



REPORT CARD FOR
SOUTH CAROLINA
INFRASTRUCTURE



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REPORT CARD FOR SOUTH CAROLINA'S INFRASTRUCTURE

ABOUT ASCE— South Carolina

The American Society of Civil Engineers' 1,700 South Carolina members work in all levels of government, academia, and the private sector to design, construct, and maintain South Carolina's infrastructure. We uphold the vision of civil engineers as active community members and stewards of our infrastructure. We bring value to our members by providing technical and informative meetings that promote professional development. In addition to scholarships, mentorship, and K-12 education, our outreach programs offer networking opportunities for students and professionals throughout the state.

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ABOUT THE REPORT CARD

The 2026 Report Card for South Carolina Infrastructure is produced by the South Carolina Section of the American Society of Civil Engineers (ASCE). ASCE is a professional organization of more than 160,000 civil engineers worldwide. The South Carolina Section has long served as a resource for state and local decision-makers on infrastructure policy, investment, and planning.

Each infrastructure category was evaluated by a volunteer committee of South Carolina civil engineers with direct expertise in that discipline. Committees drew on publicly available data, agency reports, federal databases, interviews with practitioners, and engineering judgment to develop their grades and findings. Grades reflect conditions and needs as of 2025–2026.

The grading methodology uses eight criteria: Capacity, Condition, Funding, Future Need, Operation & Maintenance, Public Safety, Resilience, and Innovation. Each criterion is evaluated on a scale consistent with the ASCE national methodology, and an overall category grade is assigned. The statewide GPA is calculated as a simple average of category grades converted to a numeric scale.

The Report Card is intended as a resource for public officials, business leaders, media, and citizens. ASCE encourages all South Carolinians to learn more about the infrastructure that powers their daily lives — and to join the call for the investment and action needed to raise South Carolina’s grade.

ASCE SC would like to thank the following contributors for their work.

REPORT CARD CO-CHAIRS

Jonathan Ard, PE | Terracon Consultant, Inc.
Renée S. Gardner, PE | MC Squared, LLC

CHAPTER AUTHORS

Aviation Dr. Dan Nale | The Citadel
Bridges Dr. John Ryan | The Citadel
Dams Dr. Nahid Vesali | The Citadel
Drinking Water Dr. Tess Doeffinger | The Citadel
Ports Dr. Mostafa Batouli | The Citadel
Roads Dr. Dimitra Michalaka | The Citadel
Transit Dr. Dimitra Michalaka | The Citadel
Wastewater Jarred Jones and Phillip Sexton | North Charleston Sewer District

SOCIETY STAFF:

Lizzie Dorman
Tatjana Kuntz
Kevin Longley
Rob Marmet
Caroline Sevier
Josh Shumaker

FACTUAL ACCURACY REVIEWERS

Chris Lacy, SCDOT
John McCain, SCDES

For more information, visit the South Carolina Section of ASCE or contact the South Carolina Infrastructure Report Card committee.



ASCE

2026 REPORT CARD

FOR SOUTH CAROLINA'S INFRASTRUCTURE

Executive Summary

Infrastructure is the backbone of South Carolina's economy, public health, and quality of life. When infrastructure fails to keep pace, the costs fall on residents and communities across the state — slowing growth and undermining safety.

South Carolina's overall infrastructure GPA improved from D+ in 2021 to C- in 2026 — a step forward driven by state and federal investment. However, a C- still means infrastructure is in mediocre condition, requiring continued attention. Seven of eight categories remain within a D or C range, and two categories — Drinking Water and Bridges — declined since 2021.

The Infrastructure Investment and Jobs Act (IIJA) delivered significant federal funding, including more than \$182 million to drinking water systems, a historic \$80 million state investment in aviation, and a highway program that grew from \$1 billion in 2009 to \$6.2 billion in 2024. Charleston Harbor was deepened to 52 feet, making it the deepest port on the East Coast. Safety improved alongside

investment: traffic fatality rates fell from 2.1 to 1.7 per 100 million vehicle miles traveled, dam safety staffing quadrupled, and aviation NextGen technologies improved aircraft sequencing.

The passage of the SCDOT Modernization Act (S.831) in 2026, enacted after the data collection period for this Report Card closed and therefore not reflected in the grades, signals South Carolina's commitment to a successor strategy. By elevating transportation leadership to a cabinet-level position, streamlining environmental permitting, expanding public-private partnership tools, and mandating faster repair turnarounds, the legislation positions the state to deliver infrastructure improvements more efficiently and unlock new investment.

But these gains are uneven. IIJA funding is finite and future funding is uncertain. South Carolina still ranks among the top three states for traffic fatalities per 100,000 vehicle miles traveled. Roads, Drinking Water, and Wastewater face annual funding gaps measured in hundreds of millions of dollars. Without a sustained state-level successor strategy, progress risks stalling or reversing.

South Carolina is at a crossroads. The Palmetto State's population of 5.6 million is projected to surpass 6.2 million by 2035, placing growing demands on infrastructure.

Climate vulnerability compounds these challenges. Sea levels along South Carolina's coast have risen approximately 10 inches since 1950, and the rate is accelerating. Seventy-six critical infrastructure assets face regular tidal flooding by mid-century. Hurricane Helene exposed resilience gaps in drinking water systems statewide, while eleven federal disaster declarations between 2022 and 2025 signal growing pressures from extreme weather.

Workforce and innovation gaps are emerging threats. Wastewater and drinking water utilities struggle to attract and retain trained operators, particularly in smaller communities. New initiatives, like the SC Office of Resilience and the state's first Bus Rapid Transit project, are meaningful steps, but must be matched with sustained workforce investment and proactive, data-driven infrastructure management.

South Carolina's C- is progress — but a floor, not a ceiling. Closing the gap requires sustained investment, dedicated funding, and long-term commitment. The choices made now will determine whether this momentum continues — or the hard-won progress of the past five years begins to slip away.

Recommendations to Raise the Grade



SUSTAIN AND GROW STATE INFRASTRUCTURE INVESTMENT. The IJA has demonstrated what dedicated investment can achieve. South Carolina must develop long-term funding strategies — including dependable revenue streams — to sustain infrastructure investment as uncertainty remains for future federal funding.



PRIORITIZE DRINKING WATER AND WASTEWATER AS PUBLIC HEALTH IMPERATIVES. With 317 drinking water violations in 2024 (up 70% year-over-year) and sanitary sewer overflows increasing 346% since 2022, these are emerging public health crises. The state should accelerate investment in water system rehabilitation, with particular attention to smaller and underserved systems.



ENACT A COMPREHENSIVE DAM SAFETY FUNDING PROGRAM. South Carolina's dam inventory continues to age while downstream development continues. The current \$3 million Dam Repair Assistance Grant Program is a start, but over 1,800 high-hazard dams — many privately owned — require a sustained, substantially larger investment program complemented by robust inspection and enforcement capacity.



ADDRESS BRIDGE DETERIORATION BEFORE IT ACCELERATES. With only 34.5% of bridges in good condition (below the national average of 44%) and 3,000 bridges over 60 years old, the state must increase bridge investment now to prevent further deterioration and avoid the far greater cost of emergency replacements.



EXPAND PUBLIC TRANSIT TO SERVE A GROWING STATE. The state's Mass Transit Fund should be doubled from \$6 million to \$12 million annually as a first step, supporting local transit systems in developing capital plans to meet projected demand.



BUILD THE INFRASTRUCTURE WORKFORCE OF THE FUTURE. South Carolina should invest in workforce development at every level — from vocational training for operators to university programs producing the next generation of civil engineers.



PLAN FOR RESILIENCE — NOT JUST RECOVERY. Eleven federal disaster declarations in four years is a warning. South Carolina should adopt resilience standards for new infrastructure, require resilience analyses for major capital projects, and develop pre-disaster mitigation strategies.

About the Report Card for America's Infrastructure

Every four years, America's civil engineers provide a comprehensive assessment of the nation's 18 major infrastructure categories in ASCE's *Report Card for America's Infrastructure*. Using a simple A to F school report card format, the Report Card provides a summary of current infrastructure conditions and needs, assigning grades and making recommendations to raise them.

The ASCE Committee on America's Infrastructure is made up of 52 dedicated civil engineers and infrastructure professionals from across the country, with decades of expertise in all categories, who volunteer their time to work with ASCE Infrastructure Initiatives staff to prepare the Report Card. The Committee assesses all relevant data and reports, consults with technical and industry experts, and assigns grades using the following criteria:

Methodology

CAPACITY

Does the infrastructure's capacity meet current and future demands?

CONDITION

What is the infrastructure's existing and near-future physical condition?

FUNDING

What is the current level of funding from all levels of government for the infrastructure category as compared to the estimated funding need?

FUTURE NEED

What is the cost to improve the infrastructure? Will future funding prospects address the need?

OPERATION AND MAINTENANCE

What is the owners' ability to operate and maintain the infrastructure properly? Is the infrastructure in compliance with government regulations?

PUBLIC SAFETY

To what extent is the public's safety jeopardized by the condition of the infrastructure and what could be the consequences of failure?

RESILIENCE

What is the infrastructure system's capability to prevent or protect against significant multi-hazard threats and incidents? How able is it to quickly recover and reconstitute critical services with minimum consequences to public safety and health, the economy, and national security?

INNOVATION

What new and innovative techniques, materials, technologies, and delivery methods are being implemented to improve the infrastructure?

Grading Scale



EXCEPTIONAL: FIT FOR THE FUTURE

The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.



GOOD: ADEQUATE FOR NOW

The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.



MEDIOCRE: REQUIRES ATTENTION

The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.



POOR: AT RISK

The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.



FAILING/CRITICAL: UNFIT FOR PURPOSE

The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

The 2026 Report Card for South Carolina's Infrastructure

NOTES ABOUT THE GRADES

Across South Carolina, aging infrastructure, limited funding, and years of deferred maintenance continue to place significant strain on the systems that previous generations built and that today's communities depend on. The analysis and grades presented in this Report Card are intended to help the public, policymakers, and local leaders better understand the importance of sustained, long-term investment; the value of proactive planning; and the need to prepare for future challenges related to growth, economic development, and resilience.

The grades reflect the condition and performance of the infrastructure systems themselves, not the dedication of the many local, state, and federal professionals who work hard every day to operate, maintain, and improve these systems despite constrained resources. This Report Card is designed to provide a clear and objective snapshot of current conditions and to serve as a tool that agencies and decision-makers can use to advocate for the funding and support necessary to keep South Carolina's infrastructure safe, reliable, and resilient for years to come.



Aviation

C-



Bridges

C-



Dams

D+



Drinking Water

D



Ports

B+



Roads

D+



Transit

D+



Wastewater

D



OVERALL GPA

Aviation



Photo: ABB Photo

GRADE
COMPARISON

SC: C-
Nat'l: D+



AVIATION

EXECUTIVE SUMMARY

South Carolina's aviation system, anchored by six commercial airports and a statewide general aviation network, generates billions in annual economic impact and provides critical connectivity for residents, visitors, businesses, and military operations. Passenger traffic continues to grow at all commercial airports, with Charleston (CHS), Myrtle Beach (MYR), and Greenville-Spartanburg (GSP) accounting for nearly 90% of activity. GSP is the state's leading air cargo hub, followed by Columbia Metropolitan (CAE) with both supporting manufacturing and global logistics.

The increase in the grade is due to the influx of state funding, capital improvements, and strengthened safety tools. However, challenges remain: The state's airports face aging infrastructure, congestion, resilience challenges, rising construction costs, outdated air traffic control technology, workforce shortages, and public safety demands. Meeting future needs will require additional investment in airport infrastructure, modernized Passenger Facility Charges, improved landside access, resilience initiatives, cargo and terminal expansion, workforce development, and technology upgrades.

BACKGROUND

In 2025, South Carolina had 210 airports, including 68 public-use and 142 private-use facilities. Fifty-two airports are included in the National Plan of Integrated Airport Systems (NPIAS), a designation that helps determine federal funding eligibility and grant allocations. The South Carolina Aeronautics Commission

(SCAC) administers the state's airport grant program, conducts safety inspections, provides air transportation for state officials, and supports aviation education. An eight-member commission provides policy guidance and oversight for these activities. The state's six commercial airports are managed by local boards.

CONDITION AND CAPACITY

SCAC completed its most recent Statewide Airport System Plan and Airport Economic Impact Study between 2016 and 2018, documenting condition and activity at all public-use airports in the state. The Airport Pavement Management System (APMS), updated between 2021 and 2023, also collected detailed pavement condition data for nearly all public-use airports. These studies support the development and annual update of the five-year Airport Capital Improvement Plans (ACIPs), which are required by the FAA and include federally, state, and locally funded airport projects.

The Commission is now beginning an update to the Statewide System Plan and Airport Economic Impact Study, with publication expected in 2028.

