Hurricane Florence Recovery Recommendations

Governor Roy Cooper

Building Communities Stronger and Smarter

Based on Preliminary Damage and Needs Assessment

October 10, 2018

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR

ROY COOPER

GOVERNOR

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To My Fellow North Carolinians:

Hurricane Florence devastated parts of our state on a scale we have never seen but we must prepare to see again. After an unprecedented deluge of rain and storm surge, North Carolina is left with almost $13 billion in damage.

The impact was like the damage of Hurricane Matthew in 2016 and Hurricane Floyd in 1999 put together. North Carolina lost 40 lives as a result of the storm. People have been displaced, businesses have been ruined, farms have been flooded.

But from this devastation we must seize the opportunity to rebuild stronger, and smarter. We can repair the damage with more resilient buildings, roads and homes. We can help move people and their belongings from harm's way. We can make sure those who live and do business along our rivers are protected from flood waters.

To succeed we need to attack the recovery just as we did the storm response: By working together, by leveraging federal, state and local partnerships, and by learning lessons from past disasters to prevent future ones.

Our future success will depend on the measures we take now. Here you will find the beginnings of a plan to rebuild our state and our future.

- Repairing our highways and interstates in ways that are resilient and safe, supporting our thriving economy and tourism industry.
- Building more affordable homes in safe areas across North Carolina.
- Reviving businesses that lost workers, income and stock with forgivable loans to get people back to work.
- Expanding a Recovery and Resiliency Office that will coordinate efficient state and federal financial assistance for housing, infrastructure and recovery.
- Helping farmers whose harvest-time crops were ruined, and providing incentives for hog farms to move to higher ground and convert to better technology.
- Ensuring medical help and mental health treatment get to those suffering the devastating after-effects of storm damage and uncertainty.

People who continue to get hit by floods wonder if they will survive. We can and will, and the homes, farms, churches, schools and businesses that make up their communities can rebound if we set the right priorities.

I am proud of the people of our state who work together to survive and overcome disasters. Now it is our job to work with them to build a stronger North Carolina.

Roy Cooper

Roy Cooper

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Table of Contents

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Executive Summary

In September 2018, Hurricane Florence brought high winds, dangerous storm surge and record rainfall that caused historic flooding throughout North Carolina. At its peak, Hurricane Florence was a Category 4 storm as wide as the entire state with winds reaching 140 mph. The storm hovered over North Carolina for six days, inflicting even higher levels of rainfall, storm surge, and flooding than Hurricane Matthew only two years prior.

This deadly storm has left a lasting impact on families and neighborhoods across our state, resulting in 40 confirmed fatalities. Property damage and power outages were widespread, cutting power to over a million people and forcing tens of thousands of families to take refuge in emergency shelters. While the impacts of Hurricane Florence were felt across the state, those who live in the southeast bore the brunt of the storm. Twenty-eight counties have been designated by FEMA for federal disaster assistance.[1] An estimated 2.6 million people, or one in four North Carolinians, live in one of the designated counties. [2]

Preliminary impact estimates approach $13 billion in damages across the state. This is over two times the $4.8 billion physical and economic cost of Hurricane Matthew in 2016. While the storm affected nearly every aspect of life in Eastern North Carolina, three categories drive approximately 80% of the direct and indirect damage estimates: (1) Business, (2) Housing and (3) Agriculture:

- **Business**: The impact on businesses and non-profits in North Carolina has also been significant, currently estimated at $3.9 billion. Over 3,800 private-sector business and nonprofit properties incurred water damage; more than 49,000 incurred wind damages. The ripple effect of this impact is immense. Hurricane related interruption results in lost revenue for the businesses and lost wages and ancillary benefits for employees, both of which can lead to substantial knock-on effects to local economies and businesses, exacerbating the impact.
- **Housing**: Current estimates show that approximately one million households or 26% of North Carolina households have been affected by the storm resulting in a preliminary impact estimate of $3.4 billion. While single and multi-family dwellings drive a significant portion of those costs, Affordable, Temporary, and Supporting Housing damages are also substantial and could continue to grow as the recovery continues.
- **Agriculture**: Florence has also had devastating effects on North Carolina's agriculture industry, causing large scale loss of crops and livestock with impact estimated at upwards of $2.4 billion. Among other elements, this figure includes $1.1 billion in crop, livestock and commodity losses and $117.7 in farm buildings, equipment, and infrastructure losses.

In terms of sources of funding, initial estimates indicate at least $2.3 billion of potential federal aid (majority in the CDBG-DR and FEMA funds). While private insurance coverage is difficult to estimate at this early stage, high-level estimates suggest $3.3 billion in private coverage. That leaves a significant gap of $7.1 billion which will need to be met by a combination of additional federal, private, and state aid.

[1] The 28 counties FEMA designated by 10/8/2018 for individual assistance are: Beaufort, Bladen, Brunswick, Carteret, Columbus, Craven, Cumberland, Duplin, Greene, Harnett, Hoke, Hyde, Johnston, Jones, Lee, Lenoir, Moore, New Hanover, Onslow, Pamlico, Pender, Pitt, Richmond, Robeson, Sampson, Scotland, Wayne, and Wilson.
Another 13 counties are currently under review by FEMA as of 10/8/18

[2] NC OSBM, Certified Population Estimates, Vintage 2017.

Summary of Preliminary Damage and Needs Estimates

Preliminary Total Damage and Needs Assessment Costs (Millions)					
Category	**Direct[1]**	**Indirect/ Induced[2]**	**Subtotal**	**Resiliency efforts**	**Total impact**
Business	$2,610	$1,274	**$3,884**	$20	**$3,904**
Housing	$3,181	$0	**$3,181**	$291	**$3,472**
Agriculture	$1,332	$1,023	**$2,355**	$75	**$2,430**
Utilities, Water and Sewer	$791	$0	**$791**	$25	**$816**
Natural resources	$409	$0	**$409**	$145	**$554**
Government Property and Revenue	$332	$69	**$401**	$5	**$406**
Transportation	$378	$7	**$385**	$50	**$435**
Education	$269	$28	**$297**	$0	**$297**
Health and Human services	$192	$40	**$233**	$0	**$233**
Recovery operations	$194	$0	**$194**	$0	**$194**
Total recovery costs	**$9,690**	**$2,441**	**$12,130**	**$611**	**$12,741**

1. *Direct effects* are the results of changes in spending and investment by businesses and organizations in a given region, including money spent to pay for salaries, supplies, raw materials, and operating expenses.

2. *Indirect effects* are the results of business-to-business transactions within a given region indirectly caused by the direct effects, such as changes in spending on business supplies or product components. *Induced effects* are the results of changes in personal income caused by direct and indirect effects. Businesses experiencing changes in revenue from the direct and indirect effects will subsequently alter payroll expenditures (e.g., by hiring more employees, increasing payroll hours, raising salaries, etc.). Households will, in turn, change amounts spent at local businesses. The induced effect is a measure of the resulting change in purchases by households from businesses within a given region.

Summary of Preliminary Damage Estimates (cont.)

Preliminary Funding Assessment (Billions)					
	Current expected funding level				
Total impact	**Private**	**Federal**	**Unmet impact**	**Additional Federal Request**	**Remaining unmet impact**
$12.7	$3.3	$2.3	$7.1	$3.4	$3.7

Governor Cooper's Hurricane Florence State Recovery and Resiliency Plan	
Total recommendation	**Initial down payment**
$1.5 billion	$750 million

Historical Comparison of Florence to other Storms

Measure	Florence	Matthew	Floyd
Total Damage	$12.8 billion	$4.8 billion	$7.0-$9.4 billion (inflation adjusted)
FEMA Individual Assistance applications	158,800 (anticipated)	82,000	87,000
Inches of Rain	25-35	18-20	17-20
Storm Surge (ft.)	10	6	9
Fatalities	40	28	51
Strongest wind (mph)	90	80	100
Duration (days)	6	2	4

Business

Addresses physical damage and economic losses for non-agricultural businesses

1. Summary

The following is documentation of the methodology used to derive a preliminary estimate for non-agriculture business and non-profit losses due to Hurricane Florence.

Preliminary estimates used flood mapping to identify affected private, non-residential structures to estimate structural damages and to model the disruption to the economy. This analysis leverages North Carolina Emergency Management (NCEM) and Bureau of Economic Analysis (BEA) data. The preliminary estimate for total impact is $3.9 billion—of this, $2.6 billion is the direct impact and $1.3 billion is the secondary impact (indirect and induced). Based on preliminary data, we expect $1 billion to be covered by federal and private sources of funding, resulting in an unmet non-agriculture business and non-profit impact of $2.9 billion. There is an opportunity to close the unmet need gap by providing loans and grants to businesses and to increase resiliency by investing in economic development programs.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Real estate and equipment	$754.2	$0.0	**$754.2**	$205.1	$103.7	**$445.4**
Economic loss	$1,855.7	$1,273.9	**$3,129.6**	$0.0	$742.3	**$2,387.3**
Subtotal	**$2,609.9**	**$1,273.9**	**$3,883.8**	**$205.1**	**$846.0**	**$2,832.7**
Resiliency efforts	$0.0	$0.0	**$20.0**	$0.0	$0.0	**$20.0**
Total	**$2,609.9**	**$1,273.9**	**$3,903.8**	**$205.1**	**$846.0**	**$2,852.7**

2. Scope

Losses in scope for the business and non-profit estimates include:

- Real estate and equipment damage, and
- Business-disruption effects.

The estimates of damages to structures do not include agricultural enterprises and hospitals/clinics – these estimates are included in other sections, but include churches and temporary lodgings (i.e. hotels). The business disruption loss estimate

covers the whole of the state's economy, except for the farming and fishing industries (those losses are covered in the Agriculture section) and government (losses to government entities are covered in the Government Property and Revenue section).

3. Methodology

NCEM estimated that a total of 3,800 private-sector business and nonprofit properties incurred water damage and more than 49,000 incurred wind damages. These estimates represent $754.2 million in total damage to the structures and their contents.

The estimates include damages from the coastal storm surge, flooding from rivers, and wind.

- *Storm surge:* NCEM used national models to create a GIS layer of the storm surge. NCEM compared the GIS layer against the elevation of the structures' first floor to determine the depth of flooding. Then, NCEM translated the flood depth into damage estimates by relying on Army Corps of Engineers (USACE) formulas and on estimated replacement values (based on property tax value) in NCEM's statewide database of buildings. The estimate for the number of buildings affected by the storm surge only includes primary structures; the replacement values include the building and its contents.

- *River flooding:* In a similar process as storm surge analysis, a GIS layer was constructed for riverine flooding. This layer combines model calculations of precipitation accumulation with actual river gage and high-water observations. The riverine flooding GIS layer allowed NCEM to estimate the flood depth sustained by structures, and damages were once again determined from NCEM's replacement values.

- *Wind:* NCEM used information on Hurricane Florence wind speeds from the National Weather Service. The agency used NCEM Risk Management tools to model the wind speed effect on structures and to derive a wind damage estimate. Structures for wind damage include minor buildings as well, such as detached garages and sheds.

- *Insurance levels:* NCEM's statewide building database includes data on NFIP insurance coverage for each building. The Office of State Budget and Management (OSBM) relied on this data to estimate the share of flood-affected buildings that were un- and under-insured and the aggregate insurance gap between estimated damages and NFIP coverage.

- *Flood mapping:* It is very likely that the estimates for structural damages presented above are underestimated. NCEM will continue to refine estimates as they receive more information.

Business Disruption: The total nonfarm business-disruption loss to North Carolina from Hurricane Florence is estimated at $3.13 billion—inclusive of the direct and

secondary (indirect and induced) effects. In terms of value-added GDP, this amounts to $1.53 billion, or about .3% of annual GDP.

- All 100 counties were grouped into 5 categories of impact – critical, high, moderate, low, and minimal. Criteria for designation include: FEMA designation for individual disaster assistance, proportion of county's properties damaged, evacuations, and school closures.
- Each category had its own set of assumptions around decreased economic output (see table in Assumptions below).
- The disruptions assumptions were applied to the daily employee compensation figures in each county to determine the total direct impact on compensation.
- Compensation losses were modeled in an economic modeling platform to calculate decreases in economic output and secondary effects. Models were run separately for the major disaster area (coastal counties in the critical and high impact categories) and emergency area (rest of the counties). These secondary effects include changes to business-to-business purchases and household purchases that are affected by the disruptions and wage losses. The total business-disruption loss reported is total effect on business output, which is consistent with how business disruption was reported for Superstorm Sandy.
- This approach to estimating disruption does not include loss in welfare from preparing for, responding to, and recovering from the hurricane. The billions of dollars in physical damages to infrastructure and lost inventory account only for a portion of the welfare loss.

Analysis of each part of the scope leads to a total estimate of $3.9 billion, which is in line with expectations as seen in Hurricane Floyd ($1 billion in structural damages to non-agricultural businesses and $4 billion in economic loss).

4. Assumptions

- *Business disruption:* Assumptions for disruptions by county impact category are below. These assumptions are based on power outages, school and road closures, and share of damaged property.

County Impact Level	Critical	High	Medium	Low	Minimal
Assumed Disruption (Share of Daily Activity)	35%	15%	10%	5%	2%
Assumed Impact Duration (Days)	25.0	15.0	6.0	3.0	1.0
Disruption-Permanency Factor	80%	70%	65%	60%	50%

- *Construction cost:* The preliminary estimate for property damages conservatively assumes construction costs would be 10% higher than the replacement values in the NCEM database. Experience from hurricanes

Matthew, Katrina, Harvey, and Superstorm Sandy suggests construction costs were 8-20% higher in the aftermath of the event due to a shortage of available construction services or an increase in the cost of raw material or labor. In addition, Hurricane Florence construction costs are likely to be driven up by the impact of tariffs on the price of lumber, steel, aluminum, and other materials, which would increase further the $754.2 million preliminary estimate.

5. Primary Data Sources

- NCEM for number of structural damages and values
- U.S. Bureau of Economic Analysis for county-level employee compensation
- IMPLAN for economic multipliers

6. Potential Sources of Funding for Unmet Impact

Federal:

- *Small Business Administration (SBA)* – The federal agency provides disaster loans for physical and economic losses to eligible small businesses. Based on SBA loans for Hurricane Matthew and Superstorm Sandy, SBA could cover a quarter of the damages to structures and their contents – preliminary estimate of $ 205.1 million.
- *Housing and Urban Development (HUD) Community Development Block Grant – Disaster Recovery (CDBG-DR)* – HUD funding could be used for small business loans. The preliminary federal funding estimate in the table above does not include any potential funding from CDBG-DR funds. For Hurricane Matthew, the state allocated $12.5 million of CDBG-DR funds for small business loans and assistance.

Private:

- *Private business disruption insurance* – $742.3 million could potentially be covered by private insurance companies for business disruption losses for the business that were directly affected. This preliminary estimate assumes 40% of direct business disruption losses would be covered by insurance. This is based on a 2007 survey of small businesses conducted by the National Association of Insurance Commissioners. Many businesses are likely to use insurance payments for business-interruption losses to at least partially compensate employees for lost wage and salary income. This preliminary estimate may be overestimating the private funding; businesses that do have private business disruption insurance may still face a cap on the total income loss covered by their insurance.
- *FEMA National Flood Insurance Program* – $103.7 million of water damages would be covered based on the structures that have coverage through NFIP according to NCEM data.

7. State Funding Recommendations for Unmet Impact

Rebuilding - $30 million

Small Business Loans and Grants– $20 million

Provides funds to the Department of Commerce to award to eligible small business lending institutions to expand access to credit for small businesses within Florence-affected areas. Funds may be used to provide loans and forgivable loans to businesses that could not obtain SBA loans or that need supplemental loans in addition to what SBA provides. Funds may also be used to provide emergency bridge loans to businesses to meet short-term needs until federal loans, insurance payouts, and other disaster relief funds are approved. Utilize best practices for disaster assistance loans, including:

- Implement appropriate program guidelines and internal controls to clearly define rules for determining loan amounts and circumstances for forgiving loans.
- Establish a process for considering exceptions to the guidelines and ensure any exceptions are thoroughly documented.
- Develop a uniform reporting template and reporting requirements for all participating entities to capture information on loans applications, approved loans, disbursements, and other metrics.
- Create an online system for applicants to track their application.
- Specify any restrictions or required uses of loan funds that have been repaid.
- Connect businesses with technical assistance providers, including business and financial planning, legal assistance, and other resources to address short-term needs and build stronger businesses for the future.

