementation.

B. Benefit Cost Analysis of Natural Hazard Mitigation Projects

For all Unified Hazard Mitigation Assistance (UHMA) disaster and non-disaster funding streams, NCEM utilizes FEMA-approved BCA methodologies per the latest publication of the UHMA Guidance. This includes leveraging the latest version of the BCA software, Greatest Savings to the Fund (GSTF) methodology, and other appropriate memoranda or waivers (i.e. acquisition of substantially damaged structures in a Riverine AE zone and acquisition and elevation of structures in the Special Flood Hazard Area using pre-calculated benefits). NCEM has a strong track record of submitting technically correct acquisition, elevation, retrofit, and tornado saferoom applications. Since 2009, NCEM 34 out of 36 non-disaster applications of these project types have passed FEMA technical review. In addition, since 2010, all 22 of its "brick and mortar" applications for these project types have passed FEMA BCA technical review, encompassing approximately 200 properties—HMGP 1942 (1 grant), HMGP 1969 (5 grants), and HMGP 4019 (16 grants). NCEM attributes its success rate due to training by FEMA R-IV and JFO staff, and its ongoing close relationships with subgrantees to leverage best available data for successful BCA analysis. As a best practice, NCEM assumes BCA functions on behalf of its subgrantees in almost all cases during project development. This allows subgrantees time to obtain key components of best available data such as Elevation Certificates, Statements of Voluntary Participation, and homeowner intake forms.

Further commentary and demonstration of North Carolina's capabilities may be found in the following parts of the current 322 Plan:

- *322 Plan Section IV Coordination of Local hazard Mitigation Planning, Local Funding and Technical Assistance, and Prioritizing Local Assistance for Planning Grants, D, p 8-9 (cf)*

IV. Program Management Capability

Requirement §201.5(b)(2)(iii)(A-D), Demonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grants programs, including a record of the following:

A. Timeframes and Project Applications

Requirement §201.5(b)(2)(iii)(A), Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible and eligible project applications.

The Hazard Mitigation program manages a variety of mitigation project and planning grants under the federal program mechanics of the Unified Hazard Mitigation Assistance program (HMGP, PDM, RFC, SRL, and FMA.) Grants are also funded under other federal and non-federal programs including the National Earthquake Hazard Reduction Program (NEHRP) and occasional state programs such as the Hurricane Recovery Acts of 1999 and 2005.

The grant life cycle for HMA projects begins under this process with the writing of a grant application. The maximum "ceiling" allowed when requesting funding for a project is determined by the Benefit Cost Analysis. This ceiling is based on the maximum calculated benefit for the project. FEMA allows eligible reimbursements for project costs to be drawn against the grant up to the award amount in the FEMA Award and Obligation letter. NEHRP and the NCHRA do not have a Benefit Cost Analysis requirement.

Hazard mitigation specialists use the FEMA Eligibility and Completeness Review checklists for all UHMA applications when developing project and planning grants. Best Practices are also reviewed for comparison and assistance.

Since 2004, 100% of HMGP grants have been found eligible (and funded) for Hurricanes Ivan (DR-1553), Ophelia (DR-1608), and Hanna (DR-1801); and no grants have yet to be rejected on programmatic grounds for Winter Storm and Flooding (DR-1871), Tropical Storm Nicole (DR-1942), April 2011 Severe Weather (DR-1969), and Hurricane Irene (DR-4019).

For the competitive non-disaster grants NCEM has submitted for acquisition, elevation, retrofits, and safe rooms since FY09, 94% (34 out of 36) of these applications passed technical review and were feasible activities under national competition. In FY10, FY11, and FY12, NCEM submitted 39 applications for UHMA non-disaster funding consideration. All of the projects encompassed by these applications have been found to be technically eligible and ultimately funded (or obligation is pending) in a UHMA funding stream, with the exception of: 1 BCA issue in FMA FY11; and 1 BCA issue in RFC FY10 (NCEM appeal was pending before house was foreclosed on); as well as 3 instances of *eligible but unfunded grants* in PDM FY12 (1) and FMA FY12 (2).

NCEM's extremely high success rate is due to working with local subapplicants on the requirements of the FEMA Evaluation and Completeness Checklist, as well as demonstrating subject matter expertise in Benefit Cost Analysis. It is a best practice of NCEM to continue to refine unfunded UHMA projects and resubmit them in subsequent non-disaster or HMGP funding streams, when additional data or new analysis tools suggest that higher calculated benefits may be the result.

During this plan update cycle, 2010-2013, NCEM once again assisted many local communities on applying for federal funding and to manage hazard mitigation projects. These totals are as follows:

Table 4.1: Hazard Mitigation Assistance Non-Disaster Project and Planning Grant Totals

Funding Stream	# of Grants FY10	FY10	# of Grants FY11	FY11	# of Grants FY12	FY12	# of Grants FY13	FY13	Total Awarded or Pending Award
Pre-Disaster Mitigation	5	$4,803,664.45	4	$3,878,713.93	3	$2,870,737.00	6	$608,581.84	$12,161,697.22
Flood Mitigation Assistance	0	$	1	$142,700.00	2	$1,268,836.85	28	$26,999,575.35	$28,411,112.20
Repetitive Flood Claims	0	$	2	$383,345.00	0	$	0	-	$383,345.00
Severe Repetitive Loss	3	$642,498.00	1	$131,860.00	0	$	0	-	$774,358.00
Legislative-PDM	1	$293,333.00	0	$	0	$	0	-	$293,333.00

****NOTE: FY12 & FY13 = Funding pending from FEMA**

Table 4.2: Hazard Mitigation Grant Program Project and Planning Grant Totals

Hazard Mitigation Grant Program	# of Grants	Total Award / Pending Awards	Comments
DR-1871	13	$2,444,886.00	-
DR-1942	2	$574,167.00	-
DR-1969	5	$5,315,236.00	-
DR-4019	31	$29,399,701.33	22 of 31 projects awarded and 9 pending.

Further commentary and demonstration of North Carolina's capabilities may be found in the following part(s) of the current 322 Plan:

- *322 Plan Section IV, D. Prioritizing Local Assistance for Project Grants, p 7-9 (cf)*
- *See also E10 in attachments (Hazard Mitigation Project Tracker)*

At the time of the 2013 update, nearly 100 percent of jurisdictions in the state have approved and adopted mitigation plans. As a result, nearly every jurisdiction is eligible to apply for and, ultimately, receive federal/state dollars to implement mitigation projects. Therefore, the state has had to implement a process for the prioritization of these dollars and it has been an extremely successful process that will continue to be implemented in the future as disasters affect the state.

