

WNC Strong:

Rebuilding Western North Carolina's Transportation System Following Catastrophic Damage from Hurricane Helene



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In late September 2024, Western North Carolina (WNC) was severely impacted by Hurricane Helene, which dumped up to 31 inches of rain on some communities, resulting in at least 106 deaths, destroying numerous homes and devastating the region’s transportation system.¹

With the support of other state transportation agencies, federal agencies and private sector organizations, the North Carolina Department of Transportation (NCDOT) has embarked on its largest ever reconstruction program as it works to restore WNC’s transportation system in the aftermath of Hurricane Helene. Over 2,000 NCDOT employees have dedicated more than 1 million hours of work to restore the state’s transportation network in the aftermath of Hurricane Helene.

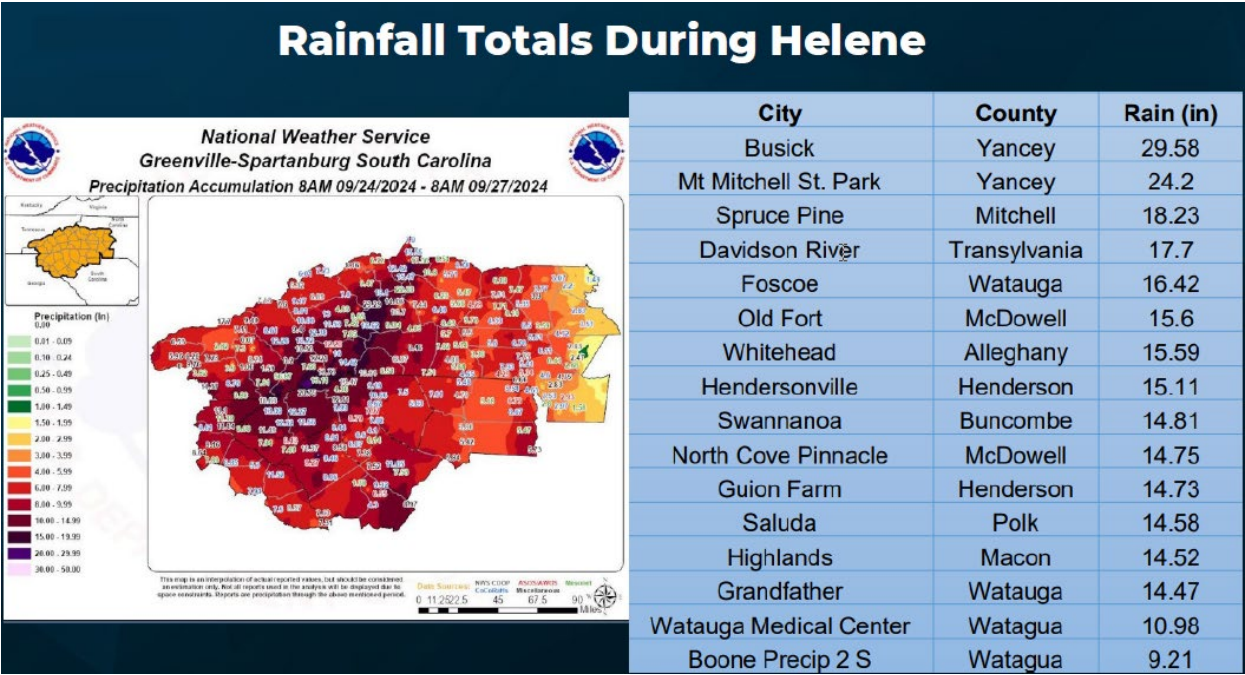
North Carolina relies on a reliable transportation network to transport people and goods to, from and through the state, and the restoration of WNC’s transportation network will be critical to maintain quality of life in the region, enhance traffic safety in WNC and support economic development within the region and throughout the state. It will also be critical that NCDOT is able to provide the required repairs to the transportation system to address the damage from Hurricane Helene without drawing resources away from other needed transportation projects in North Carolina.

This report reviews the impact of Hurricane Helene on Western North Carolina, the initial response, the current status of the recovery of the region’s transportation system, the cost of needed repairs, and the plan and timeline to fully restore WNC’s network of roads, bridges and rail.