Assistance for Historically Underutilized Businesses – $5 million

Provides funding to the Carolina Small Business Development Fund to provide low-rate loans and recovery assistance to historically underutilized businesses impacted by Hurricane Florence. Utilize the same best practices listed above.

Commercial Building Disaster Assistance – $5 million

Funds the Department of Commerce to award grants to local governments that focus on repairing, mitigation upgrading, or demolishing non-residential structures damaged by Hurricane Florence.

Boost to Historic Preservation Tax Credit – $1-2 million estimated revenue loss

Provides an additional 5% disaster zone bonus tax credit for qualified rehabilitation expenses in federally declared disaster areas for five years, changes the current five-year cycle for non-income-producing properties to a two-year cycle in federally declared disaster areas for five years, and repeals the sunset for the program.

Resiliency - $20 million

OneNC Fund – $5 million

Raises the cap on the Fund to attract high-impact economic development projects in the affected areas.

NC Main Street and Rural Planning Center – $10 million

Offers economic development planning technical assistance services and grants to local governments of impacted communities. The grants will be used to implement business district revitalization projects.

Marketing North Carolina as a Business Destination and Tourism Advertising – $5 million

Provides funds to be used for marketing the state as business destination and for advertising for tourism-related businesses and for highlighting regional assets in the affected areas.

Housing

Addresses physical damage to residential structures and cost of housing assistance

1. Summary

The preliminary need for housing assistance and recovery is estimated at $3.2 billion. The total estimate includes $2.8 billion due to residential structure damages. This estimate will change as FEMA conducts further on-the-ground assessments of damages. Single-family homes, manufactured homes, and duplexes account for the vast majority of affected residential structures; three out of four of these residences – nearly 56,000 of 74,000 – have an estimated replacement value of less than $150,000. Repairing and replacing these homes will cost an estimated $1.3 billion, just over one half of the entire estimated residential damage. Of the overall estimated need, we expect $2.6 billion to be covered by private and federal sources of funding, resulting in an unmet housing impact of at least $902.1 million.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Residential	$2,837.0	$0.0	**$2,837.0**	$1,083.0	$1,170.0	**$584.0**
Transitional Shelter	$2.2	$0.0	**$2.2**	$1.6	$0.0	**$0.6**
Housing Assistance	$236.2	$0.0	**$236.2**	$236.2	$0.0	**$0.0**
Public Assistance	$54.0	$0.0	**$54.0**	$40.5	$0.0	**$13.5**
Other Needs Assistance	$51.9	$0.0	**$51.9**	$38.9	$0.0	**$13.0**
Subtotal	**$3,181.3**	**$0.0**	**$3,181.3**	**$1,400.2**	**$1,170.0**	**$611.1**
Resiliency efforts	$0.0	$0.0	**$291.0**	$0.0	$0.0	**$291.0**
Total	**$3,181.3**	**$0.0**	**$3,472.3**	**$1,400.2**	**$1,170.0**	**$902.1**

*FEMA Federal Share Projection ($317 million) + CDBG-DR ($1.1 billion) = $1.4 billion + TBD Future Federal Funding

**Zero does not indicate that indirect and induced losses do not exist for these categories, only that estimates are not available.

2. Scope

The scope for preliminary housing estimates includes:

- Residential housing: single-family, multi-family, rental residences, and supportive housing (includes subsidized affordable housing)
- Temporary housing, public assistance (STEP program for emergency repairs), and individual assistance payments

These estimates do not include losses from private, non-residential buildings or government buildings. These items are covered in other sections.

The table below provides additional detail on estimates by level and type of damage. This data also includes nursing homes and temporary lodging, which are reflected in the health and business sections, respectively.

SUMMARY OF ESTIMATED DAMAGES TO RESIDENTIAL PROPERTIES									
		All Hazards		Surge Flooding		Riverine Flooding		Wind	
FLOOD DEPTH	DAMAGE LEVEL	Estimated Damages (M)	Building Count	Estimated Damages (M)	Building Count	Estimated Damages (M)	Building Count	Estimated Damages (M)	Building Count
Substructure	Minor	$142.2	37,391	$51.5	8,900	$90.7	28,491		
0 - 2 ft	Minor	$562.9	15,474	$340.7	8,552	$222.2	6,922		
2 - 4 ft	Moderate	$765.8	10,712	$550.4	7,617	$215.4	3,095		
4 - 6 ft	Major	$624.0	6,711	$466.7	4,880	$157.3	1,831		
6+ ft	Destroyed	$435.0	4,275	$321.1	2,938	$113.8	1,337		
Total		**$2,611.1**	**509,067**	**$1,730.4**	**32,887**	**$799.4**	**41,676**	**$81.2**	**434,504**

Source: NC Division of Emergency Management; estimates include temporary lodging, nursing homes, and institutional dormitories, which are otherwise excluded from housing damage estimates.

3. Methodology

NCEM flood models indicate that approximately 74,000 residential structures incurred damage from water, and their wind-damage models indicate that more than 430,000 incurred wind damages. These preliminary estimates represent $2.84 billion in damages, which includes $2.49 billion in total flood damage, $80 million in wind damage to the structures and their contents, and a 10% inflation factor to account for anticipated higher construction costs. Fifty-seven percent (57%) of these damages are uninsured or underinsured based on NFIP coverage data from NCEM.

The estimates include damages from the coastal storm surge, flooding from rivers, and wind.

- *Storm surge:* To produce the storm surge damage estimates, NCEM used national models to create a GIS layer of the storm surge. In conjunction with the GIS layer, NCEM used data on the elevation of the structures' first floor to determine the depth of the flooding incurred by structures. Then, NCEM translated the flood depth into damage estimates by relying on Army Corps of Engineers' formulas and estimated replacement values for buildings and contents in NCEM's statewide database of buildings. Replacement values include the value of equipment contained in the buildings. The estimate for the number of buildings affected by the storm surge only includes primary structure.

- *Flooding from rivers:* To produce the riverine estimates, NCEM employed NOAA National Severe Storms Laboratory data to determine the amount of flooding sustained from rivers and create a GIS layer of riverine flooding. To increase precision, the GIS layer combines model calculations of precipitation accumulation with actual river gage and high-water observations. The riverine flooding GIS layer allowed NCEM to estimate the flood depth sustained by structures, and in turn the flood depth informed the loss estimate for structures and their contents (including equipment). The estimate for the

number of buildings affected by flooding from rivers only includes primary structures.

- *Wind damages:* To produce the wind damage estimates, NCEM used information on Hurricane Florence wind speeds from the National Weather Service. The agency used NCEM Risk Management tools to model the wind speed effect on structures and to derive a wind damage estimate. Structures for wind damage include minor buildings as well, such as detached garages and sheds.

- *Flood insurance:* NCEM's statewide building database includes data on NFIP insurance coverage for each building. OSBM relied on this data to estimate the share of flood-affected buildings that were un- and under-insured and the aggregate insurance gap between estimated damages and NFIP coverage.

- *Flood mapping:* The structural damage estimates above will likely increase as NCEM will continue to refine estimates to account for FEMA inspections data and for people outside the floodplain making assistance requests.

- *Other considerations:*

    - Based on 5-year ACS estimates of housing tenure by structure type (e.g., single-family dwellings, duplexes, etc.) for each of the 28 FEMA disaster-declared counties, OSBM estimates approximately 53,000 owner-occupied structures suffered $1.7 billion in flood-related damages and 21,000 rental structures suffered approximately $740 million in flood-related damages.
    - Outside of the 28 FEMA disaster-declared counties, OSBM calculations based on NCEM flood modeling indicate that approximately $72 million in flood damages to residential buildings occurred.
    - The supply of affordable housing in the Florence-affected region of the state was far below the needs of the local population even before the storm hit: the NC Housing Finance Agency estimated an affordable-housing shortfall of more than 200,000 homes. Florence exacerbated this shortfall.
    - Among single-family homes, manufactured homes, and duplexes, which account for the clear majority of affected residential structures, three out of four estimated flood-affected residences – nearly 56,000 of 74,000 – have an estimated replacement value of less than $150,000. Repairing and replacing these homes will cost an estimated $1.3 billion.

4. Assumptions

- *Construction cost:* The preliminary estimate for property damages conservatively assumes construction costs will be 10% higher than the replacement values in the NCEM database. Experience from hurricanes Matthew, Katrina, Harvey, and Superstorm Sandy suggests construction costs were 8-20% higher in the aftermath of the event due to a shortage of available construction services or an increase in the cost of raw material or labor. In addition, Hurricane Florence construction costs are likely to be

driven up by the impact of tariffs on the price of lumber, steel, aluminum, and other materials, which would increase further the preliminary estimate.

- *Building estimation:* The estimate for the number of buildings affected by storm surge and riverine flooding only includes primary structures. The estimate for wind damage also includes detached garages, sheds, and the like.

5. Primary Data Sources

- DEM
- Census Bureau: American Community Survey 5-Year County Estimates
- FEMA
- HUD

6. Potential Sources of Funding for Unmet Impact

Federal:

- North Carolina expects to receive approximately $276 million from FEMA for individual assistance, temporary shelter, and other assistance programs, resulting in a state match need of $13.5 million.
- North Carolina expects to receive approximately $124 million from FEMA for hazard mitigation, resulting in a state match need of $41 million.
- Based on FEMA estimates as of October 5, 2018, the state is expected to receive $554 million in Public Assistance funds from FEMA with a state match of $185 million for a total of $739 million. Based on allocations from Hurricane Matthew, we anticipate that approximately $54 million of those funds will be for housing related items, resulting in a state match need of $14 million.
- The US Congress has earmarked approximately $1.14 billion to North Carolina in the form of HUD CDBG funding. We anticipate that a large portion of this ($1.08 billion) will be utilized for housing program needs.
- Additional funds may also be available from USDA.

Private:

- Using NCEM preliminary data, $1.17 billion of water damages would be covered through NFIP.
- Estimates are still pending that will show the amount that could potentially be covered by private insurance companies for covered damages (e.g., wind).

7. State Funding Recommendation for Unmet impact

Rebuilding - $243 million

FEMA State Match for Individual and Public Assistance – $27.5 million

Funds state match for FEMA individual assistance programs to provide short to medium term housing and temporary emergency repairs to damaged homes. Assistance is also provided for other needs, such as: medical and dental assistance, child care, repair or replacement of clothing and household items, moving and storage, and other critical needs.

Rapid Rehousing Program (Back@Home NC) – $12 million

Assists individuals and families still living in shelters or staying in unsafe or unstable arrangements due to Hurricane Florence quickly transition to safe and sustainable longer-term housing. Services include help finding housing, rent and utility assistance, move-in supplies, and, if needed, help accessing other stability supports like job training and placement and child care.

Transitions to Community Living Initiative (TCLI) Displacement Recovery – $1.3 million

Provides funding to help to secure new placements and provide additional tenancy support services to TCLI participants who were displaced during Hurricane Florence.

Volunteer Organizations Active During Disasters (VOADs) – $2 million

Provide support to volunteer organizations that provide multiple services to storm survivors.

Homeowner Repair and Rehabilitation Fund – $176 million

Provide funding for programs that help homeowners and renters remain in their communities, for activities that are not eligible for federal reimbursement. Strategies to implement this include the following:

- *Homeowner reimbursements, repairs and rehabilitation funding*. For example, owners can be reimbursed for flood damaged appliances, emergency repairs, urgent and pressing needs or other documented costs that may not be covered by federal funding sources, because the volume of applicant demands exceed federal award amounts for North Carolina.
- *Forgivable loans or grants to SBA housing loan recipients*. For example, if an individual has received an SBA loan but has difficulty affording the payments, this program would provide funds to assist with the payments or loan interest buydown.
- *Extension of Rental/Mortgage Assistance* for displaced individuals who must pay current rental leases or mortgages while their damaged properties are repaired. For example, many funding sources that provide rental and mortgage assistance do so on a time-limited basis. If a qualified individual has received assistance but continues to have unmet needs after exhausting the time limit of the benefit, this program would provide funds to continue providing the much-needed rental or mortgage assistance.
- *Gap assistance payments*. For example, if an individual has qualified for a FEMA hazard mitigation grant to re-locate their house, and the FEMA award

is less than an equivalent market priced home that is not in a floodplain, gap assistance payments can supplement these awards to make up the difference

Cash Flow Assistance to Distressed Agencies - $24 million

Provides cash flow management assistance for small, rural, and distressed agencies. Hazard Mitigation Grant Program (HMGP) awards can greatly exceed small local government operating budgets and cash reserves. For example, the Town of Fair Bluff received an $8.3 million FEMA grant to rebuild over 100 houses destroyed from Hurricane Matthew. However, the town's annual general fund operating budget is $900,000. The town does not have the cash capacity to pay construction contractors first and wait for lengthy reimbursements on its FEMA grant without risking town payroll and other budget needs.

To address this fiscal challenge, it is recommended that the Office of State Budget and Management be provided with adequate funding and authority to enter into fiscal agent agreements with these agencies to ensure they have the cash flow and financial capacity to reimburse federal agencies for disaster response and recovery grant awards. The final federal reimbursements from this cash flow assistance program would be re-directed to future FEMA grants or support housing reconstruction, repairs and state mitigation efforts.

Resiliency - $291 million

FEMA State Match for Hazard Mitigation – $41 million

After a presidential declared disaster, FEMA hazard mitigation grants requests are reviewed and approved often in advance of federal CDBG-DR funding requests. These HMGP approvals support housing acquisitions, elevations and reconstruction activities to minimize and mitigate these homes from future risk of loss of life and property. HMGP federal grants are awarded to impacted Counties and municipalities who must hire contractors, execute repairs, and then seek reimbursements from FEMA for the federal share and the State for the state share.

It is estimated that NC would qualify for a minimum of $164 million FEMA HMGP approvals, with 75% (or $123 million) supported by FEMA federal grant funds that require a 25% (or $41 million) state or local agency match.

State Acquisition and Relocation Fund (SARF) – $180 million

Provides funding to SARF, which is currently authorized by statute and has a primary focus to buyout, acquire, and totally reconstruct homes outside from the 100-year floodplain. The types of things SARF can assist with include the following:

- Home acquisition and buyouts that minimize future flood damage
- Financial assistance in the form of interest buy down grants
- Gap assistance grants for associated loans
- Flood insurance assistance

Residential Construction Infrastructure Grants - $20 million

Recommends funds for the Department of Commerce's Rural Economic Development Division to provide grants to local and regional agencies for infrastructure required to support new residential structures in areas outside the 100-year floodplain or to repair or replace existing infrastructure. Funds may be used to cover water, sewer, sidewalks, storm drainage, and other similar projects.

Affordable Housing – $50 million

Provides funds to the Housing Finance Agency (HFA) to create housing development incentives for high-quality, resilient, affordable housing options in the affected communities. Funds may also be used to repair damaged HFA properties, emergency, homeless, and domestic violence shelters.

Agriculture

Addresses physical damage and business disruption for agricultural enterprises

1. Summary

The following is documentation of the methodology used to derive a preliminary estimate for agriculture losses due to Hurricane Florence.