In 2024, South Carolina airports saw 7.214 million enplanements statewide (*Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports*) with six commercial airports accounting for more than 99% of total enplanement activity. All six showed enplanement growth between 2023 and 2024. Comparison of 2019 to 2024 enplanements indicates that four of the six commercial airports pose strong post-pandemic recovery numbers; one, HXD, is close to pre-pandemic enplanements. FLO significantly lags pre-pandemic enplanements. Non-commercial GA airports experienced mixed results between 2023 and 2024: Seven increased enplanements. Five saw no change. And twelve saw decline.

TABLE 1: ENPLANEMENT COMPARISON, 2019 TO 2024

Loc ID	City	Airport Name	S/L	Hub	CY 23	CY 24	CY23 vs CY24 Change	Pre-Pandemic CY 19	Post-pandemic Recovery
CHS	Charleston	Charleston AFB/ International	P	M	3,032,768	3,115,194	2.72%	2,375,868	131%
MYR	Myrtle Beach	Myrtle Beach International	P	S	1,658,984	1,894,929	14.22%	1,285,200	147%
GSP	Greer	Greenville-Spartanburg	P	S	1,258,724	1,412,702	12.23%	1,276,678	111%
CAE	Columbia	Columbia Metro	P	S	593,590	654,460	10.25%	642,028	102%
HXD	Hilton Head Is.	Hilton Head	P	N	103,964	108,775	4.63%	110,608	98%
FLO	Florence	Florence Regional	P	N	22,734	24,728	8.77%	42,876	58%
		TOTAL			6,670,764	7,211,788	8.11%	5,733,258	107.3%

Source: FAA

A 2025 FAA supplement to the 2022 *Economic Impact of U.S. Civil Aviation* showed that civil aviation contributes 2.2% to the Value-Added Share (VAS) of South Carolina's GDP. The 2025 *Economic Impact of South Carolina's Airports* study found that the state's six commercial airports accounted for 130,453 employees, \$6.8 billion in total labor income, and \$22.5 billion in overall economic impact.

Air Cargo

Among the six primary commercial airports, CHS, GSP, and CAE are the major freight airports serving South Carolina. According to year-over-year reports collected annually by the FAA, cargo tonnage in South Carolina followed a national trend of decreases between 2021-2024. However, CHS recorded 11% cargo growth between 2023-2024.

TABLE 2. AIR CARGO TRENDS, 2021 TO 2024

ST	Locid	Airport Name	City	2021 Landed Weight (lbs.)	2022 Landed Weight (lbs.)	2023 Landed Weight (lbs.)	2024 Landed Weight (lbs.)
SC	GSP	Greenville	Greer	658,001,219	592,756,824	542,527,148	392,634,778
SC	CAE	Columbia Metro	Columbia	538,905,440	545,570,460	396,915,350	331,852,135
SC	CHS	Charleston AFB/	Charleston AFB/ International	188,905,500	148,797,500	152,720,230	169,609,880

Source: FAA

The 2022 SC *Statewide Freight Plan Update* projected that air cargo tonnage would increase 170% between 2019 and 2050. As supply chains stabilize after pandemic disruptions, the Greenville-Spartanburg International Airport (GSP) appeared best positioned to capture growth; its major cargo tenants include FedEx, American Airlines Cargo, Delta Cargo, Southwest Cargo, Senator International Freight Forwarding, United Parcel Service (UPS), and Maersk Air Cargo. Maersk Air Cargo launched service in 2022 to Incheon International Airport in Seoul, making it South Carolina's first airport with cargo service to Asia.

Major cargo infrastructure investments accompanied the 2022 report: Columbia Metropolitan Airport (CAE) is the predominant airport in central South Carolina, serving FedEx, UPS, and Mountain Air Cargo. In 2022,

the airport received approximately \$4.2 million from the FAA. Part of the funds were used to redesign and rehabilitate the taxiway system to accommodate UPS's largest aircraft, the Boeing 747-8. Also, in 2022, the U.S. Economic Development Administration awarded GSP \$5.2 million based on the Rescue Plan Act for infrastructure improvement, which facilitates the airport to continue to expand air cargo service.

Air freight is the most expensive shipping mode. It has rigid restrictions and often requires intermodal connections to rail or truck to reach the final destinations. Currently, none of South Carolina's commercial airports have direct rail access, a significant gap compared to other states. As the state pursues high-tech industries, the need for accessible air transport, passenger and cargo, is a high priority in site selection.

OPERATION AND MAINTENANCE

The FAA establishes engineering, design, and construction standards for civil airports, heliports, vertiports, and seaplane bases. Infrastructure standards are maintained for airfield pavement; airport lighting, marking, signs, and other visual aids; safety during construction; surveying and GIS data; de-icing; Aircraft Rescue and Firefighting (AARF); bird radar and Foreign Object Detection (FOD) systems; and more.

Publicly-owned, General Aviation (GA) Airports, NON-Commercial

Across the general aviation system, SCAC conducts statewide PCI surveys, obstruction analyses, and facility

condition assessments for GA airports. These datasets are used to prioritize pavement rehabilitation, lighting upgrades, and safety area improvements in the statewide Capital Improvement Programs (CIP) and to support funding decisions for individual airports and non-Part 139 airports.

Specifically, SCAC provides technical and maintenance services to publicly-owned, GA airport including Pavement Maintenance Program, Airfield Electrical Repair, Windsocks, Vegetation Maintenance Programs, Airport Signage and Foreign Object Debris Sweepers.

Commercial Airports

South Carolina's six commercial airports operate under separate governing entities and must comply with FAA Part 139 regulations, which require a Movement-Area inspection, Aircraft Rescue and Fire-fighting inspection,

fueling facilities inspection, and nighttime inspection. Violations and discrepancies are addressed through FAA Letters of Correction to airport management responsible for follow-up actions and compliance.

TABLE 3: SOUTH CAROLINA COMMERCIAL AIRPORT MANAGEMENT ENTITIES

Airport	Managing Entity
Charleston International Airport (CHS)	Aviation Authority on behalf of Charleston County
Greenville-Spartanburg International Airport (GSP)	Greenville-Spartanburg Airport District/Commission
Columbia Metropolitan Airport (CAE)	Richland-Lexington Airport District/Commission
Florence Regional Airport (FLO)	The Pee Dee Regional Airport District, a political subdivision of SC
Hilton Head Island Airport (HXD)	Owned and operated by the County Council Beaufort County
Myrtle Beach Int. Airport (MYR)	Owned and managed by the Dept. of Airports for Horry County

Sources: Charleston International Airport: Leadership; Columbia Metropolitan Airport; Florence Regional Airport; Greenville-Spartanburg International Airport; Hilton Head Island Airport; Myrtle Beach International Airport

Commercial airports increasingly use structured asset management systems to guide capital planning and project development. These systems provide objective data on pavement conditions, airfield electrical performance, facility conditions, and lifecycle needs, allowing airports to prioritize projects within their CIPs.

CHS maintains a comprehensive pavement management system, airfield electrical system inventory, and facility condition assessments that directly inform its CIPs. CHS uses these datasets to schedule runway and taxiway rehabilitation, prioritize terminal system upgrades, and plan drainage and stormwater improvements.

GSP uses a GIS based asset inventory platform that tracks pavements, lighting circuits, NAVAIDs, utilities, and building systems. GSP integrates this data into its long range capital plan, enabling proactive replacement of aging infrastructure and supporting major airfield and terminal modernization projects.

MYR uses pavement condition index (PCI) data, airfield lighting assessments, and facility condition evaluations to shape its CIPs. These datasets support MYR's sequencing of runway rehabilitation, apron reconstruction, and terminal system upgrades.

CAE maintains detailed pavement management data, airfield electrical system mapping, and building system condition assessments. CAE uses these datasets to prioritize airfield rehabilitation, terminal modernization, and landside improvements within its capital program.

As airports expand their use of digital tools, including GIS based inventories, airfield electrical mapping, and building system monitoring, asset management data will continue to play a central role in shaping CIPs, improving project justification, and supporting resilient, cost effective infrastructure investment.

FUNDING

Airports in South Carolina are funded through a combination of federal, state, and self-funding sources. Between July 2025 and June 2026, GA airports received \$58.5 million in FAA funding through the *Airport Improvement Program* (AIP) and *Airport Infrastructure Grants* (AIG). The state matched these funds with an additional \$14.5 million; \$11,385,068 for GA Airports and \$3,154,457 for Non-NPIAS, GA Airports.

The 2025 *Economic Impact of South Carolina's Commercial Airports* report estimates that the state's six commercial airports will invest approximately \$2.1 billion in capital projects between 2024-2030, generating nearly \$3.9 billion in economic impact. (The report does not include FLO's \$126.7 million expansion nor its corresponding economic impact.) These projects include parking lots and garages, air traffic control tower (ATCT) redevelopment, terminal expansion and modernization, TSA improvements, cargo area expansion, and runway redevelopment projects.

During State Fiscal Year 2025 (SFY25), GA airport maintenance programs funding in a cost-share agreement totaled \$1,609,514. The state contributed \$1,376,125 for

maintenance program expenditures, and airport partners paid \$233,388. These funds supported vegetation maintenance, fire control, automated weather systems, and airport pavement maintenance and marking.

SCAC also awarded \$1,616,191 (SFY25) in Maintenance Grants to eleven GA airports. Total state maintenance funding in SFY25 approached \$3 million. Additionally, SCAC managed 76 state-funded grants totaling more than \$84 million in projects, including \$2 million in maintenance projects and \$82 million in planning, design, and construction projects.

Additionally, South Carolina's six commercial airports fund capital and operational expenses through an FAA-approved Passenger Facility Charge (PFC) per ticketed passenger. In their 2026 report on PFC, the Airports Council International (ACI) concluded that low PFC caps prohibit airports from generating sufficient revenue to fund critical infrastructure improvements. ACI recommends raising the PFC cap and adjusting it for inflation to give airports greater ability to self-fund modernization projects and maintain high-quality facilities for travelers.

TABLE 4: SOUTH CAROLINA COMMERCIAL AIRPORT PFC COLLECTIONS AND EXPIRATION DATES

Airport Name and LOC	Level	PFC Constrained Until	Total PFC Approved by Location
Charleston AFB/International CHS	\$4.50	7/1/2039	\$189,546,679
Columbia Metro CAE	\$4.50	10/1/2028	\$71,174,590
Florence Regional FLO	\$4.50	3/1/2041	\$3,745,108
Greenville Spartanburg International GSP	\$4.50	8/1/2027	\$33,551,627
Hilton Head HXD	\$4.50	7/1/2037	\$13,202,789
Myrtle Beach International MYR	\$4.50	10/1/2032	\$157,593,306

Source: FAA

State Legislative Support

During State Fiscal Year 2026 (SFY26), the SC General Assembly provided historic aviation support: \$80 million in non-recurring funds (from the SC Department of Commerce) and a \$5.2 million allocation in recurring funds and \$5 million in nonrecurring funds for Commercial Airport Enhancements.

Additional aviation appropriations from the state included a \$1.5 million Commercial Service Entitlement; \$10.3 million through the SCAC; and \$5.3 million recurring funding, an "historic milestone for aviation funding in the state".

FUTURE NEED

SC airports appear to have a material capital-funding gap for 2027–2037. The clearest evidence is ACI-NA’s South Carolina fact sheet: it estimates \$1.8 billion in SC airport infrastructure needs for 2025–2029 alone.¹ That matters for 2027–2037 because most SC commercial airports remain PFC-constrained well into that period as is shown in the Funding section.

State help exists, but it is not enough to close a billion-dollar-scale gap. SCAC provides matches and grants, including the typical 90% FAA / 5% state / 5% local AIP formula and a commercial-service entitlement of \$250,000 per year, but those programs are mostly match/support tools rather than a full capital solution. SC airports do not appear to have sufficient funding to meet all capital needs between 2027 and 2037, especially terminals, capacity, resiliency, access, and projects not fully eligible for FAA grants.

In its 2025 Annual Accountability Report to the SC General Assembly, SCAC noted that since the SC General Assembly voted to allocate 100% of airline property tax revenue to the State Aviation Fund (SAF), lobbying efforts to dilute the SAF have been made. Had modification efforts succeeded, revenue to the SAF would have reduced by nearly 78%, or about \$5.44 million. (Future supporters of aviation funding in the state must remain diligent to protect this funding source because commercial airlines in SC are exempt from paying the state aviation fuel tax; therefore, SCAC argues it is reasonable to expect them to pay airline property tax revenues via the SAF).

This concern is reinforced by the FAA’s 2025 supplement to the *Economic Impact of U.S. Civil Aviation* report, which found that South Carolina’s ranked last among regional competitors in grant receipts as part of the FAA’s total 2022 budget: SC received 0.6% of total budget in contrast to Florida, 6%; Georgia, 4.3%; North Carolina, 2.0%; and Tennessee, 1.2%.

In addition to funding challenges, airports must address incompatible land development near airport facilities, which can threaten safety and long-term growth. SCAC continues to work with local governments to improve land-use compatibility planning. SCAC will continue to work with the SC General Assembly to encourage appropriate regulations that will promote local governments’ enactment of airport overlay districts (AOD) to protect both airspace, imaginary surfaces and compatible land use plans.