NCEM's Mitigation Branch currently participates in all UHMA programs—the disaster-based HMGP, as well as the non-disaster based PDM, FMA, RFC, and SRL programs. From Hurricanes Fran through Ophelia, the majority of UHMA funding was comprised by the HMGP. As the Branch completed projects in these disasters, the large majority of funding between FY08 and FY11 switched to non-disaster grant funding streams as well as small disasters including Tropical Storm Hanna, the 2008 Winter Storm, and Tropical Storm Nicole. This included the start of the RFC and SRL FEMA funding streams in FY08. Since 2008 North Carolina has regularly submitted non-disaster grant proposals for all programs.

Prioritization for non-disaster grants starts with the programmatic requirements for each of the non-disaster funding streams available in a given year and the priorities associated with particular funding sources, i.e. priorities are different for Flood Mitigation Assistance as compared to Earthquake Consortium Grants. The State Hazard Mitigation Officer also solicits formal and informal input from NCEM division field staff from our 15 Area Coordinators and 3 Branch Managers, the NCEM Director, our county and municipal EM partners. Outreach is conducted through face-to-face meetings and a Letter of Interest process with local governments. The Letter of Interest is a Request for Proposals from local governments citing requested project types and coordinating the properties requesting mitigation. Training and development of the LOI process are supported through field visits, Mitigation Opportunities Assessments, and public outreach meetings. The LOI is considered an official proposal signed by the local government and contains information that is the basis for establishing programmatic eligibility and conducting Benefit Cost Analysis. Once LOI's have been screened for eligibility and a Benefit Cost Analysis is complete, projects are then generally ranked in order from lowest cost to highest cost to touch the largest number of end users of funds.

Since 2011 (DR-1969 and DR-4019, and non-disaster programs), the unit's work flow has included both the HMGP, and non-disaster grant programs in order to address the goals and measures established in the 322 Plan. (For example, North Carolina pursues tornado safe rooms under the PDM program and mitigation measures for flood risk properties that are not principle places of residence through the non-disaster flood programs. For the HMGP, note that, per the 404 Admin Plan for Hurricane Irene, priority for mitigation is framed in terms of repetitive loss among the six cascading priorities for residential acquisition and elevation (Hurricane Irene 404 Admin Plan, p. 13, "Priorities.")

The Hazard Mitigation Branch expects that Benefit Cost Analysis will be the ultimate driver of future project development, regardless of whether or not a property is classified as Repetitive Loss or not. Repetitive Loss is factored into the 404 Admin Plan to rank project prioritization under the HMGP, and is a key underpinning of NCEM's participation in the RFC, SRL, and FMA programs. In sum, the Branch's participation in these programs is in itself a policy to address repetitive loss. A bottom-up Letter of Interest process driven by Benefit Cost Analysis—with Repetitive Loss factored into the ranking of properties within these funding streams—is the best course of action for flood mitigation outreach for the HM Branch under the UHMA programs.

One additional factor that played a part in recent project prioritization is based on the state's experience in Hurricane Irene. In the aftermath of this event, many homeowners whose homes were destroyed by Irene took up residence in FEMA's Temporary Housing Units (THUs) located on their own property. Staff at NCEM recognized that if these properties were going to eventually be bought out through the voluntary acquisition program, it would make sense to implement this buyout as quickly as possible to reduce the time citizens would have to spend in these THUs and the cost the federal government would incur from continued use of the THUs. Since acquisition of high risk properties is the Mitigation Branch's highest priority, the strategy of acquiring these properties was given additional emphasis and a high prioritization.

An article by the New Bern Sun Journal of NCEM's work with Pamlico County following Hurricane Irene is an example of *identification of ongoing opportunities*. Following Hurricane Irene's impact in August of 2011, Pamlico County and NCEM closely coordinated to identify residents who may be cost effective for acquisition and elevation who were devastated by Irene's storm surge. NCEM, FEMA, and Pamlico County conducted a joint outreach effort (internally referred to as a "Mitigation Disaster Recovery Center") that took intake of 355 Pamlico County residents and pre-screened them for Benefit Cost Analysis basic criteria. This coordinated outreach effort resulted in an "expedited" application being submitted to and awarded by FEMA to acquire 16 structures whose residents were displaced in Temporary Housing Units. This news article describes the process and effectiveness of this identification and technical assistance effort from the Subgrantee perspective.

B. Environmental and Benefit Cost Analysis

Requirement §201.5(b)(2)(iii)(B), **Preparing and submitting accurate environmental reviews and benefit-cost analyses.**

The Mitigation Branch of NCEM has on staff a Community Development Specialist who is designated the Environmental Specialist. This staff member is responsible for coordinating with the North Carolina Environmental Clearing House, the State Historic Preservation Officer, the NC Department of Transportation, FEMA and other relevant local, state and federal agencies in the completion of a thorough environmental review of all proposed projects for environmental and historic preservation compliance subject to the requirements of the National Environmental Policy Act of 1969, sections 9 and 10 of 44 CFR and other relevant laws, codes, rules, guidance and policies. Categorical Exclusions (CATEX) will be used where possible to expedite completion and approval of project applications. Since 2010, 100% of submitted applications have been supported by environmental reviews that have successfully passed the FEMA environmental review process resulting in an approved application.

North Carolina Emergency Management specialists perform a benefit cost analysis for each property requested to be considered in a project application. Historically, only one in five properties analyzed receives a benefit cost ration of 1:1 or greater. The adoption of the August 15, 2013 Roy E. Wright memo, which established lower bound criteria for benefit cost analysis of flood hazard acquisition and elevation projects will likely change the success rate in demonstrating cost effectiveness to four out of five properties. For properties that do not show an initial positive Benefit Cost ratio, North Carolina mitigation specialists monitor properties over time for changes that could have a positive affect such as property damage claims, or changes in flood maps or flood insurance studies and will perform an updated benefit cost analysis to re-qualify a property based on cost effectiveness for submission under a future funding opportunity. The relationship between State mitigation specialists and local program managers ensures property owners are being actively assessed for eligibility. Since 2010, almost all submitted applications both disaster and non-disaster programs have been deemed programmatically eligible based on the benefit cost analysis performed by NC mitigation specialists.

C. Quarterly Reports

Requirement §201.5(b)(2)(iii)(C), **Submitting complete and accurate quarterly progress and financial reports on time.**

NCEM has a long track record of consistently submitting complete and accurate quarterly reports and prior to required deadlines. Since 2010, the NCEM Mitigation Branch has been using and automated quarterly report system that pulls data directly from the Hazard Mitigation Track Project Tracker. Mitigation Specialists proof the pre-formatted quarterly report for accuracy and add any additional narrative comments as necessary. This process has reduced personnel preparation time of the quarterly report from several days to just hours. This system also makes managerial review a quicker process. Combined, the updated process saves time and significantly reduces the error rate from data entry. Since 2010 NC has submitted all program and fiscal quarterly reports within required timeframes.