The preliminary economic impact is estimated at $2.4 billion. Of this amount, the direct needs and damages are estimated at $1.3 billion with indirect/induced damages of $1.0 billion. Federal and private sources of funding are expected to cover $161.7 million of these damages, resulting in an unmet agricultural impact of $2.2 billion. The direct needs and damages estimate is comprised of $1 billion due to crop and livestock losses, $9.7 million due to cooperatives and growers' associations losses, $20 million in emergency livestock disposal, $117.6 million due to agricultural building, equipment, and infrastructure losses, $13.5 million due to commercial fishing and aquaculture losses, $49.4 million due to forestry, and $57.5 million due to stream restoration and stream debris removal needs.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Crops & Livestock	$1,064.5	$967.4	$2,031.9	$0.0	$159.7	**$1,872.2**
Cooperatives & Growers' Association	$9.7	$0.0	$9.7	$0.0	$0.0	**$9.7**
Emergency Livestock Disposal	$20.0	$0.0	$20.0	$20.0	$0.0	**$0.0**
Agricultural Buildings & Equipment	$61.8	$0.0	$61.8	$0.0	$1.7	**$60.1**
Agricultural Infrastructure	$55.9	$0.0	$55.9	$0.0	$0.0	**$55.9**
Commercial Fishing and Aquaculture	$13.5	$19.8	$33.3	$0.0	$0.3	**$33.0**
Forestry**	$49.4	$35.5	$84.9	$0.0	$0.0	**$84.9**
Stream Restoration & Stream Debris Removal	$57.5	$0.0	$57.5	$0.0	$0.0	**$57.5**
Subtotal	**$1,332.3**	**$1,022.7**	**$2,355.0**	**$20.0**	**$161.7**	**$2,173.3**
Resiliency efforts	$0.0	$0.0	**$75.0**	$0.0	$0.0	**$75.0**
Total	**$1,332.3**	**$1,022.7**	**$2,430.0**	**$20.0**	**$161.7**	**$2,248.3**

*Zero does not indicate that indirect and induced losses do not exist for these categories, only that estimates are not available.
**Forestry estimate is for privately-owned timber

2. Scope

Scope for Agriculture estimates include:

- Crop and livestock losses
- Cooperative and growers' associations losses
- Emergency livestock disposal
- Agricultural buildings, equipment and infrastructure
- Commercial fishing and aquaculture
- Forestry
- Stream restoration and stream debris removal

Items considered but no or limited estimate available: Commercial fishermen's equipment and gear damage or potential federal cost-share assistance through the US Department of Agriculture (USDA) outside of its Emergency Conservation Program and Emergency Watershed Protection Program (EWP). Surveys in disaster-affected areas are needed to estimate what losses and costs are eligible for federal assistance through these types of programs.

3. Methodology

Crop and livestock losses:

Preliminary Estimates - Commodity Loss by Crop and Livestock Type (Millions)			
Commodity	**Production Losses**	**Indirect/ Induced**	**Total Economic Impact**
Soybeans	$202.8	$202.2	$404.9
Corn	$84.4	$83.4	$167.8
Cotton	$135.0	$124.3	$259.3
Flue-Cured Tobacco	$314.1	$281.1	$595.2
Hay	$19.0	$18.8	$37.8
Peanuts	$50.6	$46.6	$97.2
Sweet Potatoes	$180.7	$147.1	$327.9
Vegetables	$26.9	$21.9	$48.8
Green Industry	$30.0	$21.1	$51.1
Pork	$0.7	$0.6	$1.2
Poultry	$20.1	$20.3	$40.4
Beef	$0.2	$0.1	$0.3
Total	**$1,064.5**	**$967.4**	**$2,031.9**

Crop loss estimates are based on the percentage of crops still in the field in the 35 most highly impacted counties. Calculations looked at a five-year average for crop production and the price of commodities. The estimates were developed with assessment information from DACS regional agronomists, North Carolina State University agents and specialists, the USDA's Farm Service Agency, the USDA's National Agricultural Statistics Service and commodity associations. Livestock mortality rates were derived by DACS Veterinary Division. Industry sources and commodity groups provided base value per head for livestock and swine. Indirect and induced impacts were calculated using 2015 IMPLAN Economic Modelling software.

Indirect impacts measure the impact the direct loss has on other businesses, while induced impacts measure the impact the direct loss has on household spending.

Preliminary Estimates - Agriculture Loss by Type (Millions)			
Commodity	**Production Losses**	**Indirect/Induced**	**Total Economic Impact**
Crops & Livestock	$1,064.5	$967.4	$2,031.9
Aquaculture	$2.2	$1.9	$4.1
Forestry*	$69.6	$50.0	$119.6
Total	**$1,136.3**	**$1,019.3**	**$2,155.6**

*Includes state, federal, and privately-owned timber

Farmer-owned cooperative and growers' associations assessment losses:

The state expects losses to farmer-owned cooperatives and growers' associations. Cooperatives often purchase and store commodities to help stabilize commodity prices. Historically, the quality of commodities purchased and stored by cooperatives declines during storms due to flooding, power outages, and delays getting product to market. Such damages result in decreased revenue for the cooperative.

Growers' associations, which provide promotional and marketing of individual commodities, are typically funded by an assessment per harvested acre. Because flooding preventing harvest, revenue from assessments is expected to decline, leaving the associations unable to provide marketing and maintain demand.

The estimate of $9.7 million in damages is based on the percentage of Cooperative and Association Assessment losses covered during Hurricane Floyd relative to total Floyd crop losses applied to Hurricane Florence crop losses. During Hurricane Floyd, crop and livestock losses exceeded $551 million, $5 million was requested to cover these losses; that percentage, 0.907%, applied to Hurricane Florence crop and livestock losses of $1.1 billion results in the $9.7 million estimate. A survey of farmer-owned cooperatives and growers' associations would be needed to provide a more accurate estimate of the damages sustained by the entities.

Emergency livestock disposal

This estimate of $20 million is based on the contractor's estimate of the cost to provide animal disposal. Disposal requires carbon material for composting, transportation costs to provide the carbon material as well as to dispose of wet litter, carcasses, and other waste at landfills for livestock operations that sustained mortality losses due to the storm.

Agricultural buildings and equipment

The following is documentation of the methodology used to estimate agricultural property loss. These preliminary estimates represent $61.8 million in total damage to the structures and their contents, including equipment, due to Hurricane Florence. Preliminary estimates are based on historical production and prices as well as experience from previous storm events, leveraging data reported by farm operators and other industry participants.

DEM estimated that a total of 1,300 agricultural structures, including farm buildings and commercial fishing buildings (dealers and processors), incurred water damage; more than 4,100 incurred wind damages.

The estimates include damages from the coastal storm surge, flooding from rivers, and wind.

- *Storm surge*: DEM used national models to create a GIS layer of the storm surge. DEM compared the GIS layer against the elevation of the structures' first floor to determine the depth of flooding. Then, DEM translated the flood depth into damage estimates by relying on Army Corps of Engineers (USACE) formulas and estimated replacement values in DEM's statewide database of buildings. The estimate for the number of buildings affected by the storm surge only includes primary structures; the replacement values include the building and its contents.
- *River flooding*: In a similar process as storm surge analysis, a GIS layer was constructed for riverine flooding. This layer combines model calculations of precipitation accumulation with actual river gage and high-water observations. The riverine flooding GIS layer allowed DEM to estimate the flood depth sustained by structures, and damages were once again determined from DEM's replacement values.
- *Wind:* DEM used information on Hurricane Florence wind speeds from the National Weather Service. The agency used DEM Risk Management tools to model the wind speed effect on structures and to derive a wind damage estimate. Structures for wind damage include minor buildings as well, such as detached garages and sheds.
- *Insurance levels*: DEM's statewide building database includes data on NFIP insurance coverage for each building. OSBM relied on this data to estimate the share of flood-affected buildings that were un- and under-insured and the aggregate insurance gap between estimated damages and NFIP coverage.

Agricultural infrastructure

Emergency Conservation Program (ECP) – The USDA/Farm Service Agency, through its Emergency Conservation Program (ECP), pays affected farmers 75% of the eligible costs of repairing damaged farm fields, fences, as well as many conservation practices and structures. The ECP provides emergency funding and technical assistance "to farmers and ranchers to rehabilitate farmland damaged by natural disasters and to implement emergency water conservation measures in periods of severe drought." Funding varies from year to year, but most funding is authorized in supplemental appropriations rather than annual appropriations. Funding is normally available until expended.

This preliminary need estimate of $46.7 million is based on damages from Hurricane Matthew and then adjusted for the severity of Hurricane Florence. After Hurricane Matthew & in other prior storm events, the federal ECP program paid approximately 75% of eligible costs, the state has paid 18%, and farmers have paid 7%. For Hurricane Matthew, DACS received $6.6 million to make direct payments to farmers participating in ECP. DACS is still making these payments, since state payments go

out after the federal ECP payments are made as to not reduce the amount the farmer will receive from the federal ECP. There may be additional need and/or federal funding for similar types of damages, but an estimate is not available at this time.

- *Non-Field Farm Road Repair* – $1 million is the preliminary estimate of funds needed for non-field farm road repair. It would be for repair or stabilization of existing access roads used for agricultural operations, including roads to existing crop fields, pastures and barns. Farm roads off secondary roads that have been almost or completely washed away are not eligible for ECP funds.

- *Agricultural Pond Repair* –$5 million is the preliminary estimate of funds needed for repair and retrofits of existing agricultural pond systems. Potential benefits include water supply, erosion control, flood control, and sediment and nutrient reductions from farm fields. This estimated need is based on farmer requests for assistance from Hurricane Matthew and then adjusted for the greater severity of damage for Hurricane Florence.

- *Best Management Practice Repair and Renovation* – $2 million is the preliminary estimate for best management practice repair and renovation. There is a need for repair of conservation structures such as waterways, terraces, diversion, and other potential damages. There is additional need for repair and renovation of conservation structures that do not qualify for assistance through USDA's Farm Service Agency.

- *Hay Loss* – Hay was washed away, inundated by floodwaters, or fall cutting was unable to be made, making it detrimental to winter feeding. The need estimate of $3 million was made based on DACS's conversations with the NC Cattleman's Association, the NC Horse Council, the extension service, and regional agronomists.

- *Pasture renovation, emergency waste management, and lagoon repair* – The total estimate of need for these items is $3.2 million. Pastureland needs to be repaired to accept land application of liquid manure. Lagoons that have excess water need to either apply this waste to their fields or pay for hose drag systems or pump-and-haul to otherwise non-available application fields for lagoon management. DACS estimates these costs at $3 million based on the number of damaged, inundated, and near-full lagoons.

- *Swine lagoons*- Self-reported data from swine lagoon operators indicate that six lagoons have had structural damage, 32 have reported discharges, nine are inundated, and 48 are full or nearly full. These estimates of lagoons with structural damage are likely to increase after DEQ completes physical inspections. Based on DEQ and engineering firm professional judgements about the likely number of lagoons needing repairs and repair costs per day, lagoon and storm water diversion repair costs could range from $45 thousand to $440 thousand depending upon the severity of damage. For the purposes of this estimate we assume the cost will fall in the middle of that range at

approximately $200 thousand.

Commercial fishing

- *Commercial harvest losses* – At this time, many dealers, harvesters, and processers are unreachable, so the duration and extent of the commercial fishing industry's business disruption and harvest reductions are unknown. A preliminary estimate of the order of magnitude of revenue losses for commercial fishery harvesters was based on fishing landings from the past five years and the prices paid to fishermen for those landings during the month of September. The 2013-2017 average ex-vessel value of commercial fishery harvests for the month of September is approximately $10 million. These estimates include only direct production losses to harvesters. Vessel and gear damage and loss of product in storage at dealers are not included. These preliminary estimates are derived from the Department of Environmental Quality, Division of Marine Fisheries (DMF) trip ticket program and dealer surveys. Data needed for more precise estimates of harvest losses will not be available for several months.

    - The additional downstream impact that the direct harvest losses has on other businesses, such as dealers and processors, and household spending, is $17.9 million. Together, the preliminary total economic impact is $27.9 million. DMF estimated the indirect and induced impacts using the 2016 IMPLAN model, customized to better reflect the North Carolina industry participants.
    - Anecdotal reports suggest that some vessels and dealers are now operational, while others are still out of operation. Some fishermen removed their gear days before the storm.
    - Anecdotal reports suggest that, in general, business disruption was more severe and long lasting in southern regions compared to northern regions but there is significant impact variation within regions.
    - Species respond differently to storm events, complicating estimates of short term revenue loss and recuperation. Some species, like shrimp, may migrate to waters with preferable conditions. Fish behavior may change, and some species may experience mortality, while other species are minimally affected. Over the long term, the impact of hurricanes on nursery habitat, recruitment, and fish stocks is uncertain, but both positive and negative impacts on landings could persist for months or years.

- *Aquaculture product loss* – Preliminary aquaculture losses, estimated at $2.2 million, are based on the percentage of unharvested product in the most highly affected counties. Calculations looked at a five-year average for production and the price of commodities. The estimates were developed with assessment information from DACS regional agronomists, North Carolina State University agents and specialists, the USDA's Farm Service Agency, the USDA's National Agricultural Statistics Service and commodity associations. North Carolina Sea Grant reached similar estimates from a preliminary survey of clam and oyster

aquaculture participants. Low salinity levels will likely cause mortality and product loss. Damage assessments are ongoing and loss estimates are expected to increase. Preliminary indirect and induced impacts, estimated at $1.9 million, were calculated using 2015 IMPLAN economic modelling software. Indirect impacts measure the impact the direct loss has on other businesses. Similarly, induced impacts measure the impact the direct loss has on household spending. The preliminary total direct, indirect, and induced economic impact of aquaculture product loss is $4.1 million.

- *Shellfish aquaculture gear and equipment damage* – To date, North Carolina Sea Grant has surveyed a limited number of clam and oyster aquaculture participants to derive a preliminary estimate of damaged or destroyed gear, docks, raceways, pumps, tanks, building infrastructure, poles, and signs. Sea Grant estimates the damages at $1.3 million. Damage assessments are ongoing and loss estimates are expected to increase.

- *Equipment and vessel damage to harvesters* - An estimate is not available at this time. A survey of harvesters would be needed to determine these losses.

Forestry

An aerial survey was conducted to estimate damage to timber caused by wind from Hurricane Florence. Approximately 1.25 million acres of timberland were impacted—mostly scattered and light damage with the most damage found in four counties (Carteret, Craven, Jones, and Onslow). The estimated amount of timber damaged includes 1,354,202 tons of pulpwood and 391,164 thousand board feet of sawtimber. At current stumpage values, this amounts to approximately $69.6 million dollars. Of the $1.25 million affected acres, approximately 71% is privately owned, 6% is state-owned, and 23% is federally owned. The estimated impact to the NC forestry industry of $49.4 million includes only privately-owned timber. The estimated $4.2 million in damage to State-owned timber is accounted for under the state-owned property damage estimate. Federally-owned timber damage is excluded. Indirect and induced impacts were calculated using 2015 IMPLAN Economic Modelling software. Indirect impacts measure the impact the direct loss has on other businesses. Similarly, induced impacts measure the impact the direct loss has on household spending.

Stream restoration and stream debris removal

The complex network of streams, canals and ditches that make up the drainage network in eastern NC are critical to protect the people, property and economy of the region. In many locations this drainage network has been significantly affected by vegetative storm debris, stream bank erosion, and sediment deposition. The preliminary stream debris damage estimate of $57.5 million is based on DACS's estimates of damage eligible to be covered by the USDA Natural Resources Conservation Service (NRCS)'s Emergency Watershed Protection Program (EWP) from Hurricane Matthew and then adjusted for the greater severity of damage for Hurricane Florence.

EWP does not require a disaster declaration by federal or state officials for program assistance to begin, but ultimately partial funding must be provided by the General Assembly. If authorized, federal EWP assistance could cover 75% of eligible costs. For past storm events, the state traditionally has covered 18% of the total cost while eligible sponsors have paid 7%. Funding for EWP varies from year to year, but most funding is authorized in supplemental appropriations by Congress rather than annual appropriations. Funding is normally available until expended.

There may be additional need and/or federal funding for similar types of damages as is covered by EWP, but an estimate is not available at this time.

4. Assumptions

- After Hurricane Floyd in September 1999, approximately 15% of crop, livestock, and aquaculture losses were covered by insurance. These estimates assume the same percentage of Hurricane Florence losses will be covered.
- DACS assumes that the full cost of the emergency livestock disposal need will be covered by federal assistance through FEMA.
- The preliminary estimate for agricultural building and equipment damages conservatively assumes construction costs would be 10% higher than the replacement values in the NCEM database. Experience from hurricanes Matthew, Katrina, Harvey, and Superstorm Sandy suggests construction costs were 8-20% higher in the aftermath of the event due to a shortage of available construction services or an increase in the cost of raw material or labor. In addition, Hurricane Florence construction costs are likely to be driven up by the impact of tariffs on the price of lumber, steel, aluminum, and other materials, which would increase further the preliminary estimate for building and equipment damages.
- Commercial catch losses assume that landings and the value of those landings are similar to 2013-2017 averages for the month of September. The preliminary loss estimate of $10 million represents the entire value of the landings from that month. The duration and intensity of business disruption and lost landings is unknown at this time; trip ticket data will not be available for several months, and many industry participants are still unreachable.
- Timber damage is assumed to be proportional according to ownership. Total damage is estimated at $69.6 million. Of the 1.3 million affected acres, approximately 71% is privately owned, 6% is state-owned, and 23% is federally owned.

5. Data Sources

- Department of Agriculture and Consumer Services (DACS)
- Department of Environmental Quality
- Division of Emergency Management (DEM)

- Department of Environmental Quality, Division of Marine Fisheries (DMF)

6. Potential Sources of Funding for Unmet Impact

After Hurricane Floyd in September 1999, federal assistance reimbursed approximately two-thirds of crop and livestock losses. These funds are typically appropriated ad-hoc by Congress through federal disaster-related legislation.

In 2017, the Wildfires and Hurricane Indemnity Program (WHIP) made up to $2.36 billion available for disaster payments to agricultural producers to offset losses from eligible hurricanes and wildfires. WHIP covered losses caused by a 2017 hurricane for both insured and uninsured producers in counties that received a qualifying Presidential Emergency Disaster Declaration or Secretarial Disaster Declaration. North Carolina is not currently eligible for funding through WHIP.

FEMA provides funding for emergency livestock disposal and flood damage to structures. The state anticipates 100% FEMA reimbursement for livestock disposal, estimated at $20 million. FEMA's National Flood Insurance Program covers water damage to structures, but most agricultural structures are uninsured for flooding.

USDA offers a variety of programs to address agricultural and natural resource losses including, but not limited to the following:

- Emergency Conservation Program (ECP)
- Emergency Forest Restoration Program (EFRP)
- Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program (ELAP)
- Emergency Watershed Protection Program (EWP)
- Environmental Quality Incentives Program (EQIP)
- Livestock Indemnity Program (LIP)
- Tree Assistance Program (TAP)

Funding for the Emergency Conservation Program and the Emergency Watershed Protection Program (EWP) varies year to year, but most funding is authorized in supplement appropriations rather than annual appropriations. Funding is normally available until expended. EWP does not need a declared disaster designation for program assistance to begin; however, partial funding must be provided by the state legislature.

Funding for the Livestock Indemnity Program (LIP) and the Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program (ELAP) is permanently authorized and funded. These programs receive "such sums as necessary" via the Commodity Credit Corporation.

Financial assistance has been provided to the fishing industry when it is affected by a commercial fishery failure if certain resource and economic damage thresholds are met. The Governor must request a fishery failure determination from the US Secretary of Commerce. Funds may be distributed to states, dependent upon Congressional appropriations, through the Magnuson-Stevens Fishery Conservation

and Management Act (MSFCMA) and the Interjurisdictional Fisheries Act (IFA).

7. State Funding Recommendations for Unmet Impact

Rebuilding - $235 million

NC Farmer Recovery Reinvestment Program – $200 million

Funds economic incentives program in the Department of Agriculture and Consumer Services for NC farmers to retain the state's number one industry and job developer for the remainder of this year and next. Program grants may include, but are not limited to, assistance with uninsurable/underinsured crops as well as livestock, poultry, and aquaculture losses. Funds may also be used for hay relief, pasture renovation/lagoon management, agricultural pond repair, non-field farm road repair, and best management practice repair/renovation.

State Supplement to Federal Matching Funds – $20 million

Provides state supplemental matching funds to Department of Agriculture and Consumer Services needed to match estimated USDA Farm Service Agency, USDA Natural Resources Conservation Service, or other federal agency cost share payments. Eligible federal programs include, but are not limited to, the Emergency Conservation Program and the Emergency Watershed Protection Program. Additional supplemental matching funds may be necessary once final federal allocations are made.

Commercial Fishing Assistance – $12 million

Provides funding to the Division of Marine Fisheries in the Department of Environmental Quality for grants to commercial fishermen to compensate for equipment losses and income losses from harvest reductions.

Forest Development Fund – $2.5 million

Assists private woodland owners in establishing timber stands in counties that sustained forest loss from wind or flood damage through additional funding to the Forest Development Fund administered by Department of Agriculture and Consumer Services.

Resiliency - $75 million

NC Farmer Resiliency Fund – $75 million

Provides grant funds to the Department of Agriculture and Consumer Services to expand the voluntary buyout program for swine operations and the voluntary lagoon conversion program. Buyout program eligibility will be expanded to include operations in the 500-year floodplain. Funds may be used to relocate operations outside of the floodplain. Grants may be awarded to farmers and third-parties to convert from open lagoons to environmentally superior technologies.

Utilities, Water, Sewer

Addresses the physical damage to energy and water infrastructure

1. Summary

The following is documentation of the methodology used to estimate water, sewer, storm water, and utilities costs due to Hurricane Florence.

Preliminary estimates for water and sewer are based on an initial needs assessment by the Department of Environmental Quality. Total water and sewer estimated need is $100 million, $42 million of which we expect to be covered from federal and private funds, resulting in an unmet need of $58 million. These estimates are in the very early stages of the recovery process and will be refined as more detailed surveys and assessments are done.

Preliminary estimates for utilities are based on information provided by the North Carolina Electrical Cooperatives Association, Public Works Commission of Fayetteville, Greenville Utilities Commission, and Duke Progress Energy. The Electrical Cooperatives are designated as nonprofits and can receive FEMA reimbursement for storm related damages. The Association has already compiled early damage estimates on behalf of its members working with the Federal FEMA coordinator and Emergency Management. Duke Progress Energy is a for-profit corporation with the expectation that damages will be covered through available reserves, insurance, and potentially rate adjustments. Duke Progress Energy also operates the Piedmont Natural Gas Company which provides gas service to the hardest hit region of North Carolina. Duke Progress has provided the State with preliminary cost estimates for both electrical and gas restoration in North Carolina. Total electrical and gas need is estimated at $691 million, $680.0 million of which we expect to be covered by Federal and Private sources of funding, resulting in an unmet electrical and gas utility need of $11.0 million. The $11.0 million represents the FEMA state match for the North Carolina Electrical Cooperatives and governmental operated utilities affected by the storm.

Preliminary Damage and Recovery Needs (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Water, Sewer, storm water*	$100.0	$0.0	**$100.0**	$39.0	$3.0	**$58.0**
Gas, Electric	$691.0	$0.0	**$691.0**	$30.0	$650.0	**$11.0**
Local Fee Revenue loss*	$0.0	$0.0	**$0.0**	$0.0	$0.0	**$0.0**
Subtotal	**$791.0**	**$0.0**	**$791.0**	**$69.0**	**$653.0**	**$69.0**
Resiliency efforts	$0.0	$0.0	**$25.0**	$0.0	$0.0	**$25.0**
Total	**$791.0**	**$0.0**	**$816.0**	**$69.0**	**$653.0**	**$94.0**

* The state will conduct a local government survey in the coming weeks to quantify local government property damage, water and sewer damage, and estimated lost local fee revenue from water and sewer operations.

2. Scope

Scope for utilities estimates include:

- Public Water, Sewer, Storm water
- Gas, Electric
- Revenue loss (TBD from local survey)

3. Methodology

Water and Sewer: The estimate provided for water and sewer are a mix of known damages and estimates based on historical data from past storms. The state is continuing to do detailed assessments of damaged systems in disaster declared counties. In addition to on the ground inspections, the state plans to survey local government units in the coming weeks regarding damages related to local government buildings and water and sewer systems. As damages are assessed and additional data becomes available, the estimates provided in this document will be refined.

Electrical and Gas: Information was collected from Emergency Management, the NC Electrical Cooperatives, Public Works Commission of Fayetteville, Greenville Utilities Commission, and Duke Progress Energy. The utilities stated their methodology is based on past storm damage and some early actual estimates for personnel, right-of-way clearance, equipment, powerlines, and pole replacements.

4. Assumptions

- The needs estimates from the Department of Environmental Quality are preliminary for water and sewer. These estimates will evolve as detail

inspections occur. The State will cover the FEMA match funds, as with past storms, for the Electrical Cooperatives and some governmentally owned electric, water, and sewer repairs that file reimbursement through the State. Since Duke Progress Energy is a for-profit corporation, the company will not be eligible for direct state or federal assistance through existing programs but may request storm related rate adjustment through the State's Utility Commission.

5. Primary data sources

- Division of Emergency Management (DEM)
- Duke Progress Energy
- North Carolina Electrical Cooperatives Association
- Fayetteville Public Works Commission and Greenville Utilities
- Department of Environmental Quality (DEQ)

6. Potential sources of funding for Unmet Impact

Federal:

- FEMA has provided early estimates of federal utility reimbursement based on past storms and has shared that information with the Division of Emergency Management and the Office of State Budget and Management. FEMA estimates federal assistance for utilities at $69 million and a state share of $23 million.

Municipal:

- Pending local survey

Private:

- $650 million for Duke Progress Energy made up of reserves, insurance claims where applicable, and possible future rate adjustments will make up the difference.
- The state is estimating $3 million in insurance claims related to local water and sewer facilities.

7. State Funding Recommendations for Unmet Impact

Rebuilding - $48 million

FEMA Match – State Share - $23 million

Provides funding for the state share of FEMA funding for public assistance. Public assistance projects could potentially include repair of electrical power grids, water and sewer systems operated by governmental and non-profit utilities.

Golden L.E.A.F. - $25 million

Provides funding for grants to local governments and to 501(c) (3) nonprofit corporations for assistance and relief from Hurricane Florence. The nonprofit would provide infrastructure grants that will help restore water and sewer systems and repair storm drainage systems.

Resiliency - $25 million

Wastewater and Drinking Water Grants - $25 million

Provides supplemental grant funds to two existing programs for State Wastewater and State Drinking Water. Both programs cover infrastructure needs such as resolving failed systems, rehabilitation and replacement, expanding, consolidation of regional systems. State wastewater grants can also be used for stream, wetland, and stream buffers. State drinking water grants can be used to aid the merger of failing public water systems, resolve documented low pressure in an existing system, the treatment of contaminated water, and support connections between systems or cover a public need.

Clean Water Management Trust Fund (CWMTF): Please see the Natural Resources section funding recommendations under Resiliency for recommendations on activities related to resiliency and storm water.

Natural Resources

Addresses the restoration of landscapes, dams/dikes/levees, and waste clean-up

1. Summary

The following is the documentation of the methodology used to estimate natural resource damage and needs due to Hurricane Florence.

Preliminary estimates are based on early reports from affected entities and costs associated with similar damages during prior storms. Inspections and damage assessments are ongoing. Total impact is estimated at be at least $553.9 million, $90.1 million is expected to be covered by Federal and Private sources of funding, resulting in a potential unmet natural resource need of $463.8 million.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Hazardous waste/ Waste management	$3.0	$0.0	**$3.0**	$0.0	$0.0	**$3.0**
Dredging**	$87.1	$0.0	**$87.1**	$0.0	$0.0	**$87.1**
Beach renourishment**	$295.7	$0.0	**$295.7**	$0.0	$0.0	**$295.7**
Dams, dikes, & levees	$23.6	$0.0	**$23.6**	$0.0	$23.6	**$0.0**
FEMA Public Assistance	$0.0	$0.0	**$0.0**	$66.5	$0.0	**$0.0**
Subtotal	**$409.4**	**$0.0**	**$409.4**	**$66.5**	**$23.6**	**$319.3**
Resiliency - Lumberton	$0.0	$0.0	**$14.0**	$0.0	$0.0	**$14.0**
Resiliency - Other	$0.0	$0.0	**$130.5**	$0.0	$0.0	**$130.5**
Unknown damages & Needs						
Water quality damage and testing						
Flood abatement and water quality protection measures						
Total	**$409.4**	**$0.0**	**$553.9**	**$66.5**	**$23.6**	**$463.8**

*Zero does not indicate that indirect and induced losses do not exist for these categories, only that estimates are not available.

** Dredging and beach renourishment figures may qualify for federal funds.

2. Scope

Structures in scope for natural resources estimates include:

- Hazardous waste/ Waste management
- Dredging/ Beach renourishment

- Dams, dikes, and levees

This report does not include comprehensive estimates of damages and needs related to:

- Water quality damage and testing
- Flood abatement and water quality protection measures

These needs will be evaluated in the coming months when/if further data becomes available.

3. Methodology

Hazardous waste/Waste management

- *Underground Storage Tanks (USTs):* Flood waters can cause USTs to shift, float to the ground surface or fill with water. DEQ's Division of Waste Management has not had an opportunity to verify and categorize the 78 reported UST incidents resulting from Hurricane Florence. Average costs of soil and groundwater remediation vary by incident size, scope, and location. DEQ has estimated preliminary damages of $3.0 million based on average site costs of Hurricane Matthew UST incidents by type applied to the number of Hurricane Florence incidents reported to date.

- *Landfills:* DEQ is aware of three landfills damaged during the storm. Currently, the extent of damages to these landfills – or damages to other landfills – is unknown.

- *Hazardous Waste:* DEQ has contacted all hazardous waste sites and no releases were reported. DEQ is not aware of any damages or needs associated with hazardous waste sites due to Hurricane Florence.

Dredging/ Beach renourishment

- Dredging and beach renourishment damages and needs are $87.1 million and $295.7 million respectively. These estimates are based on a DEQ request to local partners in hurricane-impacted counties for dredging and beach nourishment needs due to Hurricane Florence. This survey information has not been verified and represents a preliminary estimate of damages. Some projects may also be on the current Six Year Water Resources Development plan and may already be receiving, or planned to, receive federal, state, and local funds. Engineers will need to survey and assess beach shorelines and channels for damage to understand the impacts of the hurricane – a process that can take months. Also, in some cases channels that were due to be dredged were cleared by the hurricane while others were shoaled in, which may have an off-setting effect on damages and needs

Dams, dikes, and levees

- Ensuring the structural integrity of dams and dikes is critical to reducing the risk of life and property loss and surface and groundwater contamination that could result from dam breaches and failures. DEQ provided a preliminary estimate of $23.6 million for damages to 19 dams. Included in this total are dam breaches at Boiling Spring Lakes and Sutton Lake, which represent an estimated $20 million in damages. This is not a complete estimate of damages incurred, as costs due to dam and dike damages is expected to increase as DEQ continues to receive updated damage reports.
- After hurricane Matthew, the City of Lumberton identified a need for floodgates and channel drainage improvements to their levee to protect residents from repeated flooding risks. The project has not been initiated and the city experienced additional flooding in Hurricane Florence.

Items considered but limited/ incomplete information available: these needs will continue to be evaluated in the coming months when/if further data becomes available.

Water quality damage and testing

At present, estimates of water quality-related damages are unavailable. As DEQ's Recreational Water Quality Program noted in their September 11 news release: "Floodwaters and stormwater runoff can contain pollutants such as waste from septic systems, sewer line breaks, wildlife, petroleum products and other chemicals." These pollutants can affect the water quality of public water supply, private wells, as well as rivers and the ocean.

- *Public water supply* - DEQ's Dashboard of Hurricane Florence-related incidents, as of noon on October 2, identified seven systems with use restriction advisories; use restrictions range from limited boil advisories to a complete system closure, and affect approximately 21,270 people. These needs associated with repairing physical damage to water treatment facilities are captured in the Utilities section of this report.
- *Private wells* - Wells are a primary source of drinking water for many residents in impacted counties. DHHS has requested $60,000 for private well-water testing. However, tests have not yet been completed on private wells to assess contamination and necessary remediation. FEMA is expected to cover 75% of testing costs.
- *River and ocean water quality* - River and ocean quality have been impaired due to Hurricane Florence. Poor water quality in rivers and the ocean can create hazards for recreational and commercial use, result in fish kills and algae blooms, and degrade wetlands and wildlife habitat. Water quality damages associated with recreational and commercial activities are captured in the Business section of this report; damages associated with fish kills and wetland and habitat degradation cannot be quantified at this time.