Looking ahead, South Carolina’s aviation system will face increasing pressure from sustained population growth, rising passenger demand, expanding cargo operations, and the introduction of new technologies such as electric aircraft and advanced air mobility. Specifically, CHS continues to face capacity pressures due to shared runway operations with the U.S. Air Force; high passenger volumes; Boeing 787 manufacturing activity; and two privately owned fixed-base operators. MYR ranks as SC’s second-busiest airport, with more than two million passengers per year. Use during peak tourism months increases creates many capacity challenges. In addition, the aircraft operating at MYR today are also much larger than the aircraft the existing terminal building was designed to accommodate.

These trends require airports to modernize airfield infrastructure, expand terminal and landside capacity, and strengthen resilience to extreme weather events. Multiple data sets across several years, according to Engineering News-Record’s “Construction Cost Index and Airfield Cost Escalation Trends,” indicates inflation has raised airfield construction costs by more than 35%, while new terminal, landside, and flood mitigation projects have expanded the overall capital burden.

Without predictable long term funding, airports may struggle to maintain service quality, meet FAA performance standards, and accommodate the state’s projected growth in air service demand.

PUBLIC SAFETY AND INNOVATION

South Carolina's airports continue to demonstrate a strong safety record, with no recent mass casualty aviation accidents and consistently high compliance with federal safety standards. The state's airports maintain high levels of safety performance through FAA regulatory compliance; aircraft rescue and firefighting programs; wildlife hazard mitigation; and runway safety action teams.

Passenger terminals and landside safety are addressed through TSA security screening operations; closed-circuit television, access control and perimeter security enhancements; and landside traffic management improvements. SCAC also collaborates with Emergency Support Function One (ESF-1), the State Emergency Preparedness Division (EPD), and the State Emergency Operations Center (SEOC) to coordinate aviation assets during emergencies.

South Carolina's aviation partners also implement NextGen technologies that improve the safety, efficiency, and capacity of the National Airspace System. For example, CHS deployed Data Communications (Data Comm) Departure Clearance Tower Service so that pilots and air traffic controllers can exchange departure clearances digitally rather than by voice, reducing communication errors and speeding aircraft departures.

CHS airport has also implemented Expanded Low Visibility Operations through Lower Runway Visual Range (RVR), enabling aircraft to operate safely in poorer weather conditions and reducing delays and cancellations during fog and other low-visibility events.

In addition, CHS benefits from the Charlotte Metroplex airspace redesign, a large-scale modernization effort that uses Performance-Based Navigation (PBN) procedures. By leveraging satellite-based navigation, PBN allows aircraft to fly more precise routes, improving airspace efficiency, reducing fuel consumption, lowering emissions, and increasing airport capacity.

At MYR and CAE, air traffic control towers have deployed Time-Based Flow Management (TBFM) hardware, which enables controllers to better sequence

arriving aircraft based on time rather than distance. This technology improves traffic flow, reduces airborne holding, decreases fuel burn, and helps airports accommodate more aircraft with fewer delays.

Drones also support aviation infrastructure as SCAC continues to operate an Unmanned Aircraft System (UAS) to inspect airports and obstructions and to conduct wildlife hazard evaluations and assess conditions after natural disasters, often providing data for decision making related to airport projects. Airports with the highest utilization of UAS include CHS, GSP, MYR, Greenville Downtown (GMU), and FLO. The FAA reported in "Integration of UAS Data Into Airport Capital Planning and Environmental Compliance" that widespread adoption of drones reduces inspection time, improves safety by limiting personnel on active airfields, and supplies more accurate data for capital project development and environmental compliance.

In 2024, FLO partnered with BETA Technologies (Burlington, Vermont), to install the state's first Level-3 fast-charger on the airside of the airport to charge electric aircraft and support vehicles. These chargers are multimodal and interoperable - capable of powering various types of electric aircraft as well as electric ground vehicles like cars, vans, and trucks.

Also in 2024, GMU signed a memorandum of understanding with SkyDrive Inc., a leading eVTOL manufacturer based in Japan, and SAI Flight, one of the largest private jet charter companies in SC, to develop real-life use cases for the eVTOL. The partnership established GMU as the initial base for developing eVTOL air taxi routes, operational procedures, and community integration strategies, a significant step toward developing an eVTOL ecosystem in South Carolina.

Innovative projects have become real-world educational opportunities. Annually, the Citadel's Civil, Environmental and Construction Engineering Senior Capstone students choose a SC airport, with which to collaborate. Students with the assistance of professionals create infrastructure designs specific to advanced air mobility.

As passenger and cargo activity continue to grow, resilience investments will be essential to sustaining operational reliability, protecting economic competitiveness, and ensuring that South Carolina's aviation system remains capable of supporting emergency response, military operations, and statewide mobility.

RESILIENCE

South Carolina's airports face recurring risks from hurricanes, coastal and riverine flooding, severe storms, extreme rainfall, and heat related pavement degradation. Coastal airports are particularly vulnerable to storm surge, sea level rise, tidal flooding, and shoreline erosion, while inland airports experience increasing impacts from intense rainfall events and prolonged heat that accelerates pavement wear and strains airfield drainage systems.

The South Carolina Office of Resilience (SCOR) in its *June 2023 Strategic Statewide Resilience and Risk Reduction Plan* evaluated 196 aviation facilities statewide and identified 16 airports at risk of flooding between 2022 and 2052. Using data from the U.S. Department of Homeland Security and the First Street Foundation, SCOR compared projected flood depth exposure across a 30 year horizon: For 195 airports, the Flood Depth Risk (FDR) of 2022 remains the same through 2025. CHS is the only major airport which shows an increased FDR risk, due to its location along the coast.

Airports across South Carolina are responding with a range of infrastructure hardening and climate adaptation strategies. CHS has advanced major airfield drainage and stormwater capacity improvements to reduce flooding during extreme rainfall events and is incorporating resilience criteria into its long range master plan. MYR has implemented shoreline stabilization and erosion control measures along its coastal perimeter and upgraded airfield lighting and navigational systems to withstand high wind events. HXD has elevated critical

electrical and communications infrastructure and expanded stormwater conveyance systems to mitigate tidal flooding and storm surge impacts.

Inland airports are also adapting: GSP has adopted resilient pavement designs and expanded stormwater detention capacity to manage more intense rainfall, while FLO has strengthened erosion control systems and improved drainage around runway safety areas.

General aviation airports, many of which operate with limited resources, are also implementing targeted resilience improvements such as runway and taxiway drainage upgrades, flood resistant fuel farm design, vegetation and obstruction management, weather monitoring enhancements, and hardening of navigational aids and communications systems. Several GA airports have incorporated resilience considerations into their airport master plans and airport layout plans, ensuring that future development accounts for flood risk, erosion, and stormwater capacity.

As passenger and cargo activity continue to grow, resilience investments will be essential to sustaining operational reliability, protecting economic competitiveness, and ensuring that South Carolina's aviation system remains capable of supporting emergency response, military operations, and statewide mobility. The combination of airport level infrastructure hardening, statewide resilience planning, and federal and state funding positions the state to withstand future climate related challenges.

Aviation



RECOMMENDATIONS TO RAISE THE GRADE

Stabilize and Increase Aviation Funding

- Preserve airline property tax revenues dedicated to the State Aviation Fund.
- Increase recurring state appropriations to leverage additional FAA grants.
- Expand state cost share programs to address significant pavement and maintenance needs.
- Modernize the Passenger Facility Charge (PFC) cap – and index it for inflation.

Expand Capacity at Growing Airports:

- Advance terminal expansion projects at CHS, MYR, and HXD.
- Improve taxiway geometry, apron capacity, and airfield circulation.
- Expand cargo facilities at GSP and CAE to support statewide logistics growth.
- Enhance roadway access, curbside flow, and parking infrastructure.

Strengthen Land Use Compatibility:

- Require local governments to adopt airport overlay zoning and protect airspace surfaces.
- Increase SCAC staffing to support planning coordination and compliance.
- Expand education for local officials on the economic importance of compatible land use.

Improve Resilience to Weather and Climate Risk:

- Prioritize drainage improvements, hardened electrical systems, and resilient navigational aids.
- Expand microgrid and backup power initiatives.
- Integrate resilience strategies into Airport Layout Plans and capital programs.

Modernize Technology and Support Workforce Development:

- Accelerate deployment of NextGen technologies statewide.
- Strengthen workforce pipelines for pilots, controllers, and technicians.
- Expand partnerships with universities and technical colleges to support advanced air mobility.

Advance Innovation and Emerging Aviation Technologies:

- Develop a statewide Advanced Air Mobility strategy.
- Expand pilot projects for electric aircraft, UAS inspections, and eVTOL operations.
- Integrate AAM into statewide transportation and economic development planning.

Aviation



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Bridges



GRADE
COMPARISON

SC: C-

Nat'l: C



BRIDGES

EXECUTIVE SUMMARY

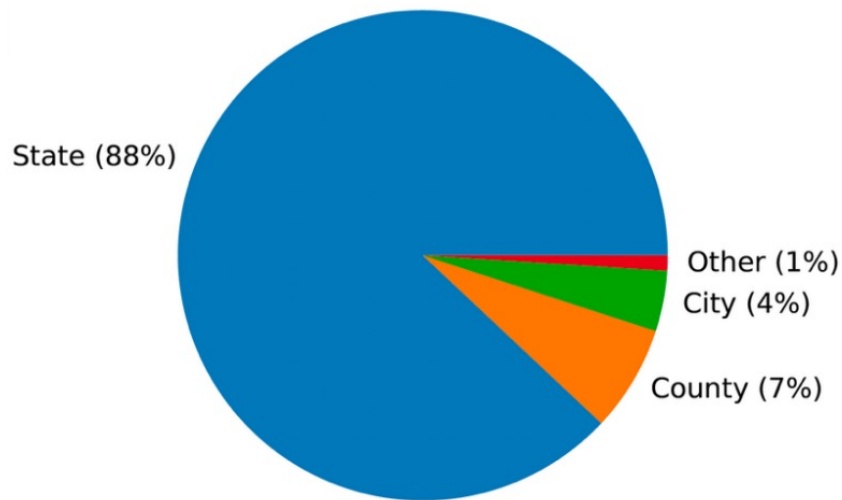
South Carolina's bridges are critical to mobility, commerce, and public safety. As of 2025, the state has 9,504 public bridges, most of which are owned and maintained by the South Carolina Department of Transportation (SCDOT). While the system remains functional, it faces increasing challenges from aging infrastructure and long-term funding needs. Overall bridge condition trends show a slight decline in overall bridge-level condition. Since 2021, the percentage of bridges in "good" condition has decreased from 42.2% to 34.5%, while bridges in poor condition have risen from 5.5% to 7.7%. However, inspection data indicate that most bridge components remain in good condition, reflecting the impact of preservation-focused investment. SCDOT maintains the system through regular inspection, preventive maintenance, and asset management practices. Continued innovation and sustained investment will be necessary to manage future demands, reduce backlogs, and maintain system performance. Overall, while targeted investments and preservation strategies have helped maintain system functionality, declining bridge-level conditions and insufficient long-term funding support a slightly lower grade compared to the 2021 Bridge Grade.

BACKGROUND

As of 2025, South Carolina has 9,504 public bridges reported in the National Bridge Inventory (NBI). Approximately 88% are owned by SCDOT, with the remaining 12% owned by county, municipal, or private

entities, as shown in the chart below. Approximately 21% of South Carolina bridges are on the National Highway System, 46% are non-NHS bridges eligible for federal aid, and 33% are not eligible for federal aid.

FIGURE 1: BRIDGE OWNERSHIP IN SOUTH CAROLINA



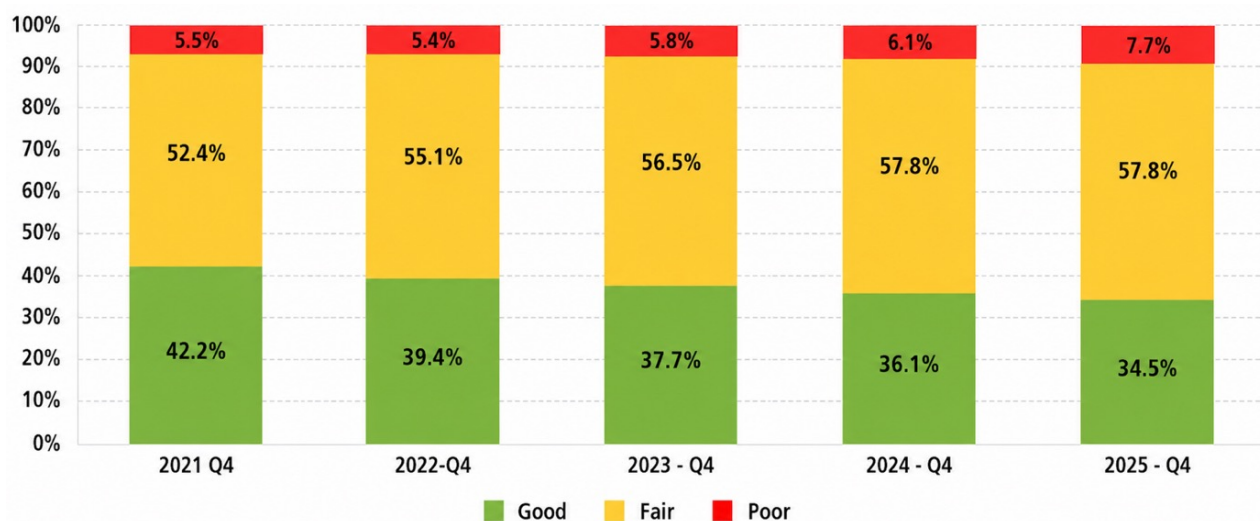
CAPACITY AND CONDITION

SCDOT inspects bridge infrastructure every two years, maximum, in accordance with federal requirements and documents bridge-level and component level condition ratings. Bridge-level condition ratings classify each bridge as good, fair, or poor based on the lowest-rated primary component (deck, superstructure, or substructure). Using this methodology, statewide trends from 2021 through 2025 show a decline of bridges in “good” condition and corresponding increases in bridges assessed as “fair” or “poor”. In 2025, 34.5% of all bridges were rated in good condition, which is below the national

average of approximately 44%, while 7.7% of bridges were rated as poor, which is slightly above the national average, 6.8%.