- *See QPR Sample (E1 in attachments)*

D. Period of Performance

Requirement §201.5(b)(2)(iii)(D), **Completing HMGP and other mitigation grants within established performance periods.**

The table below summarizes all projects starting from 2009 to the present. The nine projects listed in funding stream PDM 2009 were completed within the established performance periods. An extension was requested and approved for one planning grant prior to the end of the period of performance for that specific project. NCEM currently has fifteen additional open funding streams with a combined total of 83 approved projects open and being implemented. HMGP 4019 is still awaiting awards for the remaining nine of 31 projects. All other projects are underway with individual scopes of work. Since 2010, North Carolina has consistently submitted mitigation grants within the established period of performance.

Table 4.3: HMGP and Non-disaster Grants Performance Periods

Funding Stream	Number of Projects	FEMA Initial Project Award	End Period of Performance	# of POP Extensions	Final Project Status
PDM 2009	9	6/14/2009	6/30/2013	1	Open but Complete
PDM 2010	5	9/21/2010	3/31/2014	0	Open and Implementing
LPDM 2010	1	09/27/2011	09/30/2014	0	Open and Implementing
PDM 2011	4	9/27/2011	3/31/2015	0	Open and Implementing
PDM 2012	3	8/7/2012	7/19/2016	0	Open and Implementing
FMA 2009	2	9/28/2009	9/30/2012	0	Open but Complete
FMA 2011	1	9/29/2011	9/30/2013	0	Open and Implementing
RFC 2009	3	9/11/2009	9/11/2012	0	Open but Complete
RFC 2011	2	2/29/2012	3/31/2015	0	Open and Implementing
SRL 2009	1	9/15/2009	9/30/2012	0	Open but Complete
SRL 2010	3	7/29/2010	6/30/2014	0	Open and Implementing
SRL 2011	1	4/5/2010	3/31/2015	0	Open and Implementing
DR-1871	13	02/02/2010	07/18/2016	0	Open and Implementing
DR-1942	2	3/19/2012	6/25/2015	0	Open and Implementing
DR-1969	11	12/7/2012	4/17/2016	0	Open and Implementing
DR-4019	31	4/30/2012	Three years from the last project awarded in the funding stream.	0	Open and Implementing

Further commentary and demonstration of North Carolina's capabilities may be found in the following part(s) of the State of North Carolina Hazard Mitigation Grant Program Administrative Plan:

- *DR 4019 404, Environmental and Floodplain Reviews, Section 7, p 7-11 (cf)*

V. Assessment of Mitigation Actions

Requirement §201.5(b)(2)(iv), A system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action.

North Carolina's long commitment to hazard mitigation is shown in its record of grant-funded planning, projects and other activity including participation in various work groups, advisory committees and councils. To date, funding and assistance has been provided to local governments for the acquisition of over 8,000 individual flood hazard properties, and for the elevation of over 900 individual properties.

With each disaster, the SOP for the Mitigation Branch of NCEM calls for the identification of impact areas, immediate collection of perishable data including extent of flooding or wind damage and location of high water marks as an aide to calculating the probable return frequency of the event. This information is laid over areas where mitigation efforts have been executed to establish what might have happened had the mitigation measure not been effected. In the case of flooding events, building-specific data (floor elevations, building value, contents value) and measured flood heights are run through FEMA's Flood BCA modules to establish via depth-damage curves, what sort of losses would have been expected had mitigation not taken place. While this methodology is labor intensive, requiring field work and surveying, and while it is most effective when actual mitigated sites are impacted a second time, execution of the methodology shows impressive results. A study along these lines in Windsor, NC, following Tropical Storm Hanna in September, 2008, demonstrated that in a neighborhood where a dozen homes had been acquired following Hurricane Floyd in September 1999 showed losses avoided totaling 78% of the actual project cost incurred in the original acquisition less than 10 years earlier.

A similar study was completed for parts of Pamlico County following the impact of Tropical Storm Irene (see attached losses avoided report). The Geospatial Technology Management Section of NCEM has location data for all past mitigation projects. Data for acquisition and elevation projects begun after Hurricane Isabel in 2003 includes before and after finished floor elevations for elevation projects and a best available data record of the FFE for all projects considered for acquisition. Because the data is available in our GIS data bank, the time consuming and labor intensive process of hand-calculating avoided losses can be somewhat automated.

Although a subsequent event is required to thoroughly measure the effectiveness of mitigation measures, through the use of GIS technology, NCEM has the capability of examining speculative losses avoided studies affected by over-laying modeled wind and flood impacts over map layers showing the location of mitigated and non-mitigated structures.

Mitigation measures involving provision of back-up power to critical public facilities are examined by a similar, but somewhat simpler methodology. During disaster events that result in power loss, critical public facilities provided with generators will be polled to determine the actual usage hours of the generators. Comparing this number to the operating costs of the entity, plus a continuity premium, will provide an indication of the value of services NOT lost due to loss of power. Comparing this figure to the project cost will give some indication of what percentage of the project cost is recouped for an event of given duration or frequency.

(*Please also refer to the two losses avoided documents, attached as E15*). Further commentary and demonstration of North Carolina's mitigation capabilities may be found in the following parts of the current 322 Plan:

- *322 Plan Section III Mitigation Strategy p 8-10 (cf)*
- *322 plan Section III Mitigation Strategy, Table III-1 p 13-54 (cf)*

VI. Effective Use of Mitigation Funding

Requirement §201.5(b)(3), Demonstration that the state effectively uses existing mitigation programs to achieve mitigation goals.

NCEM makes regular use of all FEMA Mitigation Programs, and also administers 100% state-funded mitigation activities as directed, on occasion, by the North Carolina General Assembly. (Please refer to information on page 19 of this document concerning the North Carolina Hurricane Recovery Acts of 1999 and 2005). As a regular participant in the HMGP, FMA, PDM and Earthquake Consortia Grant programs, NCEM seeks to identify and mitigate the hazards identified in the State 322 Plan. While the principle hazard identified is flooding, and consequently, the bulk of grants are issued to address flooding problems, NCEM also regularly solicits and prepares applications for projects designed to address wind hazards, (storm shutters for critical public facilities; tornado safe rooms for mobile home parks) earthquake hazards, (shatter resistant window films, non-structural mitigation measures including securing light fixtures, chemical storage cabinets, securing equipment against tipping and breakage for schools, hospitals and other critical public facilities) Flash Flood Warning Devices for high hazard areas, and loss of function due to any cause leading to power failure for critical public facilities through provision of back-up power or generator quick-connects.

VII. Commitment to a Comprehensive Mitigation Program

Requirement §201.5(b)(4), Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following:

A. Workshops and Training

Requirement §201.5(b)(4)**(i)** A commitment to support of local mitigation planning by providing workshops and training.