HURRICANE HELENE STRIKES WESTERN NORTH CAROLINA

On September 26, 2024, Helene made landfall in northwestern Florida as a Category 4 hurricane with maximum sustained winds of 130 mph. The storm traveled north through Georgia, North Carolina and Tennessee, where high winds and flooding caused by significant rainfall killed more than 230 people, making it the deadliest hurricane to strike the U.S. since Hurricane Maria hit Puerto Rico in 2017.²

On the following day, September 27, Hurricane Helene traveled northwest through Georgia and cut across western North Carolina, delivering up to 31 inches of rain to some North Carolina communities and washing out multiple roads, highways and bridges.



Source: National Weather Service and North Carolina Department of Transportation.

Numerous WNC communities were left isolated by flooding caused by rainwater and debris funneled by the mountains and hills into low-lying areas. Chimney Rock, North Carolina, a small mountain town, saw most of its homes and businesses swept away by floodwaters.

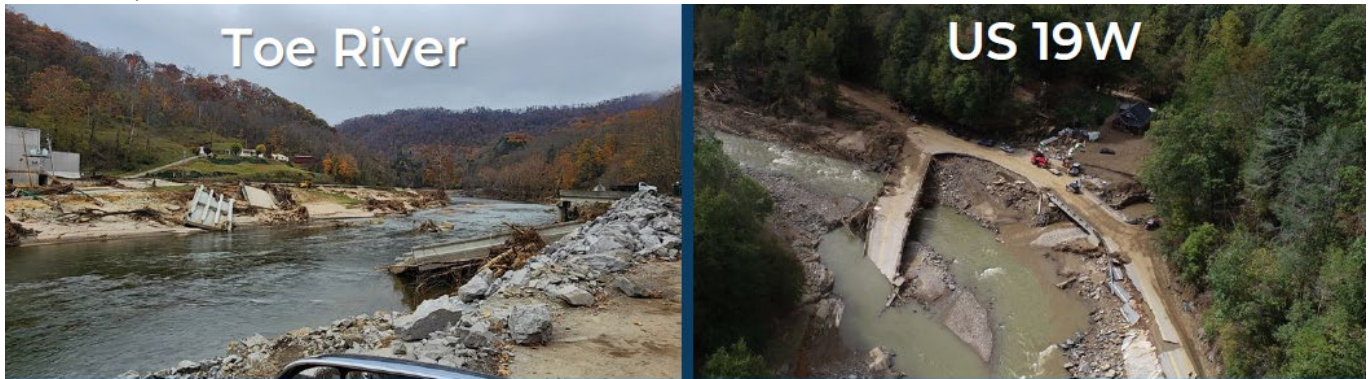
At least 106 people were killed in North Carolina due to Hurricane Helene, largely due to flooding.³ The national economic impact of Helene, including property and infrastructure damage, has been estimated as high as \$200 billion, making Helene the costliest storm in U.S. history.⁴

TRANSPORTATION NETWORK DAMAGE

Flooding from Hurricane Helene devastated WNC's transportation system, washing out numerous roads, highways, bridges and rail lines, and isolating multiple communities.

On September 27, NCDOT reported numerous roads closed because they were underwater or otherwise impassable due to landslides and rockslides, downed power lines, pipe failures and fallen trees. Impacted routes included portions of Interstate 26, Interstate 40 and U.S. 7.⁵ The Asheville Airport was also closed due to flooding.

Further inspection by NCDOT found the storm had damaged 9,370 sites, resulting in the closure of 1,400 roads and damaging 818 bridges.⁶ Some of the routes most damaged included portions of Interstate 40 along the Pigeon River Gorge, U.S. 19W, U.S. 64/74 near Chimney Rock, N.C. 197 near Pensacola, and U.S. 64 and 74A.



Source: North Carolina Department of Transportation.

NCDOT'S INITIAL RESPONSE

Immediately following Hurricane Helene's devastating toll on WNC, NCDOT launched a massive operation to evaluate the storm's damage, clearing trees and other debris to allow the re-opening of routes where possible while beginning to plan for partial and eventually full restoration of the region's transportation system. By October 17, NCDOT reported that approximately 400 homes at 12 sites were still without access other than by all-terrain vehicles (ATVs).

In addition to the approximately 2,000 NCDOT employees who were committed to WNC's recovery, the state transportation agency was further assisted by the US Army, the North Carolina National Guard, the Kentucky Transportation Cabinet (which remained on-site through Thanksgiving), the Florida Department of Transportation, 326 contractor firms and 61 transportation consultant firms.⁷

Initial work following Hurricane Helene focused on temporary bridge installations, shoulder repairs and road reconstruction.

In its December 6 update, NCDOT reported the following progress on state-maintained transportation assets:⁸

- only one WNC community, located in Yancey County, still lacked normal access

- 1,110 roads had been re-opened
- 90 roads had partial access
- 271 roads – 50 of which are primary routes – remained closed
- 52 roads remained closed to large truck traffic.

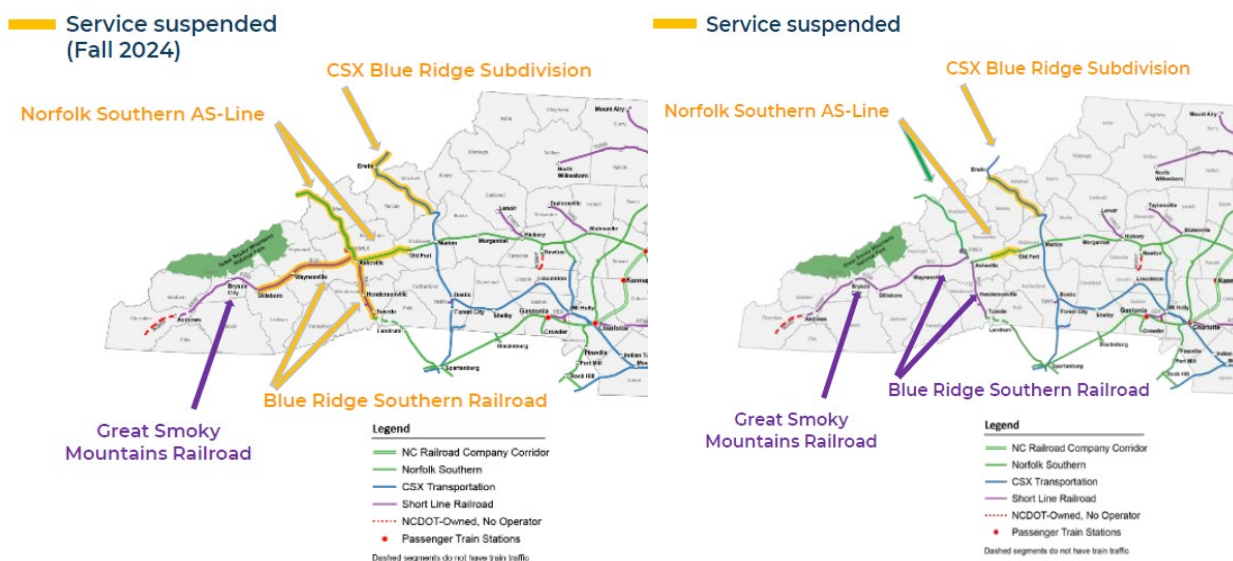
By March 1, a 12-mile, two-lane portion of Interstate 40 from Cold Springs Creek Road (Exit 7) in North Carolina to Big Creek Road (Exit 447) in Tennessee was re-opened with narrower lanes, reduced shoulders and a 35 mph speed limit.⁹ The full re-opening of this portion of Interstate 40 is not anticipated until full re-construction is completed in 2027.¹⁰

As of late May, NCDOT reported the following progress on state-maintained transportation assets:¹¹

- 97 percent - 1,395 of 1,437 – of storm-related closures on state-maintained roads had been reopened¹²
- 42 state-maintained roads remained closed, while partial access is available on 53 state-maintained roads¹³
- repair or replacement was completed on 447 bridges (52 percent of total damaged), 55 large culverts (59 percent of total damaged), and 1,064 of the 1,068 smaller culverts
- permanent replacement of 16 bridges has been completed; 138 bridges are still awaiting replacement
- more than 12 million cubic yards of debris has been removed from roads and waterways
- of the 9,400 sites damaged by the storm, approximately one-third had been permanently repaired and another one-third were at some stage of repair

North Carolina's rail system also faced significant disruptions in the aftermath of Hurricane Helene, prompting a comprehensive rebuilding response by NCDOT. Rail service was initially suspended on portions of Norfolk Southern, CSX, Blue Ridge Southern Railroad, Great Smoky Mountain Railroad and Caldwell County Railroad, disconnecting local rail lines from the national network and disrupting freight movement in and out of the state.¹⁴

As of late May, most rail lines have been repaired or rebuilt. However, service remains suspended on a portion of the Norfolk Southern AS-Line in Buncombe and McDowell Counties and on the CSX Blue Ridge Subdivision in Yancey and Mitchell Counties.¹⁵



Source: North Carolina Department of Transportation.

WNC TRANSPORTATION RECOVERY PLAN

To manage the significant challenge of restoring WNC's transportation system, NCDOT established a management team to oversee the long-term effort.

A significant portion of the damaged structures required extensive repairs, with some level of rebuilding necessary in the vast majority of cases. Of the approximately 9,400 damaged sites that required assistance from NCDOT, 73 percent – a total of 6,822 sites -- would require an additional rebuild of the structure.¹⁶ The largest projects include the reconstruction of portions of Interstate 40, roadways in the Toe and Nolichucky region, portions of U.S. 19W, N.C. 197, and portions of U.S. 64 and 74 in the Chimney Rock area.¹⁷



Source: North Carolina Department of Transportation.

Continued progress on North Carolina's transportation system following Helene can be tracked on a [dashboard](#) maintained by NCDOT. The chart below details the largest Hurricane Helene-related transportation projects in the state.

Project	Start Date	Project Length	Total Cost (millions)
Interstate 40 Pigeon River Gorge	April 2025	26 months	\$1,100
Toe & Nolichucky	September 2025	36 months	\$380
US 19W North	September 2025	36 months	\$350
NC 197 Pensacola	September 2025	36 months	\$321
US 64 & 74 Chimney Rock	August 2025	36 months	\$315
US 19W South	September 2025	36 months	\$218
US 74A	June 2025	30 months	\$141
US 64 Henderson	April 2025	18 months	\$41
Bridge replacements	November 2024	42 months	\$165
Other projects	October 2024	30 months	\$1,492

Source: North Carolina Department of Transportation.

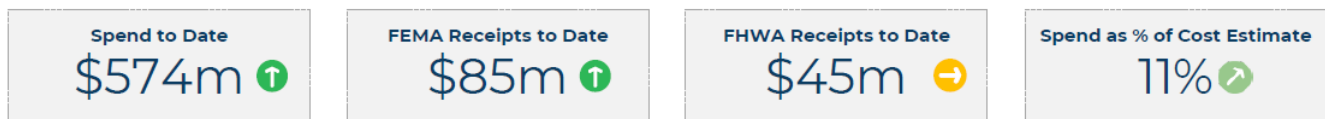
WNC TRANSPORTATION RECOVERY COST & IMPACT OF DEFERRED MAINTENANCE

North Carolina faces significant costs to address the damage caused by Hurricane Helene. While the federal government is expected to cover the largest share of the cost, additional storm-related expenditures by the state will leave less funding available for needed improvements and repairs to the transportation network in other areas of the state as the funds are redirected to hurricane recovery efforts.

The current estimate to repair and replace roads, highways and bridges damaged by Hurricane Helene is approximately \$5 billion, with federal contributions anticipated to cover 81 percent of the cost, leaving North Carolina to pay for the remaining \$917 million cost.¹⁸ NCDOT will pay all costs upfront, with the largest impacts to the department's cash reserves occurring in SFY 2026 and SFY 2027 before federal reimbursements are forecast to exceed disaster recovery spend.

Through March 2025, NCDOT has spent \$574 million on Helene recovery and has been reimbursed with about \$130 million in federal funding.¹⁹

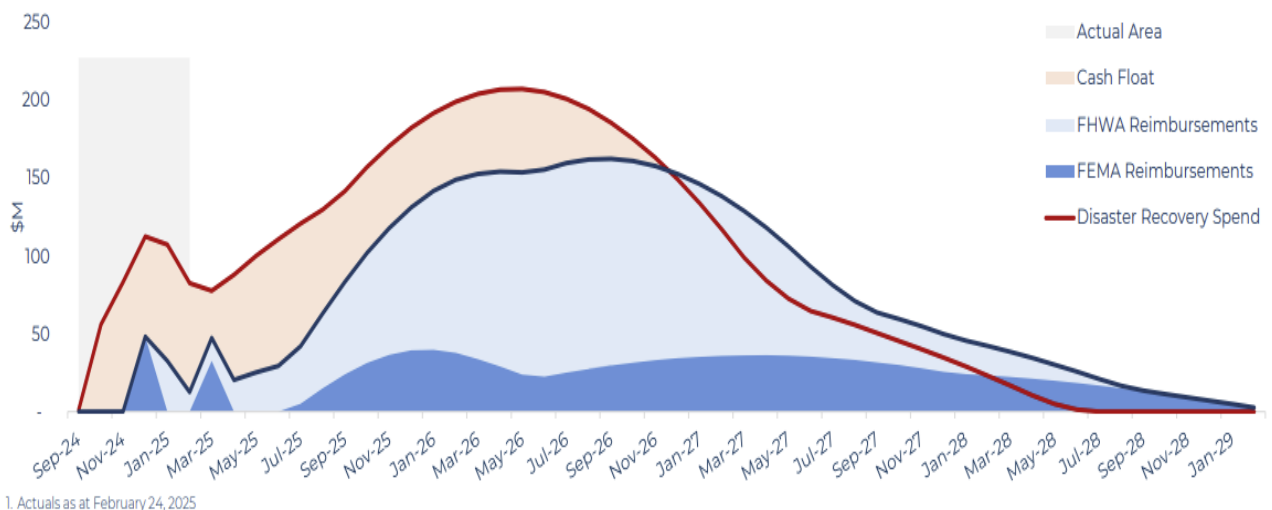
Hurricane Helene Recovery Financial Summary as of March 31, 2025



Current forecasts estimate that recovery from Helene will cost a total of \$4.953 billion over five years, with North Carolina covering \$917 million – about 19 percent – of the costs.²⁰

The majority of the work is anticipated to be largely complete by late 2027 and will be fully completed by the end of 2028.

The graph below shows the anticipated timeline for North Carolina Helene-related reconstruction.



Source: North Carolina Department of Transportation

However, without additional funding to pay for needed road, highway and bridge repairs in Western North Carolina, the state may risk further deterioration of its other state-maintained roads and bridges. The forecasted state share of \$917 million is approximately equivalent to one year of general maintenance spend, 18 months of contracted resurfacing spend, three years of bridge program spend, or 10 years of bridge preservation spend.²¹

The State Share of \$917m is approximately equivalent to...



Source: North Carolina Department of Transportation

NCDOT estimates that deferring maintenance on its transportation system as a result of re-directed funding in the wake of Hurricane Helene would have significant long-term impacts on the overall condition of the transportation system.

If approximately \$1.4 billion is redirected from the state's highway fund over the next five years (an average of \$300 million each year), the statewide route score, which evaluates the condition and smoothness of pavements, would drop from its current level of 83 to 71 in five years.²²



Source: North Carolina Department of Transportation.

On February 19, North Carolina Governor Josh Stein and NCDOT Secretary Joey Hopkins wrote to Congress asking for its support expediting and maximizing Helene reimbursements so NCDOT can avoid disruption to its non-Helene related program.²³

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ENDNOTES

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- ¹ Wikipedia (2025). Effects of Hurricane Helene in North Carolina.
https://en.wikipedia.org/wiki/Effects_of_Hurricane_Helene_in_North_Carolina
- ² Hurricane Helene (2025). Britannica. <https://www.britannica.com/event/Hurricane-Helene>
- ³ North Carolina Department of Health and Human Services (NCDHHS).
- ⁴ Hurricane Helene (2025). Britannica. <https://www.britannica.com/event/Hurricane-Helene>.
- ⁵ North Carolina Department of Transportation (2024). Hurricane Helene Update as of 5 p.m. Sept. 7, 2024.
- ⁶ North Carolina Department of Transportation (2025). Helene Update.
- ⁷ North Carolina Department of Transportation (2025). Helene Update.
- ⁸ North Carolina Department of Transportation (2024). Hurricane Helene Update December 6, 2024.
- ⁹ Ibid.
- ¹⁰ North Carolina Department of Transportation (2025). Helene Update.
- ¹¹ North Carolina Department of Transportation (2025). Hurricane Helene Update February 28, 2025; April 4, 2025; and May 23, 2025.
- ¹² [NCDOT Road Reopening for Hurricane Helene 2024](#). Accessed May 29, 2025.
- ¹³ Ibid.
- ¹⁴ North Carolina Department of Transportation Rail Division. Rail Impacts and NCDOT's WNC Response. PowerPoint presentation. May 19, 2025.
- ¹⁵ Ibid.
- ¹⁶ North Carolina Department of Transportation (2025). Helene Update.
- ¹⁷ Ibid.
- ¹⁸ North Carolina Department of Transportation (2025). Hurricane Helene Recovery Financial Update and Proposed 2025 Spend Plan Amendment.
- ¹⁹ NCDOT Hurricane Helene Update, March 7, 2025.
- ²⁰ Hurricane Helene Recovery Financial Update and Proposed 2025 Spend Plan Amendment. NCDOT Financial Management Division. March 2025.
- ²¹ Ibid.
- ²² North Carolina Department of Transportation. Helene Update. February 25, 2025.
- ²³ North Carolina Department of Transportation (2025). Hurricane Helene Update March 7, 2025.