



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 \$5.7 billion—of this, \$3.8 billion is the direct impact and \$1.9 billion is the secondary impact (indirect and induced). Based on preliminary data, we expect \$746 million to be covered by federal and private sources of funding, resulting in an unmet non-agriculture business and non-profit impact of \$4.9 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 & Need Estimate (Millions)							
Category	Direct	Indirect/ Induced	Total impact	Expected Funding		Appropriated	Unmet Impact
				Federal	Private	State	
Real estate and equipment	\$1,080.0	\$0.0	\$1,080.0	\$200.0	\$506.0	-	\$374.0
Economic loss	\$2,700.0	\$1,900.0	\$4,600.0	\$0.0	\$40.0	-	\$4,560.0
Subtotal	\$3,780.0	\$1,900.0	\$5,680.0	\$200.0	\$546.0	-	\$4,934.0
Resilience efforts	\$0.0	\$0.0	\$20.0	\$0.0	\$0.0	-	\$20.0
State Appropriations	-	-	-	-	-	\$5.0	-
Total	\$3,780.0	\$1,900.0	\$5,700.0	\$200.0	\$546.0	\$5.0	\$4,949.0

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 do include churches and temporary lodgings (e.g., 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. Economic Overview

Most of the damage from Hurricane Florence was concentrated in the 31 counties that FEMA has designated to receive individual assistance (IA). These counties account for 23% of North Carolina GDP.³

Of the 57,000 establishments (i.e. business locations that include separate locations of a chain) in the 31 counties, 96% had fewer than 50 employees in 2016.⁴ There are another 196,000 “mom and pop” type businesses and side businesses that have no employees and had receipts of nearly \$8 million in 2016.⁵

The Retail Trade sector accounts for 17% of all establishments and total employment in the 31 counties. The Health Care & Social Assistance and Construction sectors each account for about 11% of establishments, and Accommodation & Food Services accounts for 10%. While the Manufacturing sector accounts for only 3% of establishments, it comprises 14% of total employment.⁶

The average unemployment rate in these 31 counties was 5.0% in 2017 compared to the state average of 4.6% (the rate for the region was 4.4% in August 2018, the most recent month available, versus the state rate of 3.9%).⁷ However, this area includes six counties that are in the bottom fifth in terms of the unemployment rate and four counties in the top fifth.

Employment statistics are slow to show the impact of weather events, and usually undergo significant annual revisions to appropriately account for the impact of storms. However, unemployment rates in the affected area will very likely increase temporarily. As of October 22, a total of 13,732 unemployment insurance claims have been filed as a direct result of the storm and \$1,333,089 has been paid on these claims. Individuals who have already received their maximum benefit through regular unemployment insurance (12 weeks) are also entitled to Disaster Unemployment Assistance (DUA) for up to 27 weeks. As of October 22, a total of 11,478 DUA claims have been filed and \$54,009 has been paid on these claims.

³ IHS 2016 Estimate of Gross County Product.

⁴ Census Bureau County Business Patterns.

⁵ Census Bureau Nonemployer Statistics.

⁶ Census Bureau County Business Patterns.

⁷ 2017 Unadjusted Local Area Unemployment Statistics, available at: <https://d4.nccommerce.com/LausSelection.aspx>.

4. Methodology

NCEM estimated that a total of 3,800 private-sector business and nonprofit properties incurred flood damage. Based on insurance claims reported to the NC Department of Insurance (DOI) as of October 19, 2018, OSBM estimates that approximately 23,000 business and nonprofit properties suffered damages from wind and other storm-related hazards. Based on the same DOI reports, OSBM also estimates that approximately 1,100 businesses and nonprofits experienced damages to vehicles and other tangible property. These impacts represent \$1.1 billion in total damage to structures, their contents, and other property.

The estimates include damages from 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.
- *Total flood damages:* OSBM relied primarily on NCEM model-generated estimates for total structural damages caused by flooding. OSBM then adjusted the amount of damage to properties with flood insurance to account for the lower number and amount of National Flood Insurance Program (NFIP) and private flood insurance claims reported by DOI, assuming that 80% of expected NFIP and private flood insurance claims were filed by October 19, 2018
- *Wind damages:* OSBM based wind damages on the estimated non-residential share of preliminary insured losses – including real property, automobiles, and other property types – reported to DOI by private insurers as of October 19, 2018, as well as on trends in claims seen in past disasters. DOI data includes losses from the Coastal Property Insurance Pool (CPIP) and the Fair Access to Insurance Requirements plan (FAIR plan). One shortcoming of the preliminary insured losses reported to DOI is the possibility of double-counting between CPIP/FAIR losses and other insured losses. If subsequent DOI reports of insured losses indicate significant double-counting in their preliminary reports, total estimated wind damages will be lower than the current estimate.

Business Disruption: The total nonfarm business-disruption loss to North Carolina from Hurricane Florence is estimated at \$4.6 billion—inclusive of the direct and secondary (indirect and induced) effects. In terms of value-added (GDP), this amounts to \$2.3 billion, or about 0.4% of projected 2018 North Carolina 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 and public disaster assistance and for transitional shelter assistance, flood-related damages to private property as a share of each county’s aggregate value for assessed real property, mandatory and voluntary evacuations, and school closures.
- Each category had its own set of assumptions regarding decreased economic output over time (see table in Assumptions below).
- The disruption assumptions were applied to the average daily non-farm, non-government employee compensation figures in each county to determine the total direct impact on compensation.
- Compensation losses were scaled to employment, GDP, and total industry output in an economic modeling platform to calculate the direct and secondary impacts on economic output and other economic indicators. Models were run separately for the higher-impact areas (counties in the critical and high impact categories) and lower-impact area (rest of the counties), including the impact of each area’s disruptions on the other area.
- Direct effects include lost production and sales to firms resulting from storm-related disruptions (e.g., business closures, reduced access by employees and customers, etc.) 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 non-financial impacts to human wellbeing resulting from the hurricane, including but not limited to physical and emotional trauma and the value of time diverted from normal activities to preparing for, responding to, and recovering from the storm. The billions of dollars in physical damages to infrastructure, lost inventory, and reduced economic output account only for a portion of the total impact to the wellbeing of North Carolinians affected by the storm.

Analysis of each part of the scope leads to a total estimate of \$5.7 billion, which is in line with expectations as seen in Hurricane Floyd (\$1.0 billion in structural damages to non-agricultural businesses and \$4.0 billion in economic loss).

5. Assumptions

- *Business disruption:* Assumptions for disruptions by county impact category are below. These assumptions are based on evacuations, power outages, school and road closures, and share of damaged property. The business-disruption levels reflect estimates of business revenues permanently lost due to the storm.

Many businesses will compensate for reduced production and revenues during and immediately after the storm with higher production and sales (e.g., through overtime) after the initial disruption period has passed.

Business Disruption Assumptions										
Period Start (Incl.)	9/12	9/14	9/17	9/22	9/27	10/2	10/7	10/12		Disruption Factor (Days)
Period End (Excl.)	9/14	9/17	9/22	9/27	10/2	10/7	10/12	10/27		
Days	2	3	5	5	5	5	5	15		
Weekdays	2	1	5	3	3	4	4	11		
County Impact Categories	Share of Business Activity Permanently Disrupted									
Critical	30%	45%	25%	20%	15%	10%	5%	3%	6.03	
High	15%	30%	10%	5%	3%	2%	2%	1%	2.30	
Moderate	5%	10%	5%	2%	1%	0%	0%	0%	0.767	
Low	2%	3%	1%	0%	0%	0%	0%	0%	0.171	
Minimal	0.5%	1%	0.1%	0%	0%	0%	0%	0%	0.038	

Note: For disruption-factor calculations, daily GDP during weekdays assumed to be 1.3x average daily GDP and daily GDP on weekend days assumed to be 0.25x average daily GDP.

- **Construction cost:** The preliminary estimate for property damages conservatively assumes construction costs for flood damage 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 further increase the \$1.1 billion preliminary estimate.
- **Wind damages:** OSBM first assumed that claims filed with DOI as of October 19, 2018 account for 80% of total Florence-related claims to be filed, based on trends in claims seen in other disasters. Additionally, to determine the size of the damage incurred from wind, OSBM assumed that insured losses represent only 80% of total wind-damage losses. This latter assumption uses conservative impact estimates based on the National Oceanic and Atmospheric Administration’s (NOAA’s) methodology for converting insured wind-damage losses to total wind-damage losses.⁸

⁸ Smith, A.B and R.W. Katz. 2013. “US Billion-dollar Weather and Climate Disasters: Data Sources, Trends, Accuracy and Biases. National Oceanic and Atmospheric Administration. <https://www.ncdc.noaa.gov/monitoring-content/billions/docs/smith-and-katz-2013.pdf>

6. Primary Data Sources

- NC Division of Emergency Management for flood-impact modeling
- U.S. Bureau of Economic Analysis for county-level employee compensation
- IMPLAN for estimates of county-level economic indicators, multipliers, and inter-industry linkages
- NC Department of Insurance for reported insured losses

7. 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 about a fifth of the damages to business structures and their contents – preliminary estimate of around \$200.0 million. As of October 23, 2018 SBA approved close to \$20.0 million for more than 360 low-interest disaster loans. This includes about \$3.5 million for economic-injury disaster loans for small businesses.
- *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.
- *Economic Development Administration (EDA) Assistance Programs* – This federal agency within the Department of Commerce assists with the economic development aspects of long term disaster recovery, including creating jobs in areas of distress. Based on supplemental funding states have received following prior hurricanes, North Carolina may receive \$300.0 million in assistance from the EDA.

Private:

- *Private business disruption insurance* – Based on the most recent claims data reported to DOI, OSBM anticipates that private insurance should cover at least \$40 million in business disruption losses for businesses experiencing business closures resulting from physical property damage. As of October 19th, DOI had estimates for current business disruption claims of \$32 million (adjusted to account for likely deductibles and waiting periods). Based on historical timing of insurance claims following a disaster, the final amount of claims is likely to be at least 25% higher. DOI notes that due to current reporting limitations, there is likely a non-trivial amount of business disruption insurance that is currently grouped with commercial property insurance totals.

In the 2017 RIMS Business Interruption Survey of primarily large businesses, approximately 56% of businesses had comprehensive business disruption

insurance in the event of a natural catastrophe and 40% had partial coverage. Many businesses are likely to use insurance payments for business-interruption losses to at least partially compensate employees for lost wage and salary income.

Based on a 2007 survey of small businesses conducted by the National Association of Insurance Commissioners, we previously estimated that private insurance would cover up to 40% of direct business disruption losses. More likely, however, the actual amount of recouped losses will be far lower due to a common 72-hour waiting period after the event, limitations on types of losses that are insurable (i.e., disallowing claims based on loss of power or mandatory evacuations), caps on total income loss covered, and a lack of available financial data to prove loss of income.

- *FEMA National Flood Insurance Program (NFIP)* – Based on the most recent claims data reported to DOI and the commercial share of NFIP coverage among flood-affected structures modeled by NCEM, OSBM anticipates that NFIP will pay an estimated \$50 million for non-residential flood damages. DOI data as of October 19th shows that total NFIP claims are approximately \$385 million (adjusted to account for likely deductibles), of which OSBM estimates the non-residential share to be \$38 million. OSBM anticipates that the final amount will be at least 25% higher (\$50 million) based on historical trends. However, actual reimbursement may end up being lower if policyholders are not reimbursed up to the amount of their coverage, as has been the case in past disasters.
- *Private Flood Insurance* – OSBM anticipates that private flood insurance will cover approximately \$23 million in flood damage. As of October 19th, DOI reported total private flood insurance losses (residential and non-residential) equal to nearly \$31 million (adjusted to account for likely deductibles), and OSBM anticipates that this figure will increase by at least 25% to \$38 million. Based on other insurance filings with DOI, OSBM estimates that the non-residential market accounts for roughly 60% of the private flood insurance market in the state. OSBM used the estimated residential vs. non-residential market shares for private flood insurance to disaggregate the projected total private flood insurance claims into non-residential and residential estimates.
- *Private Insurance for Damages Caused by Winds and Other Hazards* – OSBM anticipates that private commercial property insurance will cover approximately \$433 million in damages to real property, automobiles, and other property. DOI's October 19th reports show insured losses of more than \$345 million (adjusted to account for likely deductibles) from wind and other hazards. OSBM anticipates that the final amount will be at least 25% higher based on historical trends. The total estimate for insured property likely includes some insured business disruption losses due to current reporting limitations.
- *Deductibles* – Note that all estimates of total insured losses include OSBM estimates of deductibles paid by policyholders to satisfy claims. Deductibles are not included in unmet need.

8. State Funding Recommendations for Unmet Impact

Rebuilding - \$30 million

Small Business Loans and Grants– \$20.0 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 – \$5.0 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 – \$5.0 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 – \$1.0-2.0 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 – \$5.0 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 – \$10.0 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 – \$5.0 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.

9. Funding Provided in S.L. 2018-134 and S.L. 2018-136

Small Business Loans – \$5.0 million

Provides funds to Golden LEAF to partner with nonprofits to administer loans to small businesses affected by Hurricane Florence.