In addition to developing the State Hazard Mitigation Plan, NCDEM has been very proactive in promoting the creation and maintenance of local mitigation plans. To help local communities meet the requirements of the Disaster Mitigation Act of 2000 and N.C. Senate Bill 300, NCDEM has poured vast amounts of resources into the planning effort. Largely through the Hazard Mitigation Planning Initiative (HMPI) which was created in 1997 following Hurricane Fran, NCDEM has partnered with other State agencies, the private sector, and academia to provide technical assistance, planning guidance, hazard data, and funding to encourage local plan development statewide. This paradigm largely continues to this day. Since the previous 322 Plan Update in 2010, NCDEM has worked extensively with local jurisdictions statewide to coordinate the review and approval of local, state, and regional hazard mitigation plans. In tandem, NCDEM has worked with stakeholders in the Western, Central and Eastern parts of the state to secure grants for regionalization through 7% funds under the Hazard Mitigation Grant Program, as well as the Pre-Disaster Mitigation Program.

In 2006, NC Emergency Management realized that our success in fostering the development of local hazard mitigation plans put us well ahead of the national curve. In 2006, while FEMA was nationally concerned with bringing states and local governments into compliance with Disaster Mitigation Act of

2000 planning requirements, 182 individual local or county-level mitigation plans had been approved in North Carolina and some these plans would begin to expire in early 2008. By 2009, with no update, most of the state would NOT be covered by an approved and adopted plan. As FEMA was occupied with bringing others into initial compliance with the requirements of DMA 2K, little thought had been given to update guidance. NC took the lead by forming a partnership with the UNC School of City and Regional Planning to develop update guidance and processes so that local governments might stay in compliance with state and federal law in regard to mitigation planning.

In 2008-10, NCEM presented no fewer than 50 local plan update workshops around the state that allowed NCEM HM Planning Staff and partners from UNC Chapel Hill to train local plan owners on the update process, the new guidance and the use of the crosswalk to affect a local plan update (please see attached power point presentation.) From 2008 through 2012, NCEM worked diligently with local governments to assist with securing funding for plan updates and provided technical assistance and plan update reviews for all 182 plans. A concerted effort to consolidate local municipal plans into county-level multi-jurisdiction plans and MJ plans into multi-county regional plans has reduced the total case load from 182 plans to 120 plans. Additional consolidations over the current 5-year update cycle will reduce this number to an estimated 75 multi-jurisdictional and regional plans by 2019. As of October, 2013, all 100 counties in NC are covered by an approved and adopted Hazard Mitigation Plan *(please see map of existing and proposed regional plans – E11 in attachments).*

NCEM further demonstrates commitment to this approach through its mitigation funding priorities. Since 2008, priorities for all planning grants through HMGP and PDM support development of grants for update of existing or creation through consolidation of single jurisdiction plans into Multi-Jurisdictional or Regional Hazard Mitigation Plans. NCEM does not prioritize development of grant proposals to create or update single-jurisdiction plans.

In addition, NCEM budgets a portion of technical assistance and management cost grants to provide technical assistance and mitigation planning support to local governments.

(*Please refer to E17 in attachments for a Local Plan Update Guidance presentation from April 2008*). Further commentary and demonstration of North Carolina's mitigation capabilities may be found in the following parts of the current 322 Plan:

- *322 Plan Appendix B, Capability Assessment Executive Summary p 12 (see E13 in attachments)*

B. Legislative Initiatives, Councils, Public/Private Partnerships

Requirement §201.5(b)(4) (ii), A statewide program of hazard mitigation through the development or support of legislative initiatives, mitigation councils, formation of public/private partnerships, and/or other executive actions that promote hazard mitigation.

The State of North Carolina's commitment to a comprehensive mitigation program is demonstrated by the programs and strategies detailed throughout the 322 plan. A key component to this has been promoting and supporting key legislative initiatives, Mitigation Councils, and Public/Private Partnerships:

Legislative Initiatives

In the 2000 Session, the General Assembly overwhelmingly passed the Flood Hazard Prevention Act, which authorized local governments to prohibit landfills, hazardous waste management facilities, junkyards, and chemical storage facilities in the 100-year floodplain. This legislation enhances the

capabilities of local jurisdictions to regulate hazardous uses in their flood hazard areas, greatly reducing the risk that residents and the environment will be endangered by hazardous contaminates in flood waters.

In June of 2001, the General Assembly passed Senate Bill 300: An Act to Amend the Laws Regarding Emergency Management as Recommended by the Legislative Disaster Response and Recovery Commission. Among other provisions, this bill requires that local governments have an approved hazard mitigation plan in order to receive State public assistance funds (effective for State-declared disasters after November 1, 2004). Local governments are also required to participate in the National Flood Insurance Program (NFIP) in order to receive public assistance for damage related to flooding. This legislation clearly indicates that the General Assembly realizes the critical need to plan ahead for future hazard events at the local level.

In the wake of disaster events in North Carolina, citizens, elected officials and Emergency Management professionals have been reminded that our expertise in analyzing and addressing well known and well understood hazards is not license to stop investigating other potential hazards. It is incumbent upon those who have the knowledge and expertise to remain vigilant and to communicate concerns and issues to the Office of the Governor and the General Assembly. We must strive to ensure that our elected officials remain aware of mitigation challenges and opportunities as they arise around the state, and that they are supplied with accurate and complete qualitative and quantitative data on which to base executive and legislative decisions.

North Carolina General Statue 166A *(cf)* makes several references to support the development of a hazard mitigation program at the State level. The following sections are highlighted in the referenced document.

- 19.1 specifies the purpose (parts (1) and (4)) – page 3
- 19.3 (10) references authority for Hazard Risk Management to NCEM – page 5
- 19.3 (16) authority to implement Stafford Act programs – page 5
- 19.12 (5) planning requirements and standards authority – page 9
- 19.12 (14) coordinate risk analysis – page 10
- 166A (see E13 in attachments)

NC GS 13 A and NCAC 13: In 2007, following a serious fire at a Wake County, NC Hazardous Waste Processing Facility, the State Hazard Mitigation Officer was appointed to the Governor's Hazardous Material Task Force. As a result of recommendations made by this panel, North Carolina General Statute 13 A, Hazardous Waste Management, and NC Administrative Code 13 were amended via House Bill 36 and Senate Bill 190 "TO IMPROVE THE OVERSIGHT OF HAZARDOUS WASTE FACILITIES, AS RECOMMENDED BY THE GOVERNOR'S HAZARDOUS MATERIALS TASK FORCE." The bill made certain recommendations including a requirement for applicants for Hazardous Waste facility permits to seek input from local governments and emergency response agencies on their contingency plans for their facilities. Please refer to the E2 attachments, as well as the following NCDENR link for further guidance on hazardous waste: http://portal.ncdenr.org/web/wm/hw/rules/statelaws .

The amendment added a component to the flood hazard analysis used in siting permits: the earlier version of the code only considered whether a facility was "in" or "out" of the special flood hazard area—this guidance was amended to include a review of whether chemical storage, electronic controls, and other critical elements of the design were appropriately elevated when sited in the flood plain. The amendment also created a task force to review the NC State Building Code to address the needs and safety of the citizens of the state with respect to the regulation of facilities that store, treat, or dispose of hazardous materials. Coastal Area Management Act (CAMA) Land Use Plan updates for the 20 coastal counties upon request from North Carolina Department of Environment and Natural Resources (NCDENR). The review is designed to ensure that CAMA plans and Hazard Mitigation Plans are consistent. Also, the State

Hazard Mitigation Officer coordinates with The Division of Coastal Management (DCM) when it comes to working in designated CAMA counties. Planned projects in these counties are coordinated with DCM to ensure it does not conflict with an area of Environmental Concern according to CAMA.

National Accreditation

The Emergency Management Accreditation Program, or EMAP, is a voluntary review process for state and local emergency management programs. Accreditation is a means of demonstrating, through self-assessment, documentation and peer review, that a program meets national standards for emergency management programs.

EMAP was created by a group of national organizations to foster continuous improvement in emergency management capabilities. It provides emergency management programs the opportunity to be recognized for compliance with national standards, to demonstrate accountability, and to focus attention on areas and issues where resources are needed.

In 2008, North Carolina became the 11th state to earn national accreditation. Through its recent re-accreditation (October 2013) in the Emergency Management Assessment Program, the State of North Carolina successfully documented its robust statewide program of Hazard Mitigation. This was North Carolina's first reaccreditation (every 5 years) with EMAP. Accreditation recognizes the ability of state government to bring together personnel, resources, and communications from a variety of agencies and organizations in preparation for and in response to a disaster of any type.

To accomplish this recertification, after months of preparation, NCEM staff worked for a week in April 2013 with EMAP Assessors as they inspected the agency's programs and practices to ensure they were in compliance with 64 national standards in 18 categories. These categories range from Hazard Mitigation to Incident Management to Crisis Communications. At the conclusion of that week, the EMAP assessment team recommended full re-accreditation with zero deficiencies to the EMAP National Headquarters - a rare accomplishment.

This recommendation was voted on and approved by the national EMAP Commission. The Governor of North Carolina was officially notified on October 8, 2013 that North Carolina was granted full reaccreditation by the Emergency Management Accreditation Program. This accreditation represents a significant achievement.

Mitigation Councils

The State Hazard Mitigation Officer and various members of the Hazard Mitigation Branch staff serve on various panels, work groups and task forces related to Emergency Management and Hazard Mitigation. Examples of these groups include:

The State Hazard Mitigation Advisory Group meets annually to as part of the formal planning process for the 322 Plan maintenance process. The State Hazard Mitigation Advisory Group and members of the NCEM Hazard Mitigation Branch staff annually reviews each section of the existing risk assessment looking for substantial changes in risk conditions. Members of the HM Branch staff review individual risk assessments in local plan updates. Recognizing that an economic downturn impacted growth and development across the state and the nation, however, very little change was recognized as to the risks faced by the jurisdictions most vulnerable to damages and losses associated with hazard events. Albeit at a slower pace, we still saw some development in coastal hazard areas, but well-enforced codes and ordinances continued to mitigate some inherent risk. Also slow, but continued growth was recognized in the western part of the state. Efforts in the state legislature to implement a minimum set of codes and

ordinances for development of steep areas promised the greatest reduction in future hazards although this ordinance was ultimately not passed, though at a state level, several counties and municipalities have adopted local ordinances.

Efforts to prepare the 2013 update were again coordinated with the State Hazard Mitigation Advisory Group and the planning team in the NCEM Hazard Mitigation Branch. The HM planning team reviewed and revised each section of the Risk Assessment and worked together with the Geospatial and Technology Management Section of NCEM to revise the Vulnerability Assessment of the plan. There have been three major disaster declarations in North Carolina since the last update: DR4019-Hurricane Irene, DR1969-Severe Storms, Tornadoes and Flooding, and DR1942-Severe Storms, Flooding, and Straight-line Winds associated with the remnants of Tropical Storm Nicole; thus there was a need to revise the Risk Assessment and Vulnerability Assessment to record these events and address new vulnerability. The input from the State Hazard Mitigation Advisory Group was sought at the three annual meetings, held in 2011, 2012, and 2013.

Governor's South Atlantic Alliance (GSAA): The GSAA was formed in 2009 under the leadership of governors from North Carolina, South Carolina, Georgia and Florida. The Alliance is led by the four states in partnership with three federal agencies (National Oceanic and Atmospheric Administration/ U.S. Department of Commerce, U.S. Environmental Protection Agency, and U.S. Geological Survey/U.S. Department of the Interior). The mission of GSAA is to significantly increase regional collaboration among the South Atlantic States, with federal agency partners and other stakeholders to sustain and enhance the environmental (coastal/marine), natural resources, economic, public safety, social and national defenses mission of the respective states.

The Alliance has identified four priority issue areas that are of mutual importance to the sustainability of the Southeast region's resources. Key among these issues is the promotion of disaster-resilient communities. The Southeast U.S. region continues to experience significant weather related events that cause hardships for the economic, environmental and social well-being of residents. NCEM is working closely with other emergency responders and community planners to develop and implement strategies to minimize risks to the millions of dollars' worth of insured property and the 860,000 people that live in North Carolina's 20 coastal counties.

The Hazardous Materials Task Force (HMTF): The State Hazard Mitigation Officer (SHMO) serves as a member of the HMTF. It is the responsibility of the HMTF to address Emergency Planning Community Right-to-Know Act (EPCRA) requirements in the state. The HMTF also provides subject matter expert advice to the SHMO for the update and maintenance of the Technological Hazards Supplement to the 322 Plan, and provides advice on the chemical threat portions of the Threat and Hazard Identification and Risk Assessment (THIRA).

The NC Geological Survey Advisory Panel (NCGAP): The State Hazard Mitigation Officer serves as a member of the NCGSAP as a subject matter expert on the mitigation of geologic hazards including earthquakes, landslides and sink holes. NCGSAP's responsibility is to provide guidance to the Survey on allocation of resources, use of data collected and identification of mapping and other data needs. The SHMO coordinates with the NCGS on the development of a series of slide hazard maps for the mountainous portions of the state http://portal.ncdenr.org/web/lr/landslides-information. Four of a planned series of 20 county-level Slope Stability Index Maps were completed prior to withdrawal of funding by the general assembly. Wide interest in the project among county emergency responders and planners, as well as among builders, developers and property owners is evidenced by the 60 inquiries on the subject that were responded to by the State Geologist in 2013.

FEMA External Users Workgroup: The State Hazard Mitigation Officer served as a charter member of the FEMA External Users Workgroup from 2008-2011. The group consisted of 12 State Hazard Mitigation Officers and other subject matter experts who convened regularly to advise FEMA Hazard Mitigation Staff on issues concerning mitigation program development, funding and implementation. The principal success of the group was the creation of Unified Hazard Mitigation Assistance Guidance for all HM funding programs, and the streamlining of processes for the review and obligation of mitigation funding requests.

Public/Private Partnerships

As part of its robust mitigation program, NCEM and its mitigation Sub applicants and Subgrantees frequently look for unique public/private partnerships to further its mitigation mission. The City of Raleigh is currently implementing a PDM FY12 Tornado Saferoom project. The City of Raleigh, Parrish Manor Manufactured Housing Community, and the 501c3 Parrish Manor-Nessie Foundation are collaborating in this unique public-private partnership to execute this high-impact mitigation project. This project is a case study that illustrates how the non-profit sector, private sector, and public sector can collaborate to deliver high-impact mitigation solutions.

The NCEM staff has cultivated a partnership with the North Carolina Emergency Management Association (NCEMA). The NCEMA is the professional organization for Emergency Managers in North Carolina. Each year the Association hosts a spring and a fall conference where participants come and learn more about what is happening in the field of Emergency Management and also build relationships with their peers. These conferences have provided a convenient mechanism for reaching Emergency Management professionals in the field.

In recent years, NCEM staff made presentations at the spring and fall conferences to include such topics as:

- **Hazard Mitigation Planning**: This workshop introduced FEMA's new Planning Tool and Guidance required for any plan submitted to FEMA after October 1. 2012. (Spring 2012)

- **Disaster Recovery Update**: This presentation provided an overview of new federal disaster recovery policies; which will impact recovery activities at all levels, from local government to state agencies. (Fall 2013)

- **Introduction to GIS Impact Products**: During emergency events and disaster situations; the Office of Geospatial and Technology Management of the North Carolina Division of Emergency Management produces a series of demographic and locational analysis products designed to be of assistance with the ongoing event. This presentation discussed these situational products. (Fall 2013)

Further commentary and demonstration of North Carolina's mitigation capabilities may be found in the following parts of the current 322 Plan:

- *322 Plan Appendix B, Capability Assessment Executive Summary p 11-12 (E12 in attachments)*

C. Non-Federal Match

Requirement §201.5(b)(4) (iii), The State provides a portion of non-federal match for HMGP and other mitigation projects.

Since 1995, the State of North Carolina has paid the entire 25% non-federal share for HMGP. Since 2010, the State of North Carolina has received HMGP declarations for HMGP 1942 (Tropical Storm Nicole); HMGP 1969 (2011 Tornadoes and Severe Flooding); HMGP 4019 (Hurricane Irene); and HMGP 4146 (severe flooding). The State of North Carolina has traditionally supplied the entire 25% non-federal match for HMGP projects in terms of the 5% Initiative, 7% Planning set-aside, and brick-and-mortar projects. The amount of match supplied per HMGP Disaster is provided below:

- HMGP 1942 - $143,542.00
- HMGP 1969 - $1,233,379.00
- HMGP 4019 - $6,584,488.75
- HMGP 4146 - $2,052,000.00 * Preliminary Estimate, State Share for HMGP not confirmed yet.

Total State Share Committed since 2010: $10,013,409.75

Additionally, administration of non-disaster Unified Hazard Mitigation Assistance programs is supported by the State of North Carolina through the execution of Management Cost projects. While local governments are fully responsible for the full 25% non-federal share of awarded project and planning grants, State of North Carolina employees (as a percentage of FTE) support the 25% non-federal share of Management Cost projects used for the states to effectively administer these grants. Specifically, the State Hazard Mitigation Officer, the Hazard Mitigation Supervisor for Grants Management, and a Hazard Mitigation Planner constitute an in-kind salary match for UHMA projects in the Pre-Disaster Mitigation, Flood Mitigation Assistance, and Severe Repetitive Loss funding streams. (Repetitive Flood Claims has no non-federal match required).

The Hurricane Recovery Acts of 1999 and 2005

HRA 1999: The flooding associated with Hurricane Floyd was unprecedented in the history of North Carolina. Hurricane Dennis had just made landfall in Eastern North Carolina in August, dumping over 12 inches of rain in Eastern North Carolina. A few weeks later, Hurricane Floyd brought 15 inches of rain to an area already saturated by Dennis and by the heavy rainfall prior to Floyd making landfall. As a result, this disaster met or exceeded the 500-year flood for many communities.

HRA 1999 authorized more than $836 million in additional State funds to help address broad needs that were unmet by existing federal and State funds. The following amounts were designated for management by the Hazard Mitigation Section of the NC Division of Emergency Management.

- **FEMA Match** $232,400,000 non-recurring funds to pay the non-federal portion of FEMA Hazard Mitigation Grant Program (HMGP).

- **Crisis Housing Assistance:** $350,180,000 provided for Direct Housing Assistance to individuals($287.42 M), support to local governments for infrastructure repairs ($41.69 M), loans for pre-development activities for construction of affordable housing ($10.00 M) , and housing counselor and recovery office administration ($11.07 M).

HRA 2005: The Hurricane Recovery Act of 2005, authorized by NC Senate Bill 7, Session Law 2005-1, March 2005 provides $247,541,447 to pay for activities associated with recovery from the Hurricanes that impacted North Carolina during the 2004 Hurricane Season. The Report of the House Appropriations Committee on The Hurricane Recovery Act of 2005 dated February 17, 2005 identified various state agencies and recommends budgets for specific activities.

The following amounts were designated for management by the Hazard Mitigation Section of the NC Division of Emergency Management.

- **FEMA Match** $16,900,000 non-recurring funds to pay the non-federal portion of FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and Flood Mitigation Assistance Program (FMA) grants awarded for various projects designed to reduce the future impacts of natural hazards in North Carolina.

- **Infrastructure Grants to Local Governments** $6,583,928 provided for grants to local governments to support the relocation of residents to areas outside of the 100-year flood plain. Eligible infrastructure includes water, sewer, sidewalks and storm drainage.

- **Other Grants to Local Governments** $34,100,000 provided to fund repairs and renovations to storm-damaged facilities and infrastructure supplementing Public Assistance Funds provided by FEMA.

D. Models for Design and Construction Standards

Requirement §201.5(b)(4) (iv), To the extent allowable by State law, require or encourage local governments to use current or national models for setting standards that addresses hazards as a basis for design and construction standards.

North Carolina has integrated the use of model building codes and standards that address natural hazards into its program as very important hazard mitigation tools. The adoption and effective enforcement of building codes and standards enable local governments to have policies, programs and capabilities designed to help mitigate the impact of hazard events in their communities.

North Carolina Model Flood Damage Prevention Ordinances: The Flood Prevention Ordinances models for both the Coastal and non-Coastal areas, were developed virtually as a reiteration of 44 Code of Federal Regulations 60.3 (Flood plain management criteria for flood-prone areas). Essentially, these were provided to assist communities in developing an ordinance that will comply with the minimum criteria of the National Flood Insurance Program (NFIP) [44 CFR 60.3(d) and (e)] and NC Session Law 2000-150, Senate Bill 1341 [NCGS 143.-215.51-.61]. This program is managed by the Geospatial and Technology Management Section (GTM) of North Carolina's Emergency Management Division.

The North Carolina models have been revised to meet or exceed the NFIP minimum requirements for communities with identified Base Flood Elevation data (BFEs) and Floodway data as well as Coastal High Hazard Areas. It is not intended that these models, if adopted, will serve all of a community's needs as related to floodplain management, land use, or zoning. Communities are encouraged to evaluate and adopt standards that are more restrictive than the minimum NFIP regulations. GTM staff recommends that the community's attorney review the model ordinance and any proposed changes. Prior to adoption, communities are also strongly encouraged to submit a draft copy to NC Floodplain Management for review, so that the adoption will have certainty of FEMA approval).

North Carolina State Building Codes: The 2012 version of the North Carolina State Building Code (SBC) includes flood-resistant design and construction standards for both residential and nonresidential construction. These standards must be enforced by local governments regardless of whether they have already adopted flood prevention ordinances that meet the minimum standards of the federal flood insurance program (FFIP). The additional one-foot freeboard requirement of the SBC does not appear to conflict with the minimum standards used to qualify North Carolina local governments for the federal program (the SBC simply sets a higher standard).

In addition, as part of its compliance with the Emergency Management Accreditation Program (EMAP), the Mitigation Program provides technical assistance consistent with the scope of its program such as implementing building codes, fire codes, and land use ordinances. A Fact Sheet for outreach on NC Building Codes has been created for the purpose of public dissemination and response to public inquiries. In addition, as part of its non-disaster UHMA grants development process, NCEM requires that all Subapplicants complete the "Evaluation Information" sections of their subgrants, which has key information on Building Codes and Standards. Concurrent with that effort, as part of its project development efforts of PDM and FMA FY13, the NCEM Hazard Mitigation Branch ensured that all elevation retrofits were pledged to be designed to engineering standards ASCE/SEI 24-05, all wind shutter retrofits to P-804, and with previously submitted UHMA tornado safe room projects, that saferooms are designed to standard FEMA P-320 or FEMA P-804.

Coastal Area Management Act (CAMA): The Hazard Mitigation Branch has a well-established working relationship with the North Carolina Division of Coastal Management (DCM), the agency that oversees development and implementation of local land use plans for the 20 coastal counties, as mandated by the North Carolina Coastal Area Management Act (CAMA). The State Hazard Mitigation Officer provides courtesy reviews of Coastal Area Management Act land use plan updates for the 20 coastal counties upon request from the North Carolina Department of Environment and Natural Resources. This review is designed to ensure that requirements imposed by CAMA for the hazard mitigation elements of the coastal land use plans are consistent with the requirements for local mitigation plans imposed by the State and FEMA. The State Hazard Mitigation Officer participates in the quarterly Coastal Resources Commission (the State's guiding body for participation in CAMA) when invited as a subject matter expert.

To help eliminate project delays, the State Hazard Mitigation Branch also partners as appropriate with the Division of Coastal Management when it comes to working in designated CAMA. For planned projects in these counties, NCEM staff coordinates with DCM to ensure that mitigation project work does not cause any environmental concerns as defined by CAMA.

E. Critical Use Buildings Mitigation Strategy

Requirement §201.5(b)(4) (v), A comprehensive, multi-year plan to mitigate risks for buildings identified as necessary for post-disaster recovery operations.

North Carolina's comprehensive strategy to mitigate risks for buildings identified as necessary for post disaster response and recovery operations has several components and is still in the process of evolving.

<u>iRISK Risk Management Tool</u>

In mid-September 2013, the NC Emergency Management Division (NCEM) Director announced a re-organization within the Division which designated the Geospatial and Technology Management (GTM) section as the lead Section within NCEM for the coordination of information and resources for hazard risk

management. This move also transferred the Hazard Mitigation Planning unit and State Hazard Mitigation Officer to the GTM section to support this new approach. This move will integrate a powerful hazard mitigation planning component with a highly qualified technical analysis group that should move North Carolina to the next level in hazard risk management.

In the future, how data collection, risk assessments, vulnerability assessments, and hazard mitigation plans are developed and maintained will be significantly different in North Carolina. The Geospatial Technology Management section (GTM) is developing the Integrated Hazard Risk Management (IHRM) risk assessment tool known as iRISK which can be used by local communities for their hazard mitigation plan updates and when looking for potential projects. Furthermore this tool will help State Hazard Mitigation Staff target communities for outreach and communicate statewide risk assessment and areas of vulnerability. The IHRM tool will be used for risk assessment in the future. It is a Division goal to use the IHRM tool (iRISK) to identify those critical public facilities mentioned in FEMA- approved local hazard mitigation plans that are exposed to natural hazards and will work with communities as they update their plans to conduct a vulnerability assessment for the identified facilities.

HMGP 5% Initiative and FEMA Grants

In recent years, North Carolina has taken a number of steps to reduce the risks facing critical public facilities. The loss of power to critical public facilities as a result of natural or man-made disasters has been identified as an important risk faced by these facilities. NCEM has used HMGP grants since 1996, and in a committed and organized fashion since 2002 to fund generators or wiring for generators at local Emergency Operations Centers, Police Stations, EMS/Rescue Squad Bases, emergency shelters and water treatment plants. The funding of backup generators is currently the State's highest priority for Five Percent Initiative funding.

HMGP grants have also funded the retrofitting of critical public facilities in communities subject to high wind hazards to better withstand high winds by installing storm shutters and impact resistant glass or shatter-resistant window films. Acquisition funds have been used to remove critical public facilities including schools, water treatment facilities, an emergency operations center, a National Guard Armory and a volunteer fire station out of flood hazard areas.

Table 7.1: HMGP 5% Initiative Projects

Project Title	Total Funds	Details
HMGP 1448	$511,118	Installed 19 generators at various EOC/EMS/Police/Fire Stations.
HMGP 1608	$28,479	Installed generator NCEM Eastern Branch Office
HMGP 1801	$193,468	Storm Shutter Retro-Fit 2 EOCs
HMGP 1871	$103,659	Installed 6 generators at EOC's
HMGP 1969	$38,934	Installed generator transfer switch at Greene County School
LPDM	$293,333	Retro-fit & generator McDowell County Hospital
ECG 2010	$20,000	Non-structural Retro-fits 4 EOC's
ECG 2011	$22,000	Non-structural Retro-fit 4 EOC's
HMGP 4019	$909,364	Install generators 6 & Auxiliary power source
TOTAL:	$2,120,355	-

Section 406 and 404 Joint Funding

NCEM Management recognizes the importance of ensuring that critical public facilities are maintained and available in the event of a disaster. Often such projects are very costly and may require more than one funding source. Although Section 406 and Section 404 mitigation funding are distinct, sometimes a combination of the two maybe appropriate, where Section 406 hazard mitigation funding is used to provide protection to the parts of the facility that were damaged and Section 404 hazard mitigation funding is used to provide protection to the undamaged parts of the facility.

NCEM recognizes the potential for utilizing both programs to address community needs. In the 2013-2015 NCEM Recovery Section Action Plan, the Hazard Mitigation staff has as a stated goal (to) "Develop more resilient citizens, local governments, and state agencies through community planning, risk reduction techniques, local education programs, and state and federal grants that reduce the effect on impacted disaster victims."

The strategy for attaining this goal is to build resilience through integrated 406/404 Mitigation Operations. An initial task will be to coordinate with FEMA subject matter experts and develop a 406 Training Curriculum in order to integrate it into Hazard Mitigation and Public Assistance outreach both prior to and during disaster operations.

F. Post Disaster Recovery Strategy

Requirement §201.5(b)(4) (vi), A comprehensive description of how the State integrates mitigation into its post disaster recovery.

North Carolina's commitment to integrating mitigation into post-disaster recovery is most recently illustrated by a recent reorganization of its Hazard Mitigation Operations. While Risk Assessment and Planning activities are under the purview of the State Hazard Mitigation Officer and a team of planners under NCEM's Geospatial and Technology Management Section, Project Development, Implementation, and Closeout activities are coordinated by a Hazard Mitigation Grants Management Team in NCEM's Recovery Section.

The development of a robust Mitigation Team within the Recovery structure serves many purposes. Mitigation Specialists are cross-trained to support Individual Assistance and Public Assistance during post-disaster Recovery operations. As part of this effort, these cross-trained, Mitigation Specialists also support mitigation-specific damage assessment related activities that can lead to expedited HMGP project applications in the impacted areas.

Expedited HMGP activities directly support a Community's recovery efforts. For example, during Hurricane Irene (HMGP 4019), Pamlico County experienced significant housing and displacement issues in the aftermath of devastating storm surge. An integrated team of NCEM, County, and FEMA-JFO staff formed the first ever (for North Carolina) "Mitigation Disaster Recovery Center", which processed over 300 impacted families with the sole purpose of expediting a BCA review for acquisition and elevation using v4.8 of the FEMA BCA software. As a result, a project to acquire 16 properties whose owners were displaced into FEMA Temporary Housing Units was funded eight months after landfall—a record fast approval for NCEM, possibly FEMA Region IV and the nation which garnered local media attention and praise. Over 100 other structures were selected for acquisition and elevation under HMGP 4019 in Pamlico County— an effort that will not only make this vulnerable location more disaster resilient, but will also support the County's ongoing Recovery from Irene.

Operations similar to the Mitigation Disaster Recovery Center will continue under the newly-reorganized Hazard Mitigation team in the Recovery Section. This Team will have purview over all Unified Hazard Mitigation Assistance (HMGP, PDM, FMA, Earthquake Reduction, and legacy RFC and SRL projects). In addition, the new team will closely coordinate with Public Assistance on 406 Mitigation activities, and Individual Assistance (IA) to coordinate any instances where IA-needs interface with potentially expedited HMGP or non-disaster UHMA projects. The team also expects to have a consistent presence in Joint Field Offices to support the rapid development of eligible mitigation projects.

This commitment to integrating Hazard Mitigation into post-disaster Recovery Operations is fully consistent with the post-Hurricane Sandy release of the FY13 Unified Hazard Mitigation Guidance, with its commitment to "front loading" and producing FEMA-approved projects earlier in the grants development life cycle. It also is fully consistent with the October 8, 2013 FEMA policy towards Benefit-Cost Analysis that commits to acquisition and elevation in flood zones if the properties meet certain cost criteria (i.e. $276,000 for acquisition or less or $175,000 for elevation or less).

Finally, it must be pointed out that, given North Carolina's consistent disaster-risk, Mitigation efforts are a consistent boon towards post-Disaster Recovery efforts. For example, the continued implementation ~200 acquisition and elevation projects underway with funding under HMGP 1969 and HMGP 4019 in eastern North Carolina would be a pillar any post-disaster recovery effort in that region should hurricane or severe flood event be experienced.

Table 7.2: References

Referenced in Document (Appendix E.)	Page #
HM Project Tracker	13
Losses Avoided Process	14, 15
Draft Recovery Plan	6
NCGS 166A	18
Local Plan Update Guidance	17, 20
322 Approval Letter	2, 3, 7, 8, 10, 15, 16, 17, 20, 21, 22

Table 7.3: Tables

Referenced Tables	Page #
Table 2.1	6
Table 4.1	9, 10
Table 4.2	10
Table 4.3	13, 14
Table 7.1	27

Table 7.4: Attachments

Attachments to Appendix E.	Attachment Reference
UHMA QPRS 103013	**E1.** NCEM_HM_QPR Q3_2013
NCGS and NCC RE HAZ MAT (Please also refer to below NCDENR link): http://portal.ncdenr.org/web/wm/hw/rules/statelaws	**E2.** General 0101
	E2. General Program Requirements 0105
	E2. Land Disposal Restrictions 0112
	E2. Hazardous Waste Permit Program 0113
	E2. Standards for Hazardous Waste (Treatment, Storage, etc.) 0109
	E2. Standards for Management of Specific Hazardous Waste, etc. 0111
	E2. Special Purpose Commercial Hazardous Waste Facility 0116
404 PLAN	**E3.** DR 4019 404 Administrative Plan
UHMA and HMGP Submission Rosters	**E4, E5.** NCEM HMGP Irene Submission Roster with Property BCAs
	E4, E5. NCEM UHMA 2012 Submission Roster
Windsor Losses Avoided Study	**E6.** Windsor Losses Avoided Presentation
Cavalier Apartments Mitigation Success Story	**E7.** Cavalier Apartments Mitigation Success Story
NOFAs for Irene & UHMA 2013	**E8.** UHMA 2013 NOFA
Letters of Interest for Irene and UHMA 2013	**E9.** UHMA FY 13 – Letter of Interest
Hazard Mitigation Project Tracker	**E10.** Hazard Mitigation Project Tracker

Map of Existing and Proposed Regional Plans	**E11.** North Carolina Expiration Status Map 11-01-13
	E11. North Carolina Status Map 11-01-13
322 Plan Appendix B, Capability Assessment Executive Summary	**E12.** (See p 13)
NC 166 A	**E13.** NC_166A_Mitigation
North Carolina Emergency Support Functions (NCESF) 14 (Recovery)	**E14.** North Carolina Disaster Recovery Plan
Losses Avoided Documents	**E15.** Losses Avoided using HWM Process
	E15. Losses Avoided-Windsor
FEMA North Carolina Standard State Plan APP Letter 10-27-13	**E16.** FEMA North Carolina Standard Plan APP Letter
April 2008 Local Plan Update Guidance.HMPI.	**E17.** April 2008 Local Plan Update Guidance