Flood abatement and water quality protection measures

- *Stormwater control measures* - Stormwater control measures slow down and filter the flow of polluted runoff from impervious surfaces after storm events. Examples include bioretention cells, infiltration systems, permeable pavement, sand filters, and green roofs. Data on damages to existing stormwater control measures is unavailable at this time. Additional stormwater management planning and installation of stormwater control measures is needed to reduce downstream flooding, protect water quality, and protect receiving streams from physical damage. Several of the local resiliency plans developed post-Hurricane Matthew identify stormwater management as a priority.
- *Conservation measures for water management* - Conservation measures such as restoring and protecting wetlands, streams, and riparian buffers, and protecting natural shorelines provide natural flood protection and reduce erosion. In addition to their storm damage mitigation benefits, healthy wetlands, streams, and shorelines perform important water quality protection and groundwater recharge functions, provide wildlife and fishery habitat, and support both recreational and commercial uses.

An estimate of damage to these natural areas due to Hurricane Florence cannot be determined at this time. The geographic extent of the damages will not be known until on-ground assessments or new LIDAR data are available. Additional protection and restoration efforts would improve the state's resilience in future storm events.

4. Assumptions

- Due to lack of verified damage assessments for most of the natural resource areas, most of these estimates rely on unverified incident counts, incomplete information on the extent of the damages, and average repair or remediation costs from prior hurricane incidents. Specific assumptions not outlined in the methodology descriptions are explained below.
- Dredging and beach renourishment projects are assumed to require a specific request for funding from the Federal government. Historically, the federal government may require a match of up to 25% of project costs from non-federal partners. The non-federal match may be up to up to 35% for beach renourishment projects. Federal projects that are not already designated as a federal project (not currently receiving federal funding) could potentially be eligible for FEMA Public Assistance funds. Federal projects that are designated as a federal project could be funded through supplemental appropriations through the US Army Corp of Engineers.
- There is no federal funding for the reconstruction of privately owned dams.

5. Primary data sources

- Department of Environmental Quality (DEQ)
- Department of Health and Human Services (DHHS)
- Division of Emergency Management (DEM)

6. Potential Source of Funding for Unmet Impact

Federal

- Dredging and Beach Nourishment: Typically, some federal funding for disaster response is made available to cover total project costs for dredging and, potentially, beach nourishment. FEMA Public Assistance funds may also be available for projects. It remains to be seen what this level of funding will be, although it is typically 50% for beach renourishment and 75% for dredging projects.
- The US Department of Commerce can provide assistance for coastal resource restoration (such as habitat improvement and oyster reef repair), research, and data collection when a fishery failure has occurred. The Governor must request a fishery failure determination from the US Secretary of Commerce. Funding is dependent upon the Secretary's determination and Congressional appropriations.
- FEMA Public Assistance funds may be available for natural resource-related needs. OSBM estimates $66.5 million in federal FEMA funds may be allocated to North Carolina with a state matching requirement of $22.2 million for a total of $88.7 million.
- FEMA Hazard Mitigation funds may be available for natural resource-related needs. OSBM estimates $30.9 million in federal FEMA funds may be allocated to North Carolina with a state matching requirement of $10.3 million for a total of $41.2 million.
- DEQ expects FEMA funding, through US EPA Region 4, for conducting assessment and field responses to actual or threatened hazardous material releases and oil discharges in counties impacted by Hurricane Florence. These funds would require a 25% state match.

Private

- Private funding from dam owners, often utilities, HOAs, or individual land owners, will be required for dam repair.

7. State funding recommendations for Unmet Impact

Rebuilding - $27 million

Dredging/ Beach Nourishment Needs Assessment – $5 million

Provides funds to survey beaches and channels for hurricane-related damage and to assess disposal areas for dredged material to prepare for any future emergency and supplemental federal funding.

FEMA Match Funds – $22 million

Provides the state match for FEMA public assistance funds for natural resource-related public assistance. Based on FEMA estimates as of October 5, 2018, the state is

expected to receive a total of $739 million in Public Assistance funds. Using FEMA allocations from Hurricane Matthew, $89 million of those funds will be for natural resources projects. The expected state match need is $22.2 million. Additionally, the State Lab of Public Health anticipates distributing 2,500 well-water testing kits to local health departments in impacted areas; each test costs $36 to test. DHHS assumes two-thirds of tests will be returned for a total cost of $60,000. FEMA is expected to cover 75% of total costs.

Resiliency - $145 million

Clean Water Management Trust Fund (CWMTF) – $25 million

Provides funds to help finance conservation and restoration projects in Hurricane Florence-impacted counties that specifically address flood abatement and surface water quality protection and improvement.

Oyster Sanctuaries & Marine Debris Clean-up – $3 million

Provides funds to DEQ to support rebuilding and repopulating of oyster reefs and marine debris clean up. According to initial assessments, the oyster population is expected to suffer a substantial die-off due to storm-induced water quality issues and increased salinity. Funds may be used to build new and repair and maintain oyster sanctuaries to help restore damaged fisheries, improve water quality, clean-up marine debris, and protect the coastline.

Dam Repair Cost-Share Fund – $5 million

Provides $5 million to establish a cost-share program for the repair of dams that pose a substantial threat to the health, safety, and welfare of downstream residents and businesses. Funds may be used when dam owners do not have the immediate resources needed to protect downstream life and property.

Mapping and Modeling – $88 million

Provides funds to DEM for the following studies, mapping projects, and flood mitigation studies for design permitting, and planning specifications. Preliminary estimates of construction of the flood mitigation projects, for all three river basins, would be approximately $105 million; this estimate will be refined by the studies. Federal funding may be available to offset the cost of these projects.

Request	Description	Total Cost ($M)
Mapping and Modeling		
Statewide Gage, Inundation Mapping and Risk Assessment	To acquire and install additional water gauges and extend flood inundation modeling and risk assessments for inclusion in the Flood Inundation Mapping and Alert Network (FIMAN) application.	$8.3
Acquisition and Generation of High Resolution Topography and Built Environment	To generate additional LiDAR data for: real-time structural flood damage calculations, road and bridge inundation and routing, water and power infrastructure damage assessments, extended flood hazard identification, and dam breach monitoring and alert.	$32.3
Real-Time Road Inundation Modeling, Mapping and Routing	To expand the FIMAN application to include real-time road inundation modeling, mapping and routing. In a flooding event, the state will be able to determine whether a road or bridge was closed, and time efficient routing and re-routing as flood conditions change.	$6.0
High and Intermediate Dam Inundation, Monitoring and Alert	To install surface elevation gages at all 1,510 high and intermediate hazard dams and enable breach monitoring and alert systems.	$4.8
	Total Mapping & Modeling Costs	**$51.4**
Flood Mitigation Design Specifications		
Tar River Basin Flood Mitigation Reservoirs - Feasibility Study and Design Build	To fund feasibility studies and design build planning for three proposed flood loss mitigation reservoirs in the Tar River Basin: Stony Creek Dry Reservoir; Swift Creek Dry Reservoir; and Little Fishing Creek Dry Reservoir.	$20.7
Neuse River Basin Flood Mitigation Reservoirs - Feasibility Study and Design Build	To fund feasibility studies and design build planning for three proposed flood loss mitigation reservoirs and levee in the Neuse River Basin: Bakers Mill Dry Reservoir; Beulah Town Wet Reservoir; and Seven Springs Levee.	$15.0
Lumber River Basin-Fair Bluff Levee - Feasibility Study and Design Build	To fund feasibility studies and design build planning for the proposed levee in the Lumber River Basin at Fair Bluff.	$0.6
	Total Flood Mitigation Design Costs	$36.3
Total		**$87.5**

FEMA Hazard Mitigation Matching Funds – $10 million

Provides the state match for FEMA hazard mitigation funds to be used for natural resource-related projects. Based on FEMA estimates as of October 5, 2018, the state is expected to receive a total of $155 million in Hazard Mitigation funds. Using FEMA allocations from Hurricane Matthew, $30.9 million of those funds will be available for natural resources projects. The expected state match need is $10.3 million.

Lumberton VFW Road Underpass – $14 million

Provides initial funding to the City of Lumberton for the VFW Road underpass to support floodgates and channel drainage improvements to protect residents from repeated flooding risks.

Government Property and Revenue

Addresses the damage to government properties, and lost tax/fee revenue

1. Summary

The following is documentation of the methodology used to estimate state and local government property and revenue loss due to Hurricane Florence.

Preliminary estimates for total direct and indirect impact is estimated to be $406.1 million, $279.0 million of which we expect to be covered by federal and private sources. This results in a total unmet impact of $127.1 million. This unmet impact includes a potential unmet government property and revenue need of $61.9 million. OSBM currently estimates a State tax revenue loss of $25 million and a local tax revenue loss of $10 million. State agency revenue loss is estimated to be $26.9 million.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Local Gov. Buildings*	$143.5	$0.0	**$143.5**	$49.5	$77.5	**$16.5**
State Gov. Buildings	$179.8	$0.0	**$179.8**	$37.5	$97.1	**$45.2**
State attractions	$4.5	$0.0	**$4.5**	$0.0	$2.4	**$2.1**
State Tax Revenue Loss	$0.0	$25.0	**$25.0**	$0.0	$15.0	**$10.0**
State Fee Revenue Loss	$0.0	$17.5	**$17.5**	$0.0	$0.0	**$17.5**
State Lottery Revenue Loss	$0.0	$9.4	**$9.4**	$0.0	$0.0	**$9.4**
Local Tax Revenue Loss	$0.0	$10.0	**$10.0**	$0.0	$0.0	**$10.0**
Local Fee Revenue Loss*	-	-	**-**	-	-	**-**
Subtotal	**$327.8**	**$61.9**	**$389.7**	**$87.0**	**$192.0**	**$110.7**
Timber	$4.2	$7.2	**$11.4**	$0.0	$0.0	**$11.4**
Resiliency efforts	$0.0	$0.0	**$5.0**	$0.0	$0.0	**$5.0**
Total	**$332.0**	**$69.1**	**$406.1**	**$87.0**	**$192.0**	**$127.1**

* OSBM will survey local governments in impacted counties to better determine hurricane impacts.

2. Scope

Structures in scope for the preliminary State and local government property estimates include:

- Local government facilities: excluding public utilities, Community Colleges, and public K-12 educational facilities.
- State government buildings for State Agencies and the University of North Carolina
- State attractions for the Department of Natural and Cultural Resources
- State tax revenue loss: $ 25 million (one year)
- State fee revenue loss: $ 17.5 million (one year)
- State Lottery lost sales: $9.4 million (one year)
- Local tax and fee revenue loss: $ 10 million tax per year (fees unknown)
- Timber losses on State property (Department of Agriculture and Consumer Services)

Incomplete Agency Responses: All Agencies and Universities are continuing to evaluate properties for damages and for the extent of the damage.

3. Methodology

Local Government Buildings - NC Emergency Management flood mapping data was used to estimate the damage to local government property. Local Education Agencies (schools), public universities, and State agencies that reported damage are excluded from the data. The modeling methodology is presented below:

- To produce the storm surge damage estimates, NCEM used national models to create a GIS layer of the storm surge. In conjunction with the GIS layer, NCEM used data on the elevation of the structures' first floor to determine the depth of the flooding incurred by structures. Then, NCEM translated the flood depth into damage estimates by relying on Army Corps of Engineers' formulas and estimated replacement values for buildings and contents in NCEM's statewide database of buildings. Replacement values include the value of equipment contained in the buildings. The estimate for the number of buildings affected by the storm surge only includes primary structures.
- To produce the riverine estimates, NCEM employed NOAA National Severe Storms Laboratory data to determine the amount of flooding sustained from rivers and create a GIS layer of riverine flooding. To increase precision, the GIS layer combines model calculations of precipitation accumulation with actual river gage and high-water observations. The riverine flooding GIS layer allowed NCEM to estimate the flood depth sustained by structures, and in turn the flood depth informed the loss estimate for structures and their contents (including equipment). The estimate for the number of buildings affected by flooding from rivers only includes primary structures.

Construction cost - The preliminary estimate for property damages conservatively assumes construction costs would be 10% higher than the replacement values in the NCEM database. Experience from hurricanes Matthew, Katrina, Harvey, and Superstorm Sandy suggests construction costs were 8-20% higher in the aftermath of the event due to a shortage of available construction services or an increase in the cost of raw material or labor. In addition, Hurricane Florence construction costs are likely to be driven up by the impact of tariffs on the price of lumber, steel, aluminum, and other materials, which would increase further the preliminary cost estimate.

State Government Buildings - OSBM surveyed all state government and University of North Carolina agencies and campuses. This analysis revealed that state facilities were significantly under insured for building and content value and may not be insured for related damage. It is assumed that insurance may only cover 54% of reported damage. State agencies and universities are continuing to assess damages and insurance coverage and these figures should be considered preliminary.

State and Local Revenue Losses - State tax revenue losses are based on an estimated reduction in personal and business income resulting from storm-related disruptions. (See Business & Nonprofit section for detailed methodology on business disruptions.) Local tax revenue losses are based on the estimated loss in private real estate and tangible property from flooding and the effective property tax rates in storm-affected counties.

State Fee Losses - The lost state fee revenues were compiled from a survey of state agencies and universities.

State Lottery Revenue Loss - The NC Education Lottery analyzed lost sales from daily games during a 14-day hurricane period and then applied the percentage decline to recent sales activity.

Timber Losses - Timber losses were modeled by the Department of Agriculture and Consumer Services and OSBM.

Survey of Local Government Needs - OSBM will survey local governments to get a better understanding of hurricane damages to their facilities.

4. <u>Assumptions</u>:

- Local government property is insured at the same level as State government property (approximately 54% of replacement value).
- Government property presented in the table is all identified "government" property by the NC Emergency Management data. Education facilities and utilities were excluded. The damages reported by State agencies were also excluded. It is possible that federal property is reported within this section. Federal military property was excluded.
- State tax revenue impacts assume that individual and corporate income losses account for nearly all lost General Fund revenues. Private insurance payments to businesses with adequate business-interruption losses will compensate for an estimated one-third to one-half of income losses. Based on

analysis of sales tax data before, during, and after Hurricane Matthew, sales tax revenues are expected to rebound quickly after an initial decline.

- Local property tax revenue impacts assume that private property owners whose property suffered major damage or was destroyed will be unable to pay their FY 2018-19 property taxes. The impact range assumes that some property owners with minor-to-moderate property damage will pay less in property taxes relative to the pre-Florence value of their properties. Rebuilding efforts in storm-affected counties should largely restore the local tax base within 3-4 years. Local sales tax revenues will rebound quickly after an initial period of losses.
- Timber losses were modeled from the Department of Agriculture and Consumer Services and IMPLAN (OSBM)

5. Primary data sources

- All State Agencies and Universities
- Division of Emergency Management (property damage)
- NCDOR (tax data)
- BEA and IMPLAN (local economic data and multipliers)

6. Potential Sources of Funding for Unmet Impact

The primary source of funding for event specific loses is expected to be private insurance held by governments and private businesses. A potential $209.9 million may be available for state and local property damages from private insurance, based on preliminary estimates. An additional $15.0 million may be available in the form of tax revenue from business interruption insurance for business related entities. It is assumed that the federal government will also provide a significant amount of funding in the form of Federal Emergency Management Agency – Public Assistance funding is assumed be the next largest portion of funds for local government property damage. The Department of Defense may also provide funding for damaged National Guard facilities should FEMA-Public Assistance funding not be available. The final source of funds is a direct state appropriation for unmet needs.

7. State funding Recommendation for Unmet Impact

Rebuilding - $82 million

FEMA Match – State Share - $22 million

Provides funding for the state share of FEMA funding for public assistance. Public assistance projects could potentially include funds to University of North Carolina Campuses, State government agencies, and local government facilities impacted by the hurricane.

Emergency Repairs and Renovations Reserve -$25 million

Provides funding to be distributed as needed to hurricane impacted facilities for items not covered by insurance or FEMA Public Assistance.

Golden L.E.A.F. Local Government Infrastructure Fund - $25 million

Provides grant funding to local governments to repair and rebuild governmental facilities, such as emergency management services facilities, administrative facilities, courts, and libraries.

Parks and Recreation Trust Fund - $10 million

Provides grants to hurricane impacted local governments to repair and rebuild local park facilities.

Resiliency - $5 million

All Risk Coverage and Flood Coverage - $5 million

Requires all State Agencies and Universities to carry all risk coverage and require flood coverage for those that are in the flood plain or have experienced a flood. The Department of Insurance shall allocate premium funding by highest risk, in the event that recommended funding is insufficient

State Risk Management – $TBD

Requires the Department of Insurance, in conjunction with state agencies and the University of North Carolina system to undertake a risk analysis and building value analysis to look at under coverage for risk type and dollar value. For example, a replacement for Dobo Hall at UNC-Wilmington is estimated at $59 million; the insured value was only $32 million.

Transportation

Addresses the physical damage and state revenue implications of the transportation infrastructure

1. Summary

The following is documentation of the methodology used to estimate transportation needs due to Hurricane Florence.

Preliminary estimates are based on a combination of windshield (initial) estimates, detailed site inspections, and historical data from prior similar events. The preliminary total impact is estimated at $434.8 million with an unmet impact of $136.9 million after expected federal and private funding is account for. The total Department of Transportation highway and bridge system need is estimated at $260 million, $195 million of which we expect to be covered by Federal sources of funding, resulting in an unmet highway and bridge system need of $65 million. The Department will utilize the cash balance of the Highway Fund to cover the unmet needs of this event. Transit system needs are fully reimbursed by FEMA and FTA funds. Rail system damage of $1.1 million is reimbursed at a 50% rate by users, resulting in an unmet rail need of $550,000. Damages related to Ports is covered entirely by insurance minus a $100,000 deductible. Nine Aviation systems are reporting damages with four of them reporting direct damage estimates of $4 million and $260,000 of indirect damages. The remaining five systems' damages are to be determined. Aviation facilities are submitted by other government entities directly to their reimbursement sources resulting in no direct effects to DOT. Damages for non-system (local) roads have also been estimated to be $56.9 million, $42.7 million of which we expect to be covered by Federal sources of funding, resulting in an unmet local transportation need of $14.2 million.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
State bridges & roads	$260.0	$0.0	**$260.0**	$195.0	$0.0	**$65.0**
Public transportation	$1.7	$0.0	**$1.7**	$1.7	$0.0	**$0.0**
Rail & rolling stock	$1.1	$0.0	**$1.1**	$0.0	$0.6	**$0.5**
Ports	$54.0	$0.0	**$54.0**	$0.0	$53.9	**$0.1**
Aviation	$4.0	$0.3	**$4.3**	$0.0	$4.0	**$0.3**
State revenue impact	$0.0	$6.8	**$6.8**	$0.0	$0.0	**$6.8**
Subtotal	**$320.8**	**$7.1**	**$327.9**	**$196.7**	**$58.5**	**$72.7**
Non-system (local) roads	$56.9	$0.0	**$56.9**	$42.7	$0.0	**$14.2**
Resiliency efforts	$0.0	$0.0	**$50.0**	$0.0	$0.0	**$50.0**

Total	**$377.7**	**$7.1**	**$434.8**	**$239.4**	**$58.5**	**$136.9**

2. Scope

Structures in scope for transportation estimates include:

- Bridges, tunnels, and roads, including sidewalks
- Public transit, including bus systems
- Rail and rolling stock
- Ports and airports
- Non-system (local) road estimates are shown here for illustrative purposes.

3. Methodology

Transportation damage costs related to infrastructure owned by the North Carolina state system were assessed. Estimates were developed by the NC Department of Transportation based on initial assessments of damage, including information obtained from contractors deployed for emergency response and repair. Cost estimates are based on estimated quantities, historic unit costs, and engineering judgments.

Item	Location	Cost
Major NC state highways	Statewide	$260,000,000
DMV	Declared Emergency Counties	$72,776
Public transportation	Declared Emergency Counties	$1,700,000
Rails	Declared Emergency Counties	$1,100,000
Non-system (local) roads	Declared Emergency Counties	$56,948,026
Aviation (direct costs only)	Declared Emergency Counties	$3,990,000
Ports	Wilmington/Morehead City	$54,000,000

4. Assumptions

- Non-system (local) road estimates were calculated based on prorated DOT-reported damages by county.

5. Primary Data Sources

- DOT
- Moody's Credit Outlook (October 2018)

6. Potential Sources of Funding for Unmet Impact

The Department of Transportation estimates reimbursements from FHWA/FEMA for the highway system and public transportation totaling $196.7 million. Public transportation has also received a grant of $340,000 from the Federal Transit Authority (FTA). Airports, ports, and public transportation use a combination of federal grants and private insurance to return their systems to pre-Florence conditions. Ports will receive an estimated reimbursement primarily from private insurance of $53.9 million after paying a $100,000 deductible. Aviation will be covered by private insurance in the amount of $4 million. The rail system is required by state law to receive 50% of their damage estimate as reimbursement from the Short Line Railroad. Their current reimbursement estimate is $550,000.

7. State Funding Recommendation for Unmet Impact

Rebuilding - $79 million

State Match for Federal Funds - $65 million (Highway Fund)

Utilizes the existing cash balance of the Highway Fund to provide the required state match of $65 million. This match will draw down $195 million in federal funding.

Match for Local Government Assistance – $14 million (General Fund)

Provides grants to local governments for repair of non-system (local) road damage and other similar projects.

Resiliency - $50 million

Building Smarter and Stronger Resilient Roads - $50 million (General Fund)

Provides funds to help leverage federal grants for designing roads, bridges, pipes, and other transportation structures to better mitigate the effects of extreme weather events. This mitigation should minimize transportation system and local property damages in future events. Initial potential projects include upgrades of eastern sections of I-40, southern sections of I-95, US 70 (future I-42), and US 421.

Education

Addresses the repair cost and revenue implications of damage to educational facilities (excludes UNC system)

1. Summary

The following is documentation of the methodology used to estimate education impacts due to Hurricane Florence.

Over 680 public k-12 schools, 28 community colleges, and four UNC institutions are located within the 28 FEMA-designated disaster counties in North Carolina affected by Hurricane Florence. Based on preliminary reporting, substantial damage was sustained to structures across these educational sectors, leading to delays at many institutions in resuming operations. Excluding Charter schools, 139 public schools across eight school districts remain closed as of October 8. The preliminary economic impact across education sectors is estimated at $297.3 million. This estimate will change as survey data on infrastructure becomes available, which is anticipated by late October. Of the overall estimated impact, we expect $174.1 million to be covered by Federal and Private sources of funding, resulting in an unmet education impact of $123.2 million.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Public K-12 Schools – Operational	$2.0	$14.2	**$16.2**	$0.0	$2.0	**$14.2***
Public K-12 Schools – Capital	$267.0	$0.0	**$267.0**	$26.0	$144.2	**$96.8**
Community Colleges - Operational	$0.0	$8.7	**$8.7**	$1.1	$0.0	**$7.6**
Community Colleges – Capital	Estimates pending survey submissions from colleges regarding damage to facilities					
UNC System	$0.3	$5.1	**$5.4**	$0.8	$0.0	**$4.6**
Subtotal	**$269.3**	**$28.0**	**$297.3**	**$27.9**	**$146.2**	**$123.2**
Resiliency efforts	$0.0	$0.0	**$0.0**	$0.0	$0.0	**$0.0**
Total	**$269.3**	**$28.0**	**$297.3**	**$27.9**	**$146.2**	**$123.2**

*S.L. 2018-135, the School Calendar & Pay/Hurricane Florence signed into law on October 3, 2018, provided $6.5million to offset the loss of revenue to pay school nutrition employees.

2. Scope

Structures in scope for education estimates include:

- Public universities (damage to university facilities is not included here; it is included with state buildings data in the Infrastructure section)
- Public K-12 schools and Charter schools
- Community colleges, including lost revenue and facilities (locally-owned)
- Private schools and universities

For reference, the number of educational institutions by sector operating in the 28 affected counties is included in the following table. Numbers of potentially affected students for UNC and independent colleges and universities includes students from the FEMA-designated counties who may be enrolled at institutions across the state.

Type of School	Number of Institutions in FEMA Counties	Number of Students from FEMA Counties
K-12 Schools (31 Local Education Agencies)	656	385,000
Charter Schools	32	13,000
Community Colleges	28	137,354
UNC Institutions	4	35,768
Independent Colleges & Universities	5	9,433

3. Methodology

K-12 Public Schools

- *Damage to Facilities and Equipment* – Damage to public school facilities and equipment was estimated by generating an average cost per impacted school using preliminary damage assessments reported by 13 Local Education Agencies (LEAs) in FEMA-designated counties. This average cost per school was then multiplied by the number of schools in FEMA-designated counties yet-to-report damages. Based on this modeling, our preliminary estimate of damages to public school facilities and equipment is $267 million. The Department of Public Instruction (DPI) is currently conducting a statewide survey of all LEAs and Charter schools regarding damage to facilities and equipment and storm clean-up costs. This survey, combined with claims data received by the North Carolina Public School Insurance Fund, will be used to produce more complete estimates of facility damage in coming weeks. Insurance and FEMA's Public Assistance Program will cover many of the costs, but the state and local share of funding will be significant.
    - The NC Public School Insurance Fund insures 85 LEAs, including 25 of the 31 LEAs located in FEMA-designated counties. Only 17 LEAs

have submitted claims to the Public School Insurance Fund to date, totaling $35.7 million.
    - Thirteen LEAs report damage estimates of $177 million, including damages of $125 million in Onslow County alone. Of that amount, Onslow needs $51 million to re-open the school system.

- *School Nutrition Programs* – Impacted schools suffered losses of food and equipment used to provide meals under the School Nutrition programs. Eight LEAs reported initial assessments of losses in excess of $2 million as of October 5. This figure is expected to rise as program officials assess the damage.

- *The North Carolina Education Lottery (NCEL)* - NCEL compared lost sales from daily games during a 14-day window surrounding Hurricane Florence with the average activity from comparable 14-day windows from the previous two months to assess the initial impact of the storm. NCEL estimates a net loss in revenue to education of $2.1 million resulting from the storm; however, there are sufficient funds in the Lottery Reserve to offset this revenue loss for FY 2018-19. Total estimated loss of lottery revenue of $9 million is included in the Government section, so it is not included in the education section.

- *Estimated Lost Revenue* - Lost revenue from school meals not served and reimbursed by the federal government under the school nutrition programs is estimated at $14.2 million as of October 5, 2018. The Department of Public Instruction likely experienced additional lost revenue and this number will rise as data becomes available.

Community College System

- *Estimated Lost Tuition Revenue* - The NC Community College System Office developed an estimate of potential lost tuition revenue based on the severity of hurricane damage in disaster-declared counties. The System used the length of college closures post-storm as a proxy for impact, dividing affected colleges into 3 categories based on when courses resumed. Colleges with the longest closures were weighted more heavily in a formula that utilized an estimated effect on enrollment multiplied by an estimated amount of lost tuition revenue per full-time equivalent student. This formula resulted in an estimated loss of $8.7 million in tuition receipts.

- *Damage to Facilities and Equipment* - The NC Community College System Office surveyed campuses regarding damage to facilities and equipment and storm clean-up costs. As of October 3rd, 46 of 58 colleges had responded. However, three of the 12 that have not yet responded are in disaster-declared counties and are potentially among the hardest hit. Based on self-reported figures to date, 18 colleges experienced damage from the hurricane, including 16 in disaster-declared counties. Many of these colleges are not yet able to report dollar figures associated with damages, as estimates are still being

prepared. Survey data and insurance claims will be used to produce an estimate in the coming weeks.

UNC System

- *Estimated Lost Revenue* - OSBM surveyed UNC constituent institutions regarding lost fee revenue due to storm-related disruption. Six institutions, including three of the four located in disaster-declared counties, reported an estimated loss of $5.1 million in various revenues. Of that, $3.3 million was at UNC-Wilmington. The estimated lost revenues primarily consisted of fees deposited in institutional trust funds, including health care, housing, dining, and receipts related to canceled events.

- *Estimated Storm Prep Costs* - 11 universities reported storm preparation costs of approximately $300,000.

- *Damage to Facilities and Storm Clean-Up* - Damage to UNC facilities and storm clean-up costs are reported separately in the state buildings and infrastructure data.

NC Independent Colleges and Universities

- *Estimated Lost Revenue* - No estimate of potential lost revenue has been obtained from private colleges. The NC Independent Colleges and Universities association has made a general request for financial aid assistance for students hailing from disaster-declared counties to both aid their continued enrollment and mitigate operational losses at private institutions.

- *Damage to Facilities and Storm Clean-Up* - No data has been collected regarding damage to private college facilities. Known damage was sustained to at least three institutions, but no damage estimates could be obtained.

4. Assumptions

- School property is insured at the same level as State government property (approximately 54% of replacement value).

5. Primary data sources

- Division of Emergency Management
- Department of Public Instruction
- North Carolina Education Lottery
- NC Community College System Office
- UNC System Office
- Individual UNC and Community College system institutions
- State Education Assistance Authority
- NC Independent Colleges and Universities association
- Southeast Education Alliance

6. Potential Sources of Funding for Unmet Impact

Federal:

- *Federal Emergency Management Agency* – Based on FEMA estimates as of October 5, 2018, the state is expected to receive $554 million in Public Assistance funds from FEMA with a state match of $185 million for a total of $739 million. Based on allocations from Hurricane Matthew, we anticipate that $35 million of those funds will be for education projects, resulting in a state match need of $9 million.
- *Department of Education* – in 2018 US Congress appropriated $2.5 billion to US Department of Education for the Restart and Emergency Impact Aid for Displaced Students program in response to Hurricanes Harvey, Irma, and Maria and 2017 California wildfires. Texas received a total of $263 million from these programs to assist with Hurricane Harvey recovery. This federal funding option needs to be pursued further.
- *Department of Education – Federal Supplemental Education Opportunity Grants (FSEOG)*. Approximately $2.0 million of unused FSEOG funds have been reallocated to date to NC public and private post-secondary education institutions in disaster-declared counties to assist students with financial need.
- *Federal Communications Commission (FCC) – Emergency E-rate*. The FCC provided funding following Hurricane Harvey to assist schools in Directly and Indirectly Impacted areas restore services and replace damaged equipment and to help schools which incurred additional costs due to serving displaced students. This federal funding option needs to be pursued further.

Private:

- *FEMA National Flood Insurance Program* – Water damages would be covered based on the structures that have coverage through NFIP; estimates are still pending.
- *Private insurance* – A potential $144.2 million may be available for property damages to K-12 schools from private insurance, based on preliminary modeling. However, estimates are still pending that will show the total amount across educational sectors that could potentially be covered by private insurance companies for covered damages.

Other:

- *Local Governments* – Additional funds may be provided by counties and municipalities; however, estimates are still pending. Capital facilities for K-12 public schools and community colleges are largely owned and maintained by local governments.

7. State Funding Recommendations for Unmet Impact

Rebuilding - $74 million

State Match for FEMA Public Assistance Funds - $9 million

Provides funding for the state share of FEMA funding for public assistance. Allocations are estimated based on proportions from Hurricane Matthew. Public assistance projects for educational operations and facilities could potentially include emergency protective measures and debris removal, infrastructure and equipment repair and replacement, cost-effective hazard mitigation to protect the facilities from future damage, and temporary facilities.

Flexible Emergency Funding for Public School Capital –$25 million

Allocates $25 million from the Education Lottery Fund to provide emergency funding for schools to address damages to facilities caused by Hurricane Florence and allow them to reopen. Seven LEAs remain closed as of October 8.

Flexible Emergency Funding for Public School Operations –$25 million

Provides $25 million in flexible funding for LEAs to address operational needs related to the storm, including transportation, mental health needs, and the North Carolina Virtual Public School (NCVPS).

- *Transportation* - LEAs receive funding for school bus fuel through DPI's Transportation Allotment, which provides a block grant to each district to provide to- and from-school transportation for students in grades K-12. Longer bus routes caused by storm damage, displaced students, and federal McKinney-Vento Homeless Education Assistance Act requirements may increase fuel costs for impacted districts. OSBM estimates that additional funds of up to $2 million may be necessary.

- *Students in Crisis Grants* – Provide crisis services and/or training to help students develop healthy responses to trauma and stress in the most heavily impacted disaster-declared areas through the existing Students in Crisis grant program. Analyses of mental health service demand following Hurricane Matthew conducted by Trillium Health Services showed a dramatic increase in demand for services for children, especially children age 13 and under. Extrapolating this data, Trillium predicts a 50-60% surge in demand for children 13 and under and overall increase in demand of 35-45% for children 18 and under lasting up to eight months. The estimated cost to increase the number of school counselors on a contract basis in the 18 LEAs which missed more than nine days of school to the recommended national ratio of 1:250 students is $12 million.

- *Average Daily Membership (ADM)* - The storm disrupted DPI's student accounting process, which adjusts funding to LEAs and Charter schools based on the first two months' ADM. A hold harmless for FY 2018-19 only for LEAs and charter schools located in the most heavily impacted disaster-declared counties would provide needed stability for affected schools.

- *North Carolina Virtual Public School (NCVPS)* - The state-funded North Carolina Virtual Public School offers on-line courses for middle and high

school students. For students in impacted areas anticipated to be out of school for 20 days or more, enrollment in NCVPS courses may help fill in the educational gap. Extending enrollment deadlines for NCVPS course and reducing or waiving payments for students in disaster-declared areas would allow more students to take advantage of this option.

Stay-in-School Student Assistance – $10 million

Assists students from disaster-declared counties who may have trouble maintaining enrollment due to disruptions to family income, ability to pay, and other negative storm-related impacts. Funds will assist affected students with paying for tuition, fees, and emergency expenses that impact a student's ability to remain enrolled. Each system will have flexibility to develop program guidelines and assess need for applicants. Eligible recipients must be NC residents and either have a FEMA-designated county as their primary residence or be attending an eligible post-secondary education institution in a FEMA-designated county. Funds will be allocated as follows, with funding administered by community colleges and by the State Education Assistance Authority for UNC and independent colleges:

- $6.0 million: NC Community College System
- $3.5 million: UNC System
- $500,000: NC Independent Colleges and Universities

Community College Tuition Receipts – $5 million

Offsets an anticipated receipts shortfall at affected community colleges due to enrollment declines caused by Hurricane Florence. Tuition receipts are pooled at the system level, thus a shortfall in receipts will have impacts across all colleges. An anticipated shortfall of approximately $8.7 million is projected based on enrollment declines experienced following Hurricane Matthew.

Health and Human Services

Encompasses the financial impact of damage to healthcare facilities, as well as cost to address additional public health needs caused by Hurricane Florence.

1. Summary

The following is documentation of the methodology used to estimate health and human services needs due to Hurricane Florence.

Preliminary estimates are based on information provided to us by the North Carolina Department of Health and Human Services (DHHS), and external health and human services stakeholders. Total impact is estimated at $232.5 million, at least $149.3 million of which we expect to be covered by federal and private sources of funding, resulting in an unmet health and human services impact of $83.2 million.

In summary, the total impact estimate is comprised of $90.6 million due to hospitals and nursing homes, $8.5 million due to public health, $29.0 million due to social services, and $104.4 million due to other health needs.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
Health Care Facilities*	$50.5	$40.1	**$90.6**	$0.0	$72.5	**$18.1**
Public Health	$8.5	$0.0	**$8.5**	$5.6	$0.0	**$2.9**
Social Services	$29.0	$0.0	**$29.0**	$18.4	$0.0	**$10.6**
Health Needs	$104.4	$0.0	**$104.4**	$52.8	$0.0	**$51.6**
Subtotal	**$192.4**	**$40.1**	**$232.5**	**$76.8**	**$72.5**	**$83.2**
Resiliency efforts	$0.0	$0.0	**$0**	$0.0	$0.0	**$0**
Total	**$192.4**	**$0.0**	**$232.5**	**$76.8**	**$72.5**	**$83.2**

**Note: Figure only includes estimates to private hospitals, and doesn't include health care safety net sites in impacted counties (rural health centers, free and charitable clinics, small rural hospitals, critical access hospitals, and school-based health centers).*

2. Scope

Structures in scope for health and human services estimates include:

- Private hospitals, nursing homes and health care safety net facilities
- Public health (including vector surveillance & mold mitigation)
- Social services (including foster care & emergency nutrition assistance)

- Health needs (including assistive technology, mental health & substance use disorder services, I/DD services)

3. Demographics

The majority of damage from Hurricane Florence was to an especially vulnerable part of North Carolina. Much of the Eastern and Southern counties impacted by the storm had not yet recovered from the severe damage of Hurricane Mathew in 2016.

More than a quarter of the state's population lives in the 28 counties the Federal Emergency Management Agency (FEMA) declared eligible for individual assistance, and many of those people lack the capacity to respond to such a devastating event. Approximately one in five residents in the region live in poverty, and a little more than 30% live below 150% of the poverty line. Almost 30% of the state's Medicaid population, and one quarter of its Children's Health Insurance Program (CHIP) recipients, live in the area. Under normal circumstances, these residents often rely on a combination of government-subsidized health and human services for food, medical care and housing assistance. In the wake of the hurricane, they've turned to emergency assistance programs such as the Disaster Supplemental Nutrition Assistance Program (D-SNAP), and temporary housing shelters until they can return to their homes.

Estimates were calculated as specifically as possible based on historical data and the demographics of affected counties. OSBM continues to work with NC hospitals and the North Carolina Hospital Association (NCHA) to verify damage estimates. Pre-K and child care facilities were also impacted by the hurricane; however, the extent of the damage is not yet known. The limited availability of current data makes it difficult to quantify the effects of trauma experienced by individuals and families impacted by the storm. In addition, the nature of DHHS services will require a comprehensive and thoughtful long-range approach in responding to this disaster.

Demographics Snapshot of Disaster-Impacted Counties	
Medicaid	• 700,000 people enrolled in Medicaid • 30,000 children enrolled in CHIP
Uninsured	• 13.1% uninsured (277,000) • Almost 45% of uninsured fall below 138% of poverty line
Disabled	• 19% over the age of 18 (363,000)
Public Assistance	• 17% of households receive FNS benefits (174,000)
Elderly	• 16% over age of 65 (420,000) • 27% of households have at least one person over the age of 65 (270,000)

4. Methodology

Private Hospitals, Nursing Homes & Health Care Safety Net

Damage at hospitals was estimated by benchmarking the physical damage and economic loss of North Carolina's hospital system against the observed financial costs of Hurricane Sandy. Damage estimates were pulled from three New York Hospitals in Sandy's path (Bellevue, Coney Island, Long Beach Medical Center). Using this information, an average cost of damage per bed was estimated. This figure was then multiplied by the total number of beds in North Carolina hospitals located in the Hurricane Florence federal disaster zone.

Finally, two adjustments were made. First, the damage at North Carolina Hospitals was scaled down according to the hospital damage severity classifications established after Hurricane Sandy. Second, the facility damage cost was adjusted down 56%, which is based on comparing the average construction cost per square foot in North Carolina vs. New York City (see Assumptions section for more detail). Based on this modeling, we estimate eastern North Carolina hospitals will face $42.7 million in facility costs and $30.8 million in economic loss.

The facility and economic costs of nursing homes were modeled using the same methodology. Damage assessments from ten New York nursing homes were used to identify a facility and economic cost benchmark per bed. This benchmark was then applied to the 99 nursing homes located in disaster-declared North Carolina counties, using the same adjustment criteria. Based on this modeling, we estimate eastern North Carolina nursing homes will face $7.8 million in facility costs and $9.2 million in economic costs.

Public Health

- *Mosquito Abatement* - Based on the population and acreage of the disaster-impacted counties, the state has committed $7.5 million in assistance to counties to address increases in mosquito population and size, caused by flooding, which pose an immediate public health risk to their communities.
- *Funding for Mold Remediation* - HHS requested an estimated $1M, which includes 6 new FTEs, to bolster counties' response to mold calls from impacted residents, as well as to assist with home clean up and mold remediation strategies. Mold growth due to flooding is a long-term issue and costs will be incurred for as long as two years. Given that current North Carolina Emergency Management (NCEM) models indicate 73,000 homes were impacted by flooding, this is a conservative needs estimate averaging to only $13.69 per impacted home.

Adult Social Services

DHHS expects an increase in the number of Adult Protective Services and Guardianship cases. The department estimated the cost of temporary staff to support each local agency's response to the increase.

The Home and Community Care Block Grant (HCCBG) provides a mix of services that counties administer to meet the needs of older adults. DHHS began providing extra supports, such as home-delivered meals, before the storm began and expects these services to be needed for as long as six months.

Child Services

A new child welfare services program would provide assistance to foster care families, foster children, and families with an open child protective services (CPS) case. DHHS estimated the number of children and families to be served by applying the percentage of households seeking individual assistance from FEMA to the number of foster care families, the number of foster care children, and the number of families with an CPS case in the impacted counties. The assistance provided would range for $150-$1000 per child/household. Federal IV-E funding may be able to cover 25% of these costs associated with foster care families.

Following Hurricane Sandy, New Jersey allotted $237,000 to hire former CPS workers to help cover increasing reports in 10 different counties. With three times as many affected counties, an estimated $800,000 would be needed to implement this program in North Carolina, which also includes an adjustment for inflation.

While the total number of damaged and/or closed NC Pre-K classrooms is not yet known, we do know that many Pre-K classrooms experienced some sort of damage from Hurricane Florence. Therefore, $1 million in assistance is being provided as grant program.

Food and Nutrition Assistance

- *D-SNAP* - DHHS reviewed county data for D-SNAP from Hurricane Matthew and extrapolated from it based on the increased severity of Hurricane Florence. DHHS also used feedback from county Departments of Social Services (DSS) operations to assist in arriving at a total estimate $10.2 million. State and local governments must provide 50% of these costs. The State has already authorized overtime for DSS staff to respond to increased demand.

- *School Nutrition Services* – All students in disaster-declared areas are eligible to participate in free federal school breakfast and lunch program through the end of October. The Department of Public Instruction (DPI) estimated the number of additional students eligible to receive free meals in the impacted school districts, charter schools, and federal schools, and the maximum potential federal payment per meal per day. The projected cost for all eligible students to receive both breakfast and lunch from September 17 through October 31, 2018 ranges from $6.0 million to $13.1 million, depending on uptake rate.

Health Needs

- *Emergency Prescription Assistance Program (EPAP)* - Eligible, uninsured residents can receive a free 30-day supply of their medications. Based on the population of uninsured in the impacted counties, anticipated take-up rate modeled after New York/New Jersey following Hurricane Sandy, and factoring increased cost of claim growth, the impact to North Carolina if the EPAP program is activated for a full year could be up to $1.0 million.

- *Durable Medical Equipment (DME) and Assistive Technology (AT) Replacement* - Based on the disabled population of the impacted counties, the

costs of providing short-term DME/AT solutions for evacuees displaced by the storm, and repairing/replacing damaged or destroyed DME/AT during Hurricane Florence. Additionally, staff in impacted counties will be needed to assist with the anticipated demands of expeditiously addressing accessibility and safety needs, increase stability, and replace equipment and devices in order to restore client's ability to function independently.

- *Intellectual and/or Developmentally Disabled Displacement Recovery* - The estimated impact to individuals with Intellectual and/or Developmental Disabilities (I/DD) who may need an institutional level of care, but currently have a living situation in the community due to supports provided by existing I/DD service providers and LME/MCOs was modeled after the disabled population in the impacted counties.

- *Mental Health Services* - Projected mental health and substance use disorder services costs are experienced by New Jersey's Department of Health and Human Services following Hurricane Sandy indicated an additional need of $8.1 million for increased clinical behavioral health services and a mental health public awareness campaign targeted at individuals impacted by Sandy. Following Sandy, there were 16,024 crisis counseling contacts, of which 1,424 required referrals for longer-term professional mental health treatment and an additional 262 received referrals for professional behavioral or medical treatment for substance abuse problems.

    - Within 30 days post-Florence, costs for mental health services responding to trauma; community outreach, screening and training; school screenings and training; and patient transportation for appointments with mental health providers in the three catchment areas with impacted counties.
    - Costs estimated for mental health services to Medicaid beneficiaries likely to surge starting roughly 2-3 months following disaster and lasting up to 8 months. Trillium experienced additional mental health services to Medicaid beneficiaries totaling $10.2 million in additional costs following Hurricane Matthew in 2016.
    - Approximately 3,200-3,750 uninsured adults will need outpatient therapy, medication management, intensive in-home services, community support team services, assertive community treatment team services, and/or substance abuse intensive outpatient services.

  This impact estimate reflects the anticipated cost of services that will be needed in impacted areas. It does not attempt to quantify the effects of trauma experienced by individuals and families impacted by the storm. Peer-reviewed literature detailing the mental health impacts of Hurricanes Katrina and Rita indicate that an evidence-based mental health response to storm trauma is feasible, but requires targeted resources, increased provider capacity, and advanced planning. The study indicated that full implementation would cost $1,133 per capita. Put into the North Carolina context, such an approach would cost more than $12.5 billion and yield 94.8% to 96.1% recovery within 30 months; however, it would exceed available provider capacity. Partial implementation would lower costs and recovery proportionately.

5. Assumptions

- 56% repair cost adjustment: based on comparing average construction cost per square foot in New York City against average cost in Wilmington, North Carolina (e.g. what would cost $1 in New York City would be $0.56 in Wilmington). This comparison was made using data from the RSMeans Location Factors.
- Extrapolating hospital costs across all hospitals utilizes the same methodology as that of Hurricane Sandy. Hospitals were placed in one of 3 impact categories: 1) no physical damage, but surge in patients (hence costs) from evacuated facilities 2) Temporary damage, significant surge in patients, and 3) facility closed due to damage and evacuated. The analysis extrapolated damage estimates from category 3 hospitals to estimate damage in facilities in categories 1 and 2. Our analysis categorizes all hospitals in disaster areas as a "Category 1.5." To this end, we applied a 95% reduction in the damage per bed figures observed in Hurricane Sandy.
- We assume all hospitals and nursing homes have comprehensive private insurance coverage that will compensate them for 80% of their facility costs.
- Assumes CPS and foster care families and children will apply for assistance at the same rate as households in the impacted areas applied for FEMA Individual Assistance.
- Assumes an annual 2% inflation in child welfare social worker costs.
- EPAP methodology assumes that North Carolina has a 2% take up rate, or double the impact experienced in New Jersey following superstorm Sandy, and a higher cost of claims grown by the Consumer Price Index medical inflation $130.

6. Primary data sources

- DEM
- DHHS
- LME/MCO Executive Staff
- Hospital Executive Staff

7. Potential Sources of Funding for Unmet Impact

Federal:

- HHS offers assistance in the following areas:
    - 67.3% of Medicaid eligible costs in FY 2018-19 ($40.4 million) - this blended rate will change in the new state fiscal year.
    - 75% of the EPAP costs ($3 million)
    - 25% of the costs associated with child welfare ($0.2 million)

- USDA covers 50% of the costs associated with D-SNAP ($5.1 million). In addition, USDA provides 100% of the funding for the school nutrition program ($13.1 million).
- FEMA will reimburse the State up to 75% of the costs associated with certain health care services ($9.4 million) and mosquito abatement ($5.6 million).

Private:

- For private hospitals and nursing homes, $76 million would come from those entities' insurance companies.

8. State Funding Recommendation for Unmet Impact

Rebuilding – $69 million

Health Care Safety Net - $5 million

Provides funds to the NC Department of Health and Human Services, Division of Central Administration to administer grants to hospitals, nursing homes, and health care safety net sites (rural health centers, free and charitable clinics, small rural hospitals, critical access hospitals, and school-based health centers) in the 28 affected counties.

Mosquito Abatement - $2 million

Provides funding to local agencies to conduct integrated mosquito management. This state funding will be used to leverage federal funding and provide a total of $7.5 million to impacted counties.

Mold Remediation - $1 million

Bolsters counties' response to mold calls from impacted residents, as well as to assist with home clean up and mold remediation strategies. Mold growth due to flooding is a long-term issue and costs will be incurred for up to two years.

Child Welfare Services - $2 million

Reimburses counties for financial assistance provided to foster children and foster care families, as well as families with open CPS cases, who have been impacted by Hurricane Florence. This assistance would be used to provide stability in the home by restoring losses to personal property.

NC Pre-K Repairs - $1 million

Establishes a grant program where Pre-K providers can apply for assistance for immediate repairs that would aid these programs in remaining open or returning quickly to operations.

D-SNAP Match Funding - $5 million

Provides food to families and individuals that meet certain eligibility requirements, including suffering a loss due to Hurricane Florence, and who are

not currently receiving Food and Nutrition Services (FNS) benefits. This state appropriation leverages federal funding for a total of $10.2 million in food benefits.

Durable Medical Equipment & Assistive Technology - $1 million

Provides funding for staff qualified to assist individuals with replacing lost devices and requalifying individuals needing DME and/or AT in order to live independently and remain integrated in the community.

Individuals with Intellectual/Development Disabilities Displacement Recovery - $2 million

Increases funding for the I/DD population to ensure that individuals remain integrated in the community and to assist I/DD providers to regain capacity to serve I/DD population in impacted counties.

Adult Protective Services - $2 million

Provides assistance to counties for temporary staff support to respond to an expected increase in guardianship and APS cases following the disaster.

Area Agencies on Aging (AAA) - $0.2 million

Provides home-delivered meals, transportation, and damage repairs to low-income elderly residents in impacted areas.

Child Welfare Social Workers - $1 million

Provides a flexible pool of temporary or contract social workers to work with counties in the short term as they experience a surge in child welfare reports. Research indicates that reports of domestic violence, child abuse, and neglect increase following a disaster.

Emergency Prescription Assistance Program - $1 million

Activates the EPAP program, allowing enrolled pharmacies to process claims for prescription medications, medical supplies, vaccinations and some medical equipment for uninsured residents of a disaster area.

Mental Health Services for the Uninsured - $27 million

Provides funding to support emergency mental health needs as well as provide ongoing mental health support to the uninsured population impacted by Hurricane Florence.

Mental Health Services for Medicaid Beneficiaries - $20 million

Provides supplemental funds to address the emergency and ongoing behavioral health needs of Medicaid beneficiaries for up to eight months post disaster declaration.

Substance Use Treatment Programs - $3 million

Provides funding for supplies, take-home medication, overtime, building damage repair, and other costs of treatment to 25 opioid treatment programs to assist individuals with opioid addiction while recovering from Hurricane Florence.

Recovery Operations

Addresses the costs of establishing an office to implement recovery efforts

1. Summary

The following is documentation of the methodology used to estimate needs in Recovery Operations due to Hurricane Florence. Preliminary estimates are based on staffing costs for robust and efficient recovery office and leveraging Local Government Commission data on cities that are financially struggling. Total impact is estimated at $194.2 million, $137.4 million of which we expect to be covered by federal sources of funding, resulting in an unmet impact of $56.8 million for recovery operations.

Preliminary Damage and Needs Estimate (Millions)						
Category	**Direct**	**Indirect/ Induced**	**Total Impact**	**Federal Funding**	**Private Funding**	**Unmet Impact**
State Government Support for Recovery & Resiliency	$67.0	$0.0	**$67.0**	$57.0	$0.0	**$10.0**
Local Government Assistance	$20.0	$0.0	**$20.0**	$0.0	$0.0	**$20.0**
State Match - FEMA Immediate Recovery Operations	$107.2	$0.0	**$107.2**	$80.4	$0.0	**$26.8**
Subtotal	**$194.2**	**$0.0**	**$194.2**	**$137.4**	**$0.0**	**$56.8**
Resiliency efforts	$0.0	$0.0	**$0.0**	$0.0	$0.0	**$0.0**
Total	**$194.2**	**$0.0**	**$194.2**	**$137.4**	**$0.0**	**$56.8**

2. Scope

Items in scope for recovery operation estimates include:

- State government needs to manage an effective recovery
- Funding assistance to local governments

3. Background & Methodology

Effective State Government Support for Storm Recovery and Resiliency

State agencies need personnel and operating support to assist with an effective recovery and rebuilding. North Carolina's Division of Emergency Management (DEM) is working to fulfill the basic responsibilities of a state recovery office. With large scale recovery efforts, it is often best practice to set up a distinct recovery office entity with its own dedicated staff to oversee and drive recovery. Without this dedicated entity, it will be challenging for North Carolina to efficiently execute the

needed multi-year recovery and resilience projects. Other state agencies will also need additional support to effectively assist in North Carolina's rebuilding and resiliency efforts.

Office of Recovery and Resiliency

Initial cost estimates for the Office of Recovery and Resiliency are based on best practices observed from recovery offices set up following Hurricanes Sandy and Harvey as well as South Carolina's successful Disaster Recovery Office. While New York's recovery office had over 100 employees and South Carolina's has 35 employees, North Carolina's office can be run in a more streamlined manner because it benefits from existing capacity within DEM. The office director will shape the specific organizational design of the office. To complete the full scope of recovery projects, the Office will need to be operational for approximately 5 years.

Local Government Assistance

Local governments are a critical partner in the state's efforts to rebuild after a disaster. Ensuring they have the capacity to implement programs and effectively utilize state and federal recovery funds is vital for a successful recovery and an efficient distribution of funds Two programs to support and increase local governments recovery capacity are described below; another local government support program is included in the Housing section of this report.

Rebuilding and Capacity Grants

The Office of Recovery and Resiliency will develop and administer a grant program for financially-distressed local governments to assist with recovery capacity. The grants would cover the salaries, benefits, and operating costs for two positions as well as the purchase of 1 vehicle per community for three years.

Emergency Financial Assistance

The Local Government Commission (LGC) identified 36 municipalities in disaster-declared areas that may face difficulties maintaining normal operations in the event of a disaster. These municipalities, the majority of which have very small populations, were already facing financial difficulties in FY 2016-17 when there was no nationally declared disaster. It is currently unknown how many additional municipalities in hurricane impacted areas may face financial hardship. OSBM estimates that three months annual operating revenue for the identified municipalities is approximately $30.0 million.

4. Assumptions

- Funding for the Office of Recovery and Resiliency will be needed for five years.
- Funding for State agency operational support for rebuilding and resiliency will be needed for three years.
- Funding for rebuilding and capacity grants to local governments will be needed for three years.

- Employee benefits are based on FY 2018-19 rates: 7.65% of pay for FICA, 18.86% of pay for retirement contributions, and $6,104/FTE for health insurance.
- Annual operating costs per employee are $23,808, and include average per employee expenditures on office supplies, technology, professional development, travel, and rental cost.
- Municipalities whose 2017 operating budget data was unavailable were assumed to have a municipal budget amount equal to the average of the municipalities for which data is available
- Local government fund balance was not considered in this analysis, as the governments may have already used some fund balance to meet operating requirements. Also, negatively weighting the availability of local fund balance may act as a disincentive to maintain adequate fund balance in future events.

5. Primary data sources

- Local Government Commission (LGC)
- Division of Emergency Management (DEM)
- Department of Environmental Quality (DEQ)
- Department of Insurance (DOI)
- Department of Administration (DOA)
- Office of State Human Resources (OSHR)

6. Potential Sources of Funding for Unmet Impact

North Carolina is expected to receive over $1.1 billion in CDBG-DR funds. HUD allows 5% of these funds, equivalent to $57 million, to be used to administer recovery programs. These funds will be used to support state government recovery needs and local government recovery.

7. State funding recommendations for Unmet Impact

Rebuilding - $57 million

State Government Support for Recovery and Resiliency – $10 million

Office of Recovery and Resiliency

Establishes an Office of Recovery and Resiliency. Preliminary assessment indicates the Office budget will be approximately $35.0 million in order to operate for five years. This includes $20.0 million for a staff of 30-35 time-limited positions providing general disaster recovery coordination and public information; citizen outreach and application case management; audit, finance, compliance, and reporting on disaster recovery funds; and program and construction management

services. These positions will supplement the 40 existing positions within DEM already dedicated to recovery operations. The Office will also utilize up to $15.0 million over the 5-year life of the Office to acquire contractual services from private sector firms specializing in housing, construction, and project management services.

Support Agency Disaster Recovery and Resiliency Efforts

Recommends funds for enhance state agency operational capacity related to disaster recovery rebuilding and resiliency efforts over the next three years.

Division of Emergency Management Needs

Provides $2.5 million to DEM address critical operational support to Division of Emergency Management's Logistics section in order to build capacity and increase the efficiency and effectiveness of future emergency response. This funding will support the salaries, benefits and operational needs for 10.0 time-limited positions which will include positions such as emergency response warehouse personnel, emergency services coordinators and emergency supply transportation staff.

Provides $10.0 million to DEM fund immediate public safety and response capacity building which would include equipment and infrastructure needs to improve future emergency response. Items that could fall into this category include search and rescue equipment, generators, and information technology improvements.

Department of Environmental Quality Needs

Provides $13.0 million to DEQ to address critical operational support and staffing needs for DEQ programs responding to disaster recovery and resiliency efforts. DEQ may establish up to 20.0 time-limited positions to support rebuilding and resiliency with these funds. Rebuilding activities include but are not limited to waste management, water quality monitoring and permitting, and dam safety. Funds for rebuilding may be used for operational needs, such as travel and testing as well as equipment necessary to assess, rebuild, and monitor storm-related damages. DEQ divisions also supporting resiliency activities helping the state and local governments prepare for and mitigate future storm-related impacts. Sample resiliency needs include obtaining storm-response training and equipment, conducting studies related to storm resiliency, and assisting local governments and other customers (such as water quality permits) in preparing for storm events.

Department of Insurance (DOI) Statewide Code Inspectors

Provides a $5.5 million for DOI to hire 15.0 time-limited all trade code inspectors who can be deployed to Florence-impacted counties to augment and expand county and municipal city code inspection offices that perform compliance inspections associated with repairs and reconstruction of flood damaged homes. These code inspectors would have statewide jurisdiction and authority to ensure construction activity complies with building code standards. These additional staff are critical to ensuring the rebuilding process can occur without delay. Most of the local governments impacted by Hurricane Florence do not have the staff needed to review and inspect the volume of major home repairs and reconstruction activities expected to result from Hurricane Florence rebuilding.

Department of Administration (DOA) Needs

Provides $950,000 to DOA to hire 3 time-limited positions. The Office of State Human Resource (OSHR) would hire 2.0 positions to assist agency HR offices in recruitment of positions and to fast-track the review and approval of all hurricane - related HR requests. The Division of Purchase and Contracts would hire 1.0 position to expedite the review and approval of state contracts related to disaster recovery.

Local Government Assistance – $20 million

Rebuilding and Capacity Grants – $10.0 Million

Provides $10 million in state appropriation for grants-in-aid to financially distressed local governments to support two-person teams rebuilding and capacity teams. The Office of Recovery and Resiliency will engage impacted communities, assess internal capacity to manage large scale repair and reconstruction activities, and award grants of up to $1 million to selected distressed communities. Grants would be awarded in a fair and open process and provide adequate funding for an experienced housing construction manager, civil engineer, land-use planners, and experienced program managers to assist the distressed communities for three years. These grants must accommodate each community's specific needs related to rebuilding and recovery. Some communities may need a construction manager while another needs a landouse planner. The grant program will provide the flexibility to allow the recipient to partner with another appropriate governmental entity, such as a county government or regional Council of Government, if the distressed local community does not have the capacity to supervise the 2-person disaster recovery team.

Emergency Financial Assistance Grants – $10.0 million

Recommends the state establish a one-time emergency fund for local governments in disaster-affected areas that need immediate cash flow assistance. The Office of Recovery and Resiliency in consultation with the LGC will manage these funds, which shall be distributed to local government for the following, in priority order:

- To meet local government debt service obligations;
- To meet payroll obligations for local governments; and/or
- To meet vendor payments where non-payment would result in negative financial outcome.

State Match - FEMA Immediate Recovery Operations – $27 million

Provides the state match for FEMA public assistance funds to be used for immediate disaster response activities. Based on FEMA estimates as of October 5, 2018, the state is expected to receive a total of $739 million in Public Assistance funds. Using FEMA allocations from Hurricane Matthew, $107.2 million of those funds will be immediate response such as rescues, debris removal, etc., resulting in $26.8 million in state funds needed to match the $80.4 million from FEMA.

Glossary

AAA – Area Agencies on Aging

ACS – American Community Survey

ADM – Average Daily Membership

AT – Assistive Technology

BEA – US Bureau of Economic Analysis

CDBG - Community Development Block Grant

CDBG-DR – Community Development Block Grant Disaster Recovery

CHIP - Children's Health Insurance Program

CPS - Child Protective Services

CWMTF - Clean Water Management Trust Fund

D-SNAP - Disaster Supplemental Nutrition Assistance Program

DACS – Department of Agriculture and Consumer Services

DEM – Division of Emergency Management

DEQ – Department of Environmental Quality

DHHS – Department of Health and Human Services

DME - Durable Medical Equipment

DMF - Division of Marine Fisheries

DOA – Department of Administration

DOI – Department of Insurance

DOT – Department of Transportation

DPI – Department of Public Instruction

DSS - Departments of Social Services

ECP - Emergency Conservation Program

EFRP - Emergency Forest Restoration Program

ELAP - Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program

EPAP - Emergency Prescription Assistance Program

EQIP - Environmental Quality Incentives Program

EWP - Emergency Watershed Protection

FCC – Federal Communications Commission

FEMA – Federal Emergency Management Agency

FHWA – Federal Highway Administration

FICA - Federal Insurance Contributions Act

FIMAN - Flood Inundation Mapping and Alert Network

FNS - Food and Nutrition Services

FSEOG - Federal Supplemental Education Opportunity Grants

FTA – Federal Transit Administration

FY – Fiscal Year

GDP – Gross Domestic Product

GIS – Geographic Information System

HCCBG - Home and Community Care Block Grant

HFA – Housing Finance Agency

HMGP - Hazard Mitigation Grant Program

HOA – Homeowner Association

HUD – Housing and Urban Development

I/DD – Intellectual and/or Developmental Disabilities

IFA - Interjurisdictional Fisheries Act

LEAs – Local Education Agencies

LGC – Local Government Commission

LIDAR – Light Detection and Ranging

LIP - Livestock Indemnity Program

LME/MCOs - Local Management Entity / Managed Care Organization

MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act

NCDOR – North Carolina Department of Revenue

NCEL – North Carolina Education Lottery

NCEM – North Carolina Emergency Management

NCHA - North Carolina Hospital Association

NCVPS - North Carolina Virtual Public School

NFIP – National Insurance Flood Program

NOAA – National Oceanic and Atmospheric Administration

NRCS - Natural Resources Conservation Service

OSBM – Office of State Budget and Management

OSHR – Office of State Human Resources

SARF - State Acquisition and Relocation Fund

SBA – Small Business Administration

STEP - Sheltering and Temporary Essential Power

TAP - Tree Assistance Program

TCLI - Transitions to Community Living

UNC – University of North Carolina

US EPA – US Environmental Protection Agency

USACE – US Army Corps of Engineers

USDA – US Department of Agriculture

USTs – Underground Storage Tanks

VOADs - Volunteer Organizations Active During Disasters

WHIP - Wildfires and Hurricane Indemnity Program