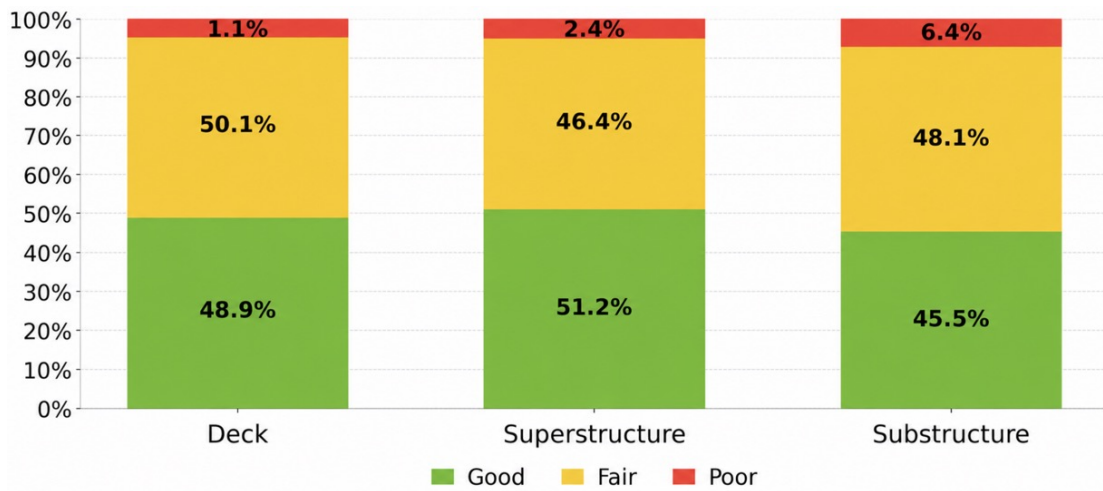
Bridge-level ratings are useful for systemwide screening and safety oversight but do not account for bridge size, complexity, or how much of a structure is deteriorated. To provide additional insight, 2025 component condition ratings from the FHWA NBI are shown for deck, superstructure, and substructure components.

FIGURE 2: SOUTH CAROLINA BRIDGE CONDITION TRENDS, 2021–2025



Source: SCDOT

FIGURE 3: COMPONENT CONDITION RATING FY25



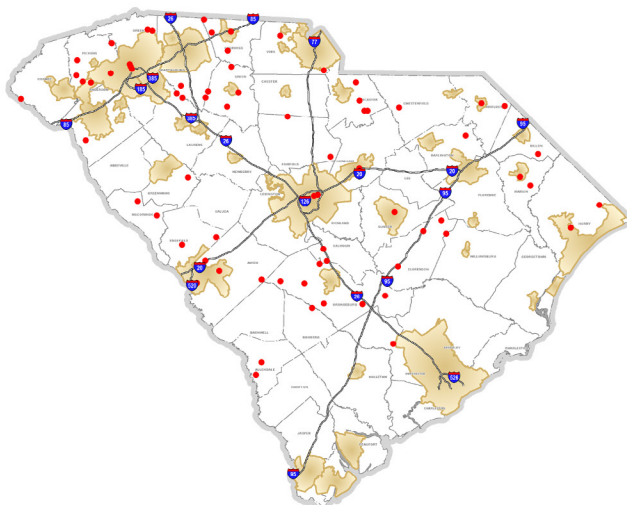
Source: SCDOT

Component condition ratings show that 45.5% to 51.2% of deck, superstructure, and substructure elements remain in good condition. From 2021 to 2025, the percentage of deck and superstructure components rated as “good” or “fair” remained steady. Substructure deterioration was indicated over the same period with an

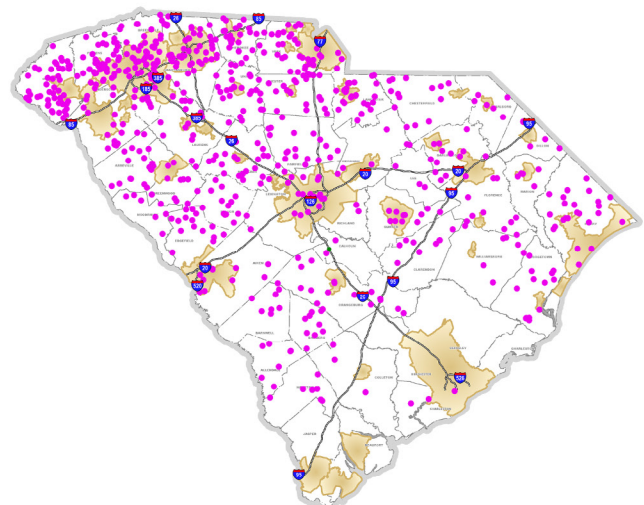
increase in poor condition ratings from 4.1% to 6.4%.

Bridges that cannot safely carry legal loads are posted with weight restrictions or, in some cases, closed. Approximately 550 bridges (5.8%) are load posted, and about 70 bridges (0.7%) are closed statewide.

FIGURE 4: CLOSED AND LOAD POSTED BRIDGES FY25



Closed Bridges



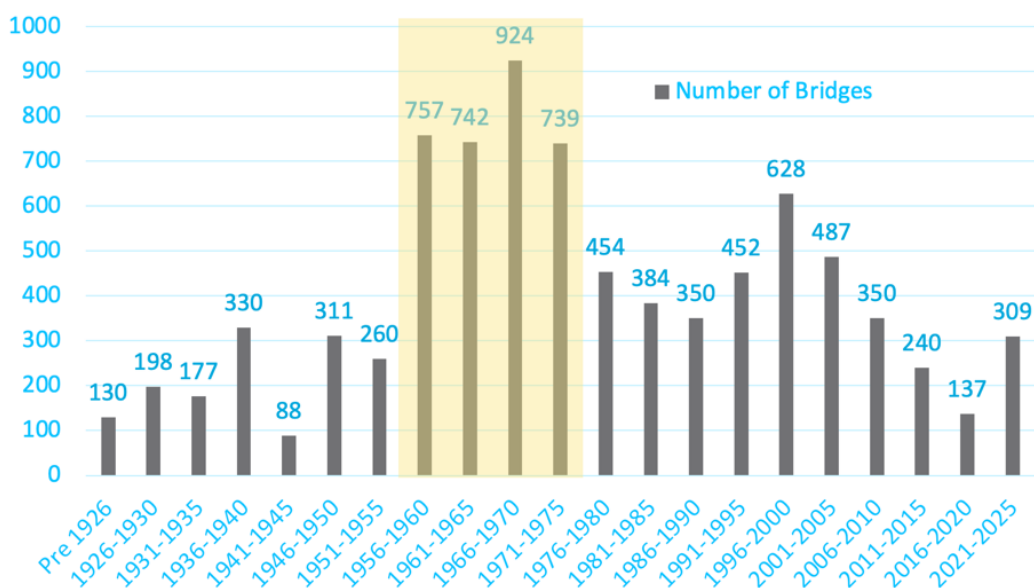
Load Posted Bridges

Source: SCDOT

Bridge age is a major contributing factor to the downward condition trend of South Carolina bridge inventory. Examination of the number of bridges built per year reveals that nearly 3,000 bridges are more than 60 years old. Additionally, a significant concentration

of bridges are between 50 and 70 years old, which represents a future increase in the number of bridges requiring substantial maintenance or replacement compared to any previous or subsequent 20-year range.

FIGURE 5: NUMBER OF BRIDGES BUILT BY YEAR IN SOUTH CAROLINA



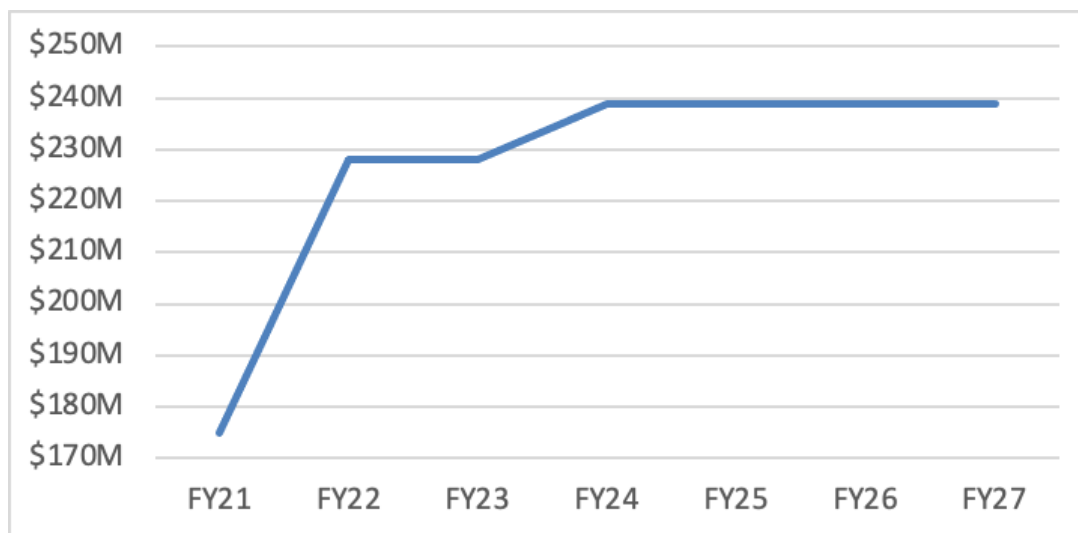
Source: SCDOT

FUNDING AND FUTURE NEED

South Carolina's bridge system is supported through a combination of state transportation revenues and federal funding programs. Recent increases in federal funding have improved the state's ability to advance bridge preservation and rehabilitation projects; however,

current funding levels remain insufficient to address long-term replacement needs and an aging bridge inventory. In addition, funding levels remain relatively flat between 2022 through 2027.

FIGURE 6: BRIDGE FUNDING FY21 TO FY27



Source: SCDOT

Federal Funding

Federal funding for bridge projects is provided through programs administered by the Federal Highway Administration (FHWA). In 2025, South Carolina received approximately \$100 million in dedicated funding through the Bridge Formula Program, supplemented by funding from broader programs such as the National Highway Performance Program and Surface Transportation Block Grant Program. Additional funding from competitive programs, including the Bridge Investment Program and INFRA/RAISE grants, is awarded on a project-specific basis and is not reflected in these annual totals.

The enactment of IIJA in 2021 significantly increased federal investment in bridges, providing both expanded formula funding and new competitive opportunities. These funds have enabled South Carolina to address bridges in poor condition, accelerate rehabilitation schedules, and begin reducing portions of the replacement backlog.

State Funding

State funding is derived primarily from motor fuel user fees established under Act 40 of 2017, supplemented by the State Infrastructure Bank and limited legislative

appropriations. Other sources of state funding sources include registration fees and motor vehicle sales tax revenue. In FY 2025, state funding for bridge-related work is estimated at approximately \$130 million, supporting maintenance, rehabilitation, and required matching funds for federal-aid projects.

Consistent with national trends, South Carolina has prioritized preservation-focused investment strategies to extend the service life of existing bridges. While effective at maintaining component-level condition, this approach does not fully address the increasing number of bridges approaching major rehabilitation or replacement.

Funding Adequacy and Long-Term Need

Despite recent funding increases, South Carolina's bridge inventory continues to age, with most bridges exceeding 50 years of service life. As bridges transition from good to fair condition, maintenance costs rise and replacement needs accumulate. Without increased, long-term funding commitments, deferred replacement needs will continue to grow, rehabilitation costs will escalate, and operational restrictions, such as load postings, may become more prevalent, particularly on secondary and rural routes.

OPERATION AND MAINTENANCE

The operation and maintenance of South Carolina's bridge system are managed primarily by the SCDOT through routine inspection, preventive maintenance, and asset management-based prioritization. SCDOT conducts bridge inspections in accordance with Federal Highway Administration (FHWA) requirements under the National Bridge Inspection Standards (NBIS). Public bridges are inspected on a regular cycle, with more frequent inspections for bridges with known deficiencies or critical features. Inspection results are reported to the National Bridge Inventory and used to support maintenance, rehabilitation, and replacement planning.

SCDOT integrates inspection data into its bridge asset management framework to prioritize projects based on condition, risk, and system performance rather than age alone. Preventive maintenance and preservation activities, including deck sealing and resurfacing, joint and bearing maintenance, steel cleaning and

painting, and minor structural repairs, are used to slow deterioration and extend service life. These practices have helped maintain generally good component-level condition, even as the overall bridge inventory continues to age.

South Carolina's ability to maintain and rehabilitate its bridges is also affected by a growing construction workforce experience gap. Retiring superintendents, foremen, project managers, and skilled tradespeople are reducing the pool of workers with the hands-on expertise needed to manage complex projects, with implications for safety, quality, productivity, and compliance. Several key strategies should be employed to address these shortages, including registered apprenticeships, structured mentorship, and partnerships with community colleges, in order to transfer institutional knowledge and develop the experienced workforce needed to deliver infrastructure projects safely and efficiently.

INNOVATION

South Carolina is advancing bridge delivery performance through data-driven asset management practices, innovative construction methods, and the evaluation of advanced materials. Asset management tools and emerging inspection technologies, including unmanned aerial systems (drones), are improving system-level decision-making and operational efficiency. The SCDOT utilizes Bridge Management (BrM) systems to track bridge conditions, with the Highway Maintenance Management System (HMMS) integrated to monitor maintenance activities.

Accelerated Bridge Construction (ABC) and prefabricated bridge elements are used by to reduce construction durations, improve quality, and minimize

impacts to the traveling public. These techniques have been implemented by SCDOT for emergency bridge replacement projects where prefabricated elements and rapid construction methods reduced traffic disruptions and improved project delivery timelines.

In coordination with the Federal Highway Administration and research partners such as Clemson University, ultra-high performance concrete (UHPC) has been evaluated for bridge applications including field-cast connections, deck joints, and structural repairs. These applications enhance durability, reduce permeability, and improve resistance to corrosion in South Carolina's coastal and high-moisture environments.

FIGURE 7: ACCELERATED BRIDGE CONSTRUCTION IN GREENVILLE, SC



Photo credit: Wright Brothers Construction

RESILIENCE AND SAFETY

South Carolina transportation planning must account for a unique combination of natural hazards, including hurricanes along its 824-mile coastline, significant seismic risk centered in the coastal region, and riverine flooding in the Upstate. Recent extreme rainfall events across the Carolinas and Tennessee further demonstrated the vulnerability of transportation networks to widespread flooding and slope failures. These hazards can simultaneously disrupt critical evacuation corridors and emergency response routes, underscoring the importance of resilient bridge infrastructure capable of remaining operational or being rapidly restored following infrequent but high-consequence events.

To address these risks, SCDOT strategically prioritizes resiliency within its bridge program. All bridges are designed in accordance with AASHTO specifications for seismic, hydraulic, and scour considerations, while critical primary system bridges may be designed for flood and seismic events exceeding minimum National Highway System requirements through increased

recurrence intervals and additional freeboard. This risk-informed approach helps preserve connectivity for evacuation, commerce, and emergency response during and after major events.

SCDOT also maintains the capability to rapidly restore damaged crossings through deployment of temporary slab and truss bridge systems from centralized locations across the state. In addition, accelerated bridge construction techniques and pre-event emergency contracting strategies allow for rapid mobilization and reconstruction following disasters. A recent example occurred in June 2025, when the Old Vacluse Road Bridge replacement over Interstate 20 in Aiken County collapsed following a tanker truck fire beneath the structure, requiring emergency demolition and accelerated replacement efforts to rapidly restore this critical corridor. Innovations such as precast pile caps and modular deck systems further support expedited recovery and improved long-term resiliency of South Carolina's transportation network.

FIGURE 8: OLD VAUCLUSE ROAD BRIDGE COLLAPSE, AIKEN COUNTY, SC



Photo credit: Fox 54 News

Bridges



RECOMMENDATIONS TO RAISE THE GRADE

- Continue reducing bridges in poor condition to meet SCDOT's long-term performance goals.
- Increase investment from all levels of government to support bridge repair, rehabilitation, and replacement.
- Fund preservation and rehabilitation programs to extend service life and delay costly replacements.
- Accelerate project delivery through expanded use of Accelerated Bridge Construction (ABC) and prefabricated elements.
- Continued use and improvement of asset management practices to prioritize investments based on risk and performance.
- Implement resilience strategies for critical bridges, particularly in coastal and interstate corridors, to address natural and man-made hazards.
- Promote the use of innovative materials and technologies to improve durability, sustainability, and long-term performance.
- Enact legislation codifying a resiliency strategy that would span multiple decades.

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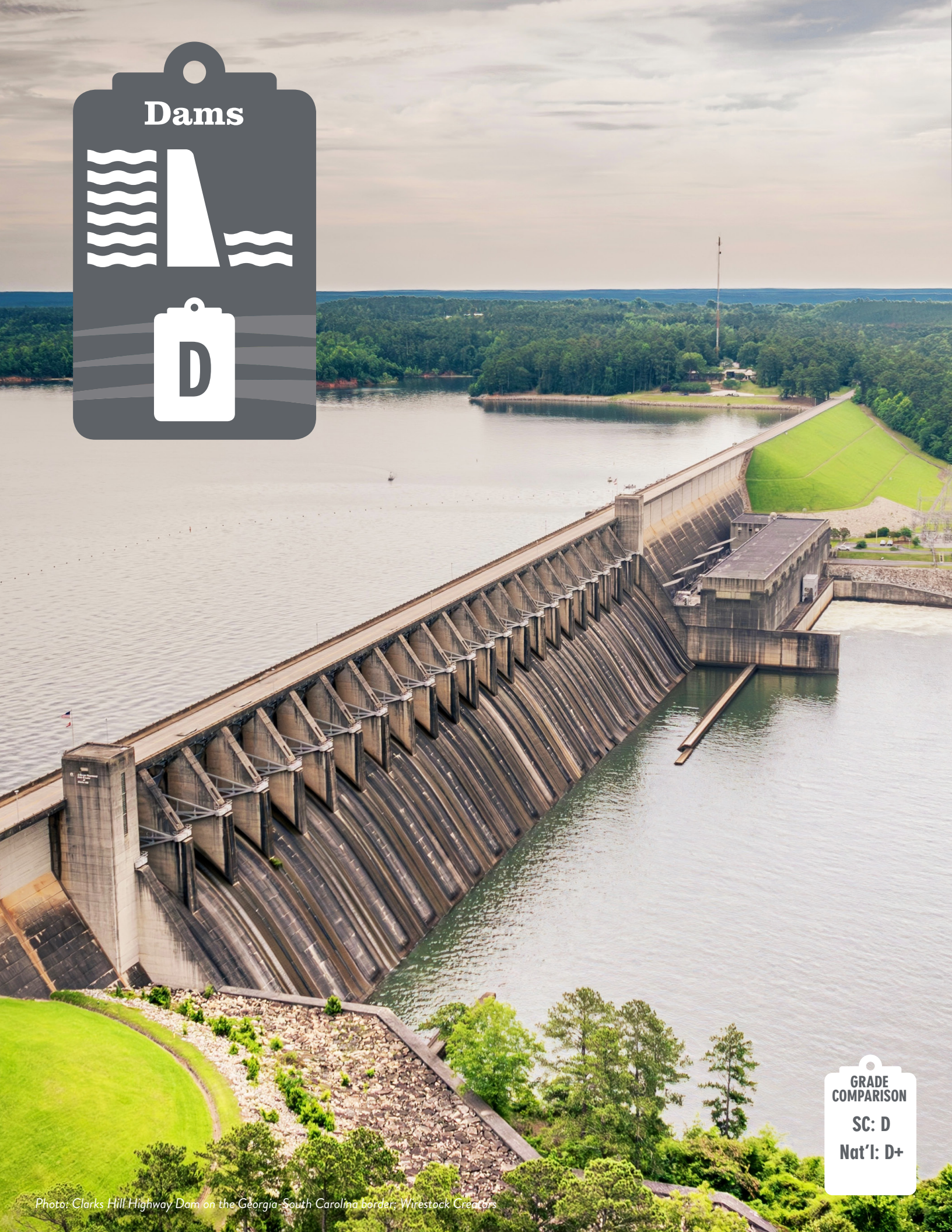
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Dams



GRADE
COMPARISON

SC: D

Nat'l: D+



DAMS

EXECUTIVE SUMMARY

South Carolina made measurable progress in dam safety during the 2021–2026 reporting period, shifting toward a more proactive, risk-based approach. As of February 2026, the National Inventory of Dams lists 2,440 dams in the state, up from 2,409 in 2022. South Carolina’s dams average 68 years old, underscoring the need for continued inspection, maintenance, and rehabilitation. Approximately 90% are state-regulated and 4% federally regulated. State and federal investments enabled the South Carolina Department of Environmental Services (SCDES) to expand inspection capacity, staffing, data management, and risk-informed decision-making. However, severe flooding in 2024 caused multiple dam failures, highlighting the vulnerability of aging dams to extreme rainfall and changing climate conditions. Despite this progress, substantial rehabilitation and remediation needs remain. Continued investment is needed to address deficient dams, strengthen emergency preparedness, modernize safety standards, improve downstream land-use planning, and strategically remove dams that no longer serve a necessary purpose.

BACKGROUND

South Carolina’s population growth, aging infrastructure, and extreme rainfall increase the importance of maintaining a safe and resilient dam inventory.

As of February 2026, the National Inventory of Dams (NID) lists 2,440 dams in South Carolina, up from 2,409 in 2022; SCDES regulates 2,203 under the South Carolina Dams and Reservoirs Safety Act.

Private owners account for 83% of the state’s dams. State- and federally regulated dams are classified as High, Significant, or Low Hazard Potential based on consequences of failure, not physical condition. SCDES regulates state dams, while federal agencies regulate federally regulated dams. Table 1 summarizes the inventory.

TABLE 1: SOUTH CAROLINA'S DAM INVENTORY REGULATION TYPE AND HAZARD POTENTIAL LEVEL- NID, FEB 2026

Hazard level	State Regulated Dams	Federal Regulated Dams	Non-Regulated dams	Total number
High	620 (28%)	54 (58%)	-	674
Significant	233 (11%)	13 (14%)	-	246
Low	1350 (61%)	26 (28%)	19 (13%)	
Undetermined	-	-	125 (87%)	
Total Number	2203	93	144*	2440

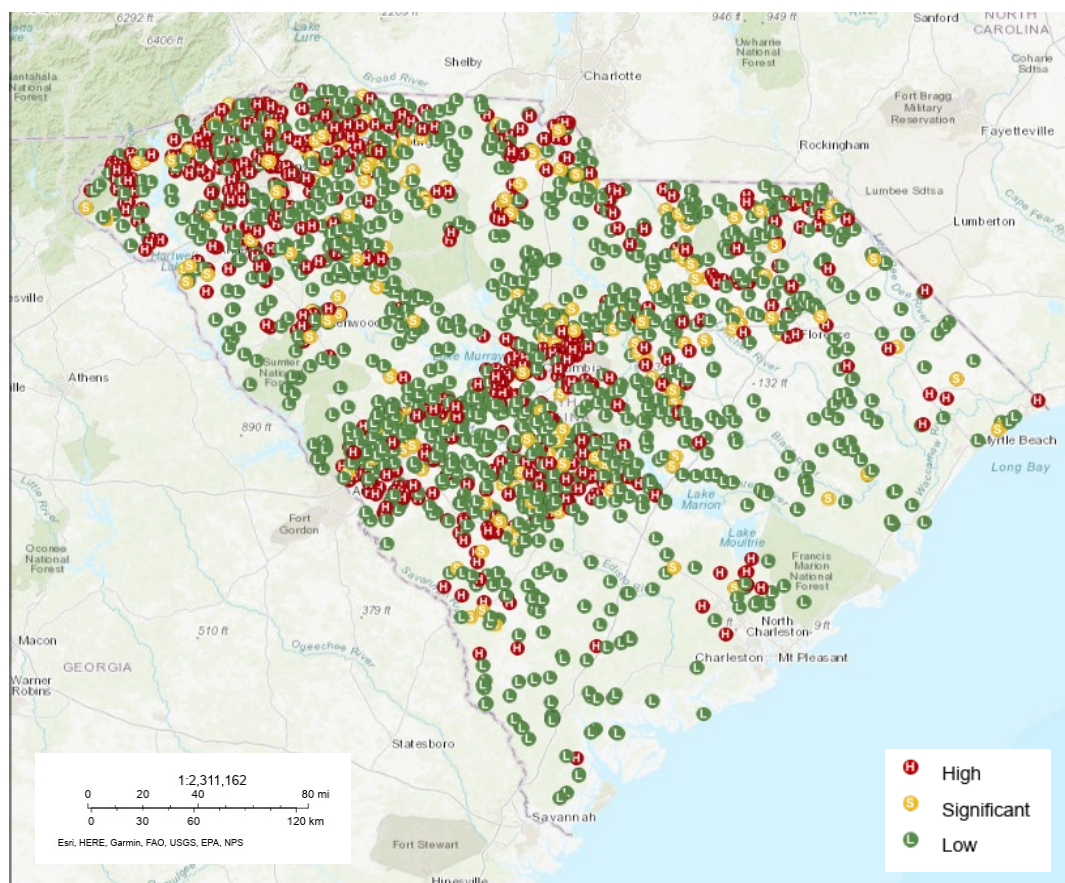
**This number is based on NID data. However, the SCDES State of the Dams report indicates that most dams in South Carolina are exempt from state regulation for various reasons. The exact number of non-regulated dams is unknown, although approximately 15,000 dams are estimated to exist statewide.*

CAPACITY & CONDITION

Dam hazard potential is classified as High, Significant, or Low based on the consequences of failure or improper

operation. This classification does not indicate a dam's physical condition.

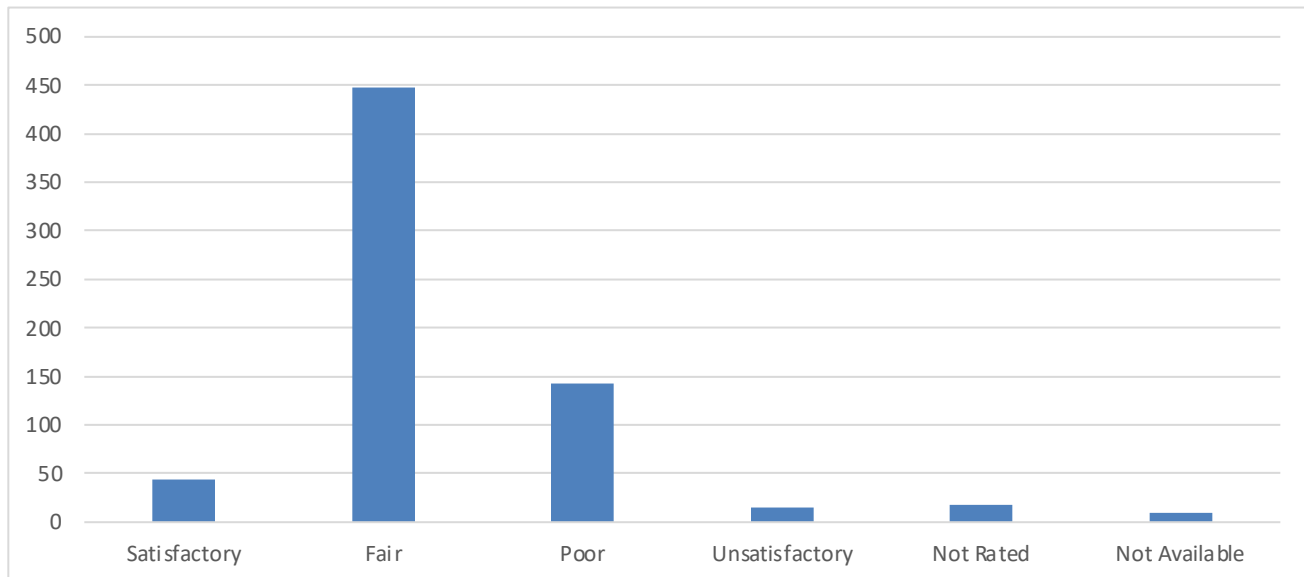
FIGURE 1: SOUTH CAROLINA STATE-REGULATED DAMS CATEGORIZED FOR HAZARD LEVEL AS OF JULY 2026- [HTTPS://GIS.DES.SC.GOV/SCDAMS](https://gis.des.sc.gov/scdams)



According to the NID, South Carolina dams average 68 years old; 90% are state-regulated and 4% federally

regulated. Of 2,296 state- or federally regulated dams, 29.35% are High Hazard Potential dams.

FIGURE 2: SOUTH CAROLINA HIGH HAZARD POTENTIAL DAMS CONDITION- NID, FEB 2026



SCDES inspects state-regulated dams and reports condition information to the U.S. Army Corps of Engineers (USACE) for inclusion in the National Inventory of Dams (NID), which USACE maintains. Condition ratings use USACE criteria:

- Satisfactory — No existing or potential dam-safety deficiencies are recognized; acceptable performance is expected under all loading conditions.
- Fair — No deficiencies are recognized under normal loading, but rare or extreme hydrologic or seismic events may create a deficiency and warrant further action.
- Poor — A dam-safety deficiency is recognized under realistically possible loading conditions; remedial action or further investigation is necessary.
- Unsatisfactory — A dam-safety deficiency requires immediate or emergency remedial action.

- Not Rated — The dam has not been inspected, is outside state or federal jurisdiction, or has been inspected but not assigned a rating.

Approximately 93 federally regulated dams are exempt from state regulation, although their condition is listed in the NID. Small dams under 25 ft high and with less than 50 acre-ft of storage may also be exempt when failure would not cause loss of life. SCDES establishes ownership using deeds, maps, GIS, and other public records. Private owners account for 1,918 regulated dams (87.42%); the remainder are owned by state, municipal, county, special-purpose, or joint entities.

Condition data show substantial needs. Among state- and federally regulated dams, about 46% are Satisfactory or Fair and 47% are Poor or Unsatisfactory. For High Hazard dams, about 73% are Satisfactory or Fair and 23% are Poor or Unsatisfactory; the remainder are not rated or not inspected. The following tables and figures present the details on each category's condition.

TABLE 2: SC DAM CONDITION ASSESSMENT SUMMARY

SC Dam Condition Assessment Summary	
Satisfactory	69
Fair	982
Poor	1011
Unsatisfactory	61
Not Rated	85
Not Inspected	17
Total Accounted For	2225
Total Number	2296

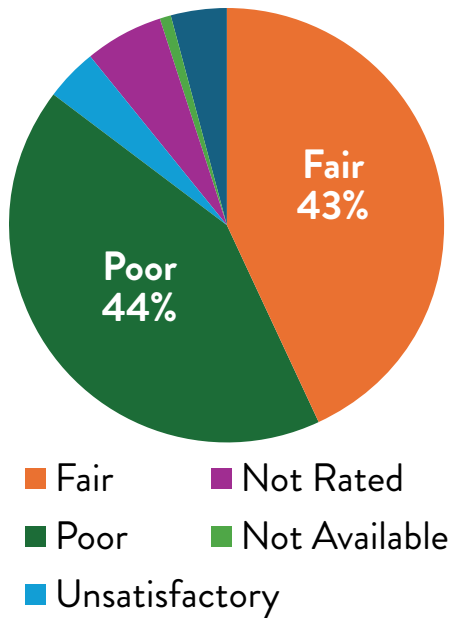
Source: NID

TABLE 3: HIGH HAZARD POTENTIAL DAMS INSPECTION CONDITION

High Hazard Potential Dams Inspection Condition	
Satisfactory	44
Fair	448
Poor	142
Unsatisfactory	14
Not Rated	17
Not Inspected	9
Total Number	674

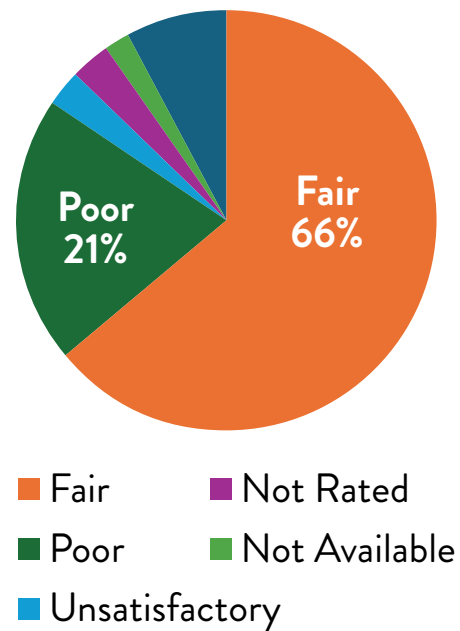
Source: NID

FIGURE 3: SC DAM CONDITION ASSESSMENT SUMMARY



Source: NID

FIGURE 4: HIGH HAZARD POTENTIAL DAMS INSPECTION CONDITION



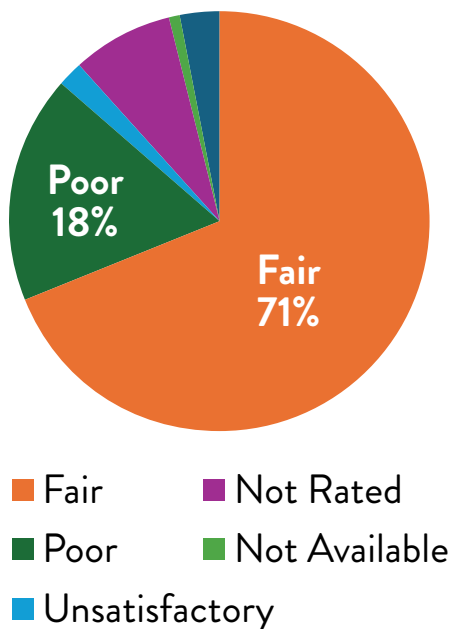
Source: NID

TABLE 4: SIGNIFICANT HAZARD
POTENTIAL DAMS INSPECTION
CONDITION

Significant Hazard Potential Dams Inspection Condition	
Satisfactory	7
Fair	174
Poor	45
Unsatisfactory	4
Not Rated	14
Not Inspected	2
Total Number	246

Source: NID

FIGURE 5: HIGH HAZARD POTENTIAL
DAMS INSPECTION CONDITION



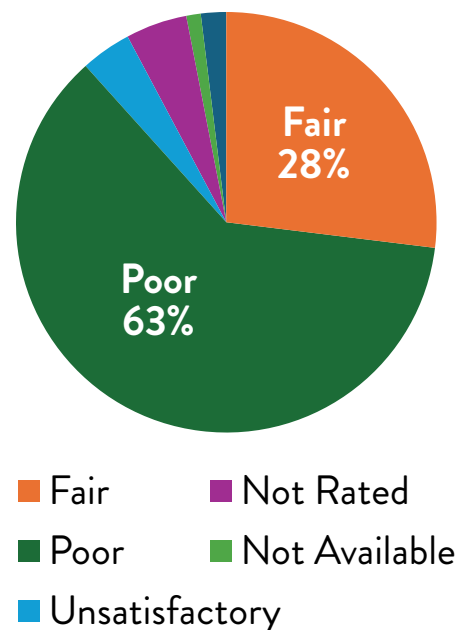
Source: NID

TABLE 5: LOW HAZARD
POTENTIAL DAMS INSPECTION
CONDITION

Low Hazard Potential Dams Inspection Conditions, *	
Satisfactory	18
Fair	360
Poor	824
Unsatisfactory	43
Not Rated	54
Not Inspected	6

Source: NID

FIGURE 6: LOW HAZARD POTENTIAL
DAMS INSPECTION CONDITION



Source: NID

OPERATION AND MAINTENANCE

The SCDES Dam Safety and Stormwater Permitting Division administers the state Dam Safety Program, established under the South Carolina Dams and Reservoirs Safety Act in 1977. SCDES conducts inspections, classification checks, permitting, and outreach. High Hazard Potential dams are inspected every two years, Significant Hazard Potential dams every three years, and Low Hazard Potential dams receive classification checks at least every five years.

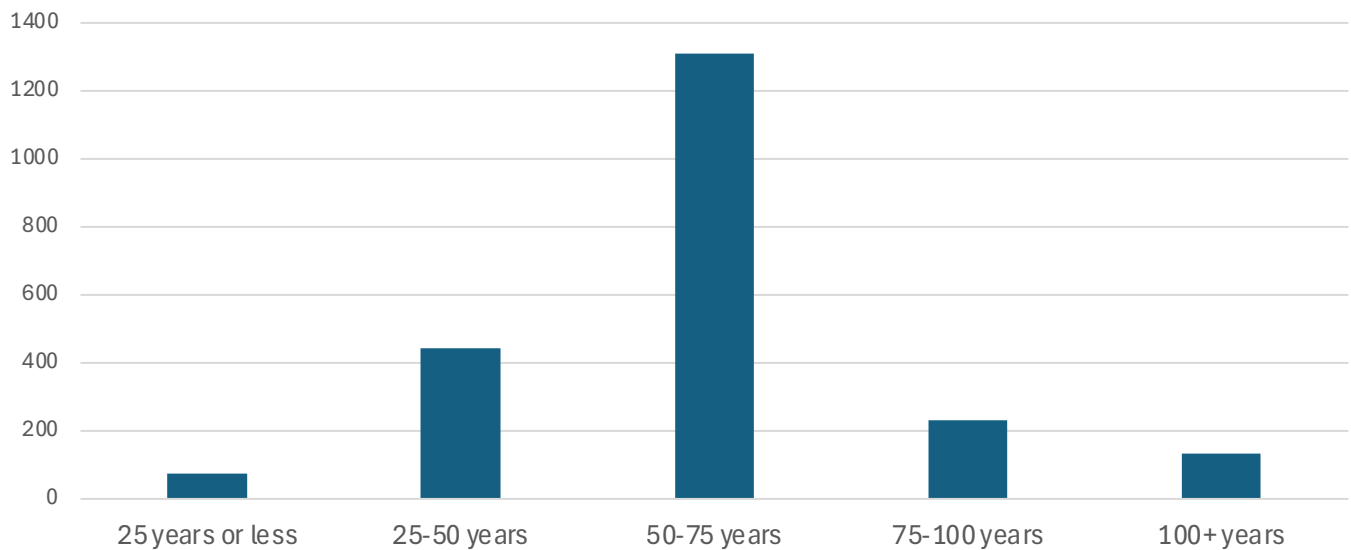
SCDES supports improved operations and maintenance primarily through inspections, technical assistance, and owner education, while responsibility for maintaining each dam remains with its owner. Inspection findings are provided to owners with recommendations or requirements for correcting observed deficiencies, and regional dam safety staff are available to provide guidance on maintenance, regulatory compliance, and related topics. The Dam Safety Program has also partnered with Clemson Extension, Clemson Online, and the Natural Resources Conservation Service to offer Dam Ownership in South Carolina, a free six-week, self-paced course covering dam inspection, maintenance, and repair. Additional recorded training addresses dam operations and maintenance, failure mechanisms, emergency action planning, liability, and repair options, including resources developed specifically for homeowner and property-owner associations that own dams. More recently, SCDES has supplemented this technical assistance with webinars and guidance for applicants to the state Dam Repair Assistance Grant Program, which supports eligible rehabilitation and removal projects at deficient High and Significant Hazard Potential dams.

Federally regulated dams in South Carolina are exempt from the SCDES Dam Safety Program but are subject to separate federal dam safety requirements. Depending

on jurisdiction, agencies such as the Federal Energy Regulatory Commission (FERC) and USACE oversee dam operation, maintenance, inspections, performance monitoring, risk assessments, and emergency preparedness. Dam owners or operators are responsible for routine maintenance and addressing identified safety deficiencies, while federal programs provide oversight through inspections, engineering assessments, and risk-informed safety requirements.

Despite these inspection, training, and technical-assistance efforts, the age of South Carolina's dam inventory and limitations in historical construction documentation continue to create operations and maintenance challenges. As dams age, they may become more susceptible to deterioration, while maintenance, repair, and rehabilitation needs may become increasingly complex and costly. Incomplete, inaccurate, or outdated construction records may further complicate condition assessment and long-term maintenance planning. The average reported age of South Carolina's state-regulated dams is more than 60 years, higher than the national average of 57 years old, although the ages of many older dams are estimated because they were constructed before the state's dam safety regulations were established. While age is not a direct reflection of hazard potential, the high average age typically means that the dams were not built to current standards and may not incorporate newer materials that could be used to improve their resilience and reduce the risk to downstream areas. Nearly 80% of the existing inventory was constructed before South Carolina lawmakers established a statewide dam safety framework. Therefore, many of these dams were constructed with little regulatory oversight or proper documentation of construction details.

FIGURE 7: AGE OF STATE-REGULATED DAMS IN SC



Source: 2025 Satet of the Dams report by SCDES))

Under state law, SCDES has the authority to take emergency action when the dam owners cannot or will not take action to make dams safe.

A 2023 SCEMD report identified risk-mitigation actions for High Hazard Potential dams, summarized in Table 6.

TABLE 6: RISK MITIGATION ACTIONS TAKEN TO IMPROVE HIGH HAZARD POTENTIAL DAMS' SAFETY - SCEMD 2023

Category	Major Accomplishments
Infrastructure Improvements	Rehabilitation of Langley Pond Dam; removal of Mandel Park Pond, Wesley North, and Upper North Lake Dams.
Risk Assessment & Technology	Screening Level Risk Assessments, statewide breach modeling, GIS mapping, pre-populated state's EPA templates by program staff including inundation mapping and a listing of potential downstream consequences, and Semi-Quantitative Risk Assessments.
Emergency Preparedness	Updated FEMA-compliant EAP templates, free EAP preparation assistance, and improved emergency notification tools.
Capacity Building	Increased state funding, dam owner workshops, webinar series, partnerships through SC ACT, and publication of the Dam Removal Handbook.

These actions reflect South Carolina's shift from primarily compliance-based oversight toward risk-informed dam safety emphasizing assessment, emergency preparedness,

owner education, rehabilitation, and removal of obsolete high-risk dams.

FUNDING AND FUTURE NEED

South Carolina's dam infrastructure continues to face substantial long-term funding needs. Most dams in the state are privately owned, and many owners receive little or no revenue from their dams while remaining responsible for detailed inspection, operation, maintenance, rehabilitation, and emergency repairs. Because approximately 95% of state-regulated dams are earthen structures, major maintenance and rehabilitation projects may require specialized engineering services, permitting, and heavy construction equipment. These costs can exceed the financial capacity of individual owners, particularly when aging dams require major structural or spillway improvements. With South Carolina's growing population, 'hazard creep' wherein new development within the dam's downstream can result in reclassification of dams and causes increase costs for dam owners. Although dam owners are responsible for maintaining their structures, the public benefits of reducing dam-failure risks extend to downstream residents, businesses, transportation systems, utilities, and communities.

Beginning in FY 2023–2024, the General Assembly established the Dam Safety Emergency Fund for SCDES emergency actions when owners cannot or will not act. The fund may receive up to \$250,000 at the beginning of each fiscal year, carries forward unspent balances, and receives funds recovered from owners after state emergency actions.

The Dam Repair Assistance Grant Program supports eligible owners correcting SCDES-identified deficiencies at state-regulated High and Significant Hazard Potential dams. The General Assembly appropriated \$1.5 million

in FY 2024–2025 and \$1.5 million in FY 2025–2026, totaling \$3 million. After Funding Cycle 1 closed in September 2025, SCDES selected six applications totaling nearly \$820 thousand, leaving approximately \$2.18 million for Funding Cycle 2.

Federal support also increased, in large part due to increased funding through the Infrastructure Investment and Jobs Act (IIJA). In federal fiscal year 2024, SCDES received approximately \$5.85 million through FEMA's High Hazard Potential Dam Rehabilitation Grant Program and approximately \$923,000 through FEMA's State Assistance Grant Program. These funds were in addition to the above-mentioned state Dam Repair Assistance Grant Program. Future federal support is less certain as the IIJA sunsets in September 2026.

Despite these recent investments, substantial funding needs remain. The age and condition of South Carolina's dam inventory, increasing development downstream of existing dams, and exposure to extreme rainfall events create long-term needs that exceed currently available resources. Sustained state funding is needed to continue emergency response capabilities, provide predictable assistance for rehabilitation of deficient dams, support inspections and technical staffing, and leverage future federal funding opportunities. Future funding strategies should prioritize risk reduction at High and Significant Hazard Potential dams while maintaining owner accountability and evaluating cost-effective alternatives—including rehabilitation, modification, or removal—based on each dam's condition, function, downstream consequences, and long-term public benefits.

PUBLIC SAFETY

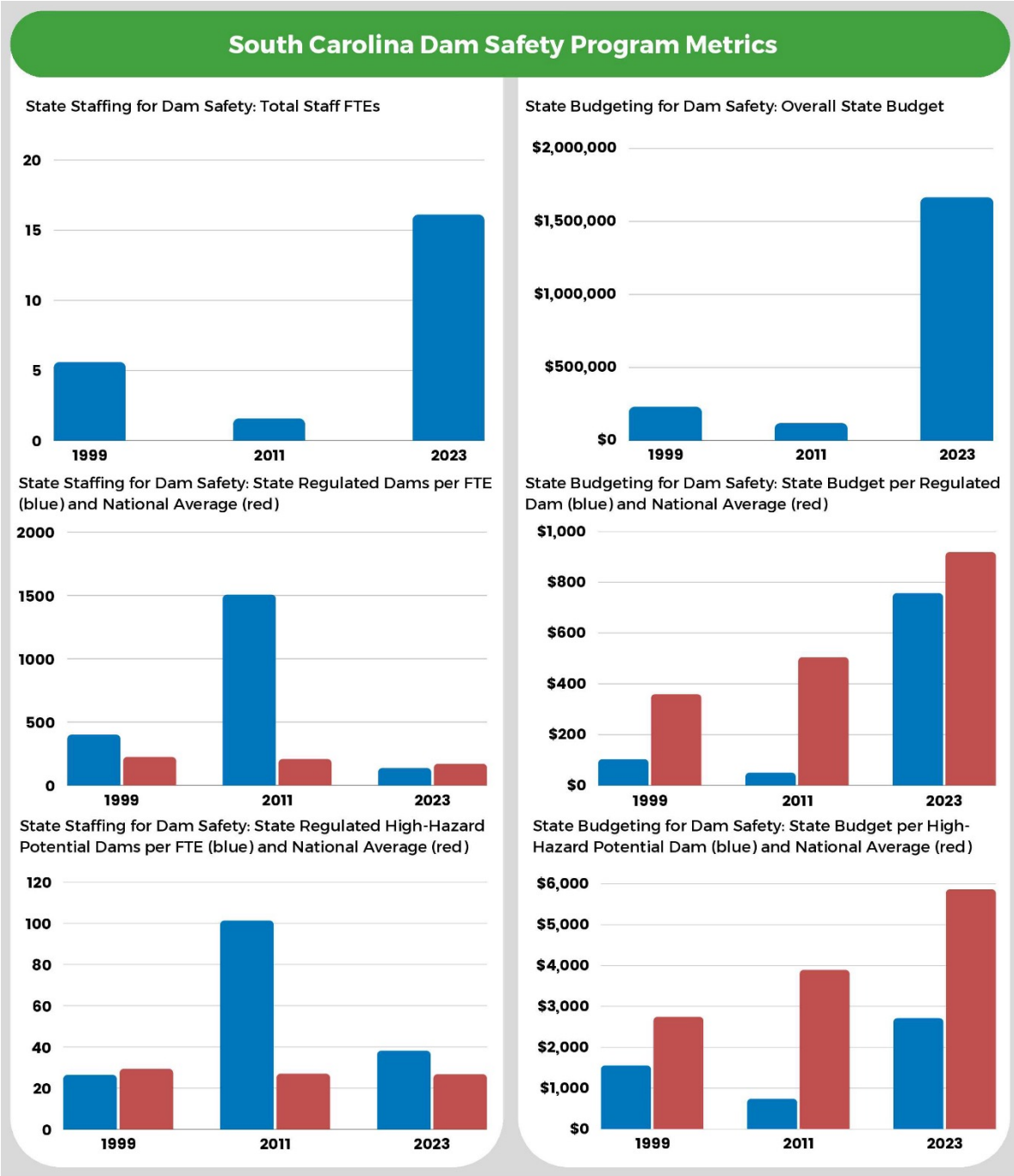
The National Dam Safety Program and Association of State Dam Safety Officials (ASDSO) developed the Model State Dam Safety Program as a benchmark for effective state programs. The guidance was modernized in 2023 to incorporate current dam-safety principles.

According to ASDSO, the IIJA allocated \$1.6 billion nationally for dams: half for dam safety, environmental, and electric-grid upgrades at hydropower dams and

half for dam-removal projects. SCDES received \$6.8 million, including \$5.85 million for High Hazard dam rehabilitation and about \$923,000 through FEMA's State Assistance Grant Program. The South Carolina General Assembly also authorized \$3 million for the State Dam Repair Assistance Grant.

Figure 8 presents South Carolina dam-safety metrics reported by ASDSO in 2023.

FIGURE 8- SC DAM SAFETY PROGRAM METRICS- 2023 SC DAM SAFETY PERFORMANCE REPORT, ASSOCIATION OF STATE DAM SAFETY OFFICIALS



Staffing has increased substantially. As of October 2025, the program has 18 FTEs; nearly half work from seven regional offices conducting inspections and

assisting local dam owners. This is more than four times the four full-time staff employed before 2015.

FIGURE 9: SCDES DAM SAFETY INSPECTORS PERFORM ROUTINE INSPECTIONS OF REGULATED DAMS THROUGHOUT THE STATE.



Photo credit: des.sc.gov/news/sc-department-environmental-services-scdes-promotes-dam-and-reservoir-education-and-awareness

SCDES also promotes public awareness through National Dam Safety Awareness Day on May 31, providing information on dam function, regulation, and maintenance.

Between 2021 and 2026, 2024 was the most active year for state-regulated dam failures linked to extreme weather in South Carolina. Major events included:

- Extreme rainfall causing the partial failure of High Hazard Potential Lake Paul Wallace Dam in May 2024;
- Tropical Cyclone Helene; and
- Non-tropical high-intensity rainfall and Edisto River flooding in November 2024, which caused ten Orangeburg dam failures.

Combined Helene and Orangeburg failures and the Bennettsville breach contributed to failure or breach of 13 state-regulated dams statewide. Repairs to Lake Paul Wallace Dam alone were estimated at \$25 million.

Under State law, a dam that is either a) 25-feet in height from the invert of the natural stream bed, or from the lowest point along the outside perimeter of the dam, to the maximum water storage elevation, b) has an impounding capacity at the maximum water storage

elevation of 50 acre-feet, or c) regardless of height or impounding capacity, may cause loss of life in the event of its failure, is subject to regulation by the State. Dams meeting the third criteria for regulation are termed “Very Small, High Hazard Potential Dams” under state regulations and are subject to all state regulatory requirements. The following categories of dams are exempt from SCDES regulation: small dams (less than 25 feet high with less than 50 acre-feet of storage where failure would not result in loss of life), federally owned or federally regulated dams, certain road-on-dams maintained by SCDOT or local governments, and dams determined by SCDES to pose no significant downstream threat. The 2018 Joint Resolution (S.1190) changed South Carolina’s dam safety program by limiting regulation of many low-hazard dams and restricting the reclassification of dams as downstream development increases risk. Consequently, some dams that would otherwise qualify as Significant or High Hazard remain officially classified as Low Hazard, affecting regulatory oversight and the state’s assessment of dam safety risks.

The federal definition of “dam” excludes structures less than 25 ft high and with less than 50 acre-ft of impounding capacity; therefore, Very Small, High Hazard Potential Dams are not included in the NID.

RESILIENCE AND INNOVATION

Resilience improves when states and owners prioritize projects based on risk and when dams are evaluated against updated hydrology and land-use conditions. South Carolina has made measurable progress since 2021 in strengthening the resilience of its dam infrastructure by integrating climate science, modern risk-based practices, and innovative inspection and asset management tools. The state invested in improved emergency planning, communication systems, GIS tools, and risk assessment capabilities. Examples include DSS-WISE, the Dams & Inundations Web Map, Emergency Action Plans (EAPs) that are required by state law for High and Significant Hazard Dams), and ReadyOp

which represent key operational components of this enhanced dams' resilience and summarized in Table 7. South Carolina has continued to improve inventory management and mapping products, including public-facing mapping tools for regulated dams and ongoing updates to condition ratings submitted to the NID. These tools support more transparent risk communication and enable better integration of dam risk into local hazard mitigation planning. The state has adopted lessons learned from historic flooding events, with increased recognition that climate variability, aging infrastructure, and downstream development collectively heighten dam safety risks.

TABLE 7: SC DAMS RESILIENCE IMPROVEMENT TOOLS/SYSTEMS

Tool/System	Purpose
Decision Support System for Water Infrastructure Security (DSS-WISE)	FEMA-supported web-based dam breach modeling software that predicts flooding after dam failure and produces inundation maps for emergency planning
SCDES Dams & Inundations GIS Web Map	Interactive GIS map of regulated dams which provides situational awareness of dam locations, hazard classifications, downstream impacts, and inundation areas
Emergency Action Plans (EAPs)	The state dam safety program has developed in the last 7 years a program of offering direct assistance to dam owners to develop a basic EAP that uses program inundation modeling and other public records. Dam owners then revise and complete these draft plans to meet the remaining state requirements, and the state distributes EAPs to relevant county emergency management personnel
ReadyOp Emergency Notification System (ReadyOp)	Emergency communication platform that could rapidly notify dam owners and emergency contacts before and during hazardous events

NOAA provides weather, climate, and hydrologic information used in dam design and flood-risk management, including Atlas 14 precipitation estimates, the National Water Model, and National Weather Service flood forecasts. NOAA also has a role in 23 planned Inflation Reduction Act (IRA) and IIJA projects in South Carolina representing \$33.4 million in economic investment.

More frequent and intense rainfall, tropical systems, and compound flooding challenge historical dam-design assumptions. State-regulated dams, averaging above 60 years old, are particularly vulnerable to changing

hydrologic conditions, supporting reassessment of spillway capacity, freeboard, and emergency preparedness.

The federal PRECIP Act, enacted in 2022, directed NOAA to modernize Probable Maximum Precipitation (PMP) estimates using advances in atmospheric science and changing climate conditions. No actionable changes to PMP determination have yet resulted; NOAA is still determining implementation, and PMP determinations for South Carolina-regulated dams continue to use NWS HMR-51 and HMR-52 data and methodology.

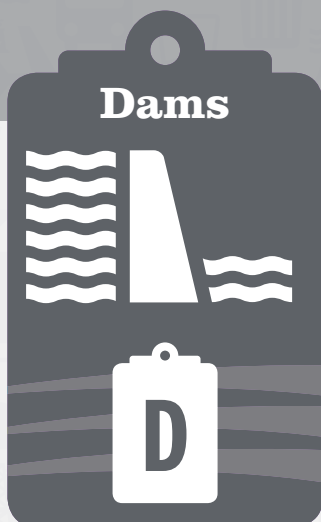
South Carolina also uses risk-informed decision-making (RIDM) to prioritize High Hazard Potential dam rehabilitation based on probability of failure, consequences, and uncertainty, directing limited resources toward the greatest threats to life safety and critical infrastructure.

Since 2021, the South Carolina Dam Safety Program has expanded staffing, data management, statewide inundation mapping, and inspection workflows, improving inspections, emergency-management coordination, and risk communication.

Technological innovation has further supported these efforts through the increased use of drone-based inspections. Unmanned aerial systems (UAS) are now routinely used to supplement traditional inspections by providing high-resolution imagery of spillways, embankments, and inaccessible structural elements. Drone inspections improve inspector safety, reduce inspection time and cost, and enable early detection of deterioration such as cracking, erosion, and seepage—enhancing both preventive maintenance and long-term asset management. Another advanced technology is

bathymetric surveys that use an autonomous boat to develop detailed 3D models of reservoirs, providing critical data on storage capacity and dam breach modeling. These technologies have enhanced condition assessments, risk analyses, and regulatory decision-making, including identifying dams that no longer meet state regulatory thresholds.

Additionally, dam removal has emerged as a strategic resilience and safety tool for obsolete or high-risk structures. The South Carolina Aquatic Connectivity Team (SC ACT) which is partnership among state and federal agencies, universities, and conservation organizations to coordinate expertise and streamline the removal of obsolete dams, developed a guideline for dam removal in 2021. Between 2021 and 2025, South Carolina advanced multiple dam removal projects that eliminated safety liabilities, restored natural river connectivity, and reduced long-term maintenance burdens. In cases where dams no longer serve a critical purpose, removal has proven to be a cost-effective and environmentally beneficial alternative to rehabilitation.



RECOMMENDATIONS TO RAISE THE GRADE

- Fully fund the National Dam Safety Program (NDSP), High Hazard Potential Dam (HHPD) initiatives, and complementary state programs to maintain inspection capacity, technical staffing, and rehabilitation efforts as dams age and downstream populations grow.
- Keep EAPs for High and Significant Hazard dams current, dam-specific, coordinated, and regularly tested; expand simulated emergency exercises, verify contacts and notification procedures, and improve downstream-community awareness.
- Inventory low-head dams, including structures outside the regulated inventory, assess public-safety risks, and prioritize warning signage, education, access controls, and other interventions. Update hydrologic design criteria.
- Continue engagement with PMP modernization under the PRECIP Act and incorporate updated precipitation information into dam-safety standards and engineering practice as appropriate.
- Improve coordination between dam-safety and land-use authorities, reassess hazard classifications as downstream development changes, and evaluate rehabilitation, removal, and other risk-reduction alternatives based on safety, lifecycle cost, environmental impacts, infrastructure needs, and community priorities.

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Drinking Water



GRADE
COMPARISON

SC: D

Nat'l: C-



DRINKING WATER

EXECUTIVE SUMMARY

Drinking water in South Carolina is typically managed and provided by local public water systems. At the state-level, the South Carolina Department of Environmental Services (SCDES) administers and enforces drinking water quality standards and regulations at these public systems. The number of violations for drinking water utilities increased from 2023 to 2024. The EPA Assessment on anticipated funding needs to update drinking water infrastructure over the next 20 years for the state of South Carolina has also increased from \$6.1 billion in 2018 to \$8 billion as of 2023. The greatest portion of this gap (\$5.5 billion) comes from the need to update distribution and transmission pipelines as many are reaching the end of their life cycle. Urban areas are seen to be making necessary improvements. However, some of the smaller utilities are contributing to the number of water quality violations, and due to a lack of publicly available data, it is unclear how well they are keeping up with system maintenance.

CONDITION AND CAPACITY

According to the Environmental Protection Agency's (EPA) evaluation of the Public Water System Supervision (PWSS) Program, the South Carolina Department of Environmental Services (SCDES), formally known as the Department of Health and Environmental control (DHEC), regulates utilities which serve more than 4.5 million residents with public water systems (PWS). SCDES defines PWS as infrastructure providing water through piping or other constructed conveyances for human consumption (≥ 15 service connections or serving ≥ 25 people on average) for at least 60 days each year. The three types of PWS are community water systems (CWS, such as towns), non-transient non-community systems (such as schools or factories), or transient non-community

systems (such as rest stops or parks).¹ A breakdown of the state's PWS systems by category and population can be found in Table 1, and drinking water quality violations and compliance data can be found in the Public Safety section below.

There are two types of water sources used for the state's PWSs: surface and groundwater. According to the SCDES Annual Report (Calendar Year 2023), 86% of the total population is being serviced with surface water and 14% rely on groundwater. Parts of the state did enter a severe to extreme drought during 2024 and have remained in an abnormally dry to moderate drought for 2025.² However, the state has not entered a prolonged exceptional drought period since 2007-2008.²

TABLE 1: SOUTH CAROLINA CAPACITY AND POPULATION SERVED BY PUBLIC WATER SYSTEMS BASED ON THE SCDES ANNUAL REPORT – CALENDAR YEAR 2024¹

Type of Public Water System	Number of Systems	Population Served	Percentage of Population Served by PWS
Community Water System (CWS)	571	4,581,781	98%
Non-Transient Non-Community System	83	24,516	1%
Transient Non-Community System	748	48,648	1%
Total	1,402	4,654,945	100%

The large number of PWSs in the state reflects the low requirements (≥ 15 service connections or serving ≥ 25 people on average) for classification. There have been efforts to consolidate systems, such as the South Carolina Water Utilities (SCWU) move to consolidate four utility systems in the Lowcountry that serve Pleasant Point Plantation, Lady's Walk, Vivian Island, Grand Oaks, Harbor Island, Chechessee Bluff, Callawassie, Spring Island, and Kiawah Island, bringing the total utility customers to 7,000.³ The reason behind the consolidation was to “streamline operations, reduce administrative costs, and allow for a more balanced distribution of infrastructure investments” across the utility service area.³

There is no direct source on the age or replacement dates of PWSs for the state, but the average life cycle

for piping is 75-100 years and 25-50 years for a drinking water treatment plant.⁴ However, many older cities (e.g., Columbia or Charleston) have infrastructure that dates to the early 1900s. For example, the Charleston, SC water treatment plant was built in Hanahan, SC in 1903, but has had refurbishments and extensions throughout the years.⁵ This makes replacement and maintenance a top priority to handle an increasing population for the state.

An additional source of drinking water is private wells. These systems are considered private property and are not regulated by federal standards. As of a 2019-2020 report, approximately 20% of residents rely on private wells, which is higher than the national average of 15%. From July 2018 – June 2019, there were 3,609 notices of intent submitted for residential wells.⁶

OPERATION AND MAINTENANCE

The SCDES issues permits to municipalities, counties, utilities, and special purpose districts to operate and maintain the treatment processes and sources of drinking water. South Carolina DES drinking water enforcement section carries out enforcement actions on PWS compliance to ensure safe drinking water, thereby protecting the public's health.

There is no statewide data on O&M or pipe replacement rates, but data can be found for some of the larger cities in the State. For example, as of 2024, the Charleston Water System agreed to replace all lead service lines by 2037 at a cost of over \$120 million, with over \$30 million coming from the federal government.⁷ Pickens,

South Carolina replaced over 8 miles of water mains and fire hydrants with close to \$5 million from SCIIP funds with work being completed by early 2025.⁸ In early 2026, the City of Florence, South Carolina announced that they would be investing \$85 million in water quality improvements, which includes updates to the water treatment plant, and extending capacity from 10 to 15 million gallons per day.⁹

At a national level, there is evidence of a coming gap in employment with one third of the current workforce reaching retirement age in the next five years.¹⁰ There are no statewide statistics on the state's workforce associated with water utilities. However, to address the

employment gap, in 2023, the SC Water Associations formed a utility workforce collaborative. The purpose of the collaborative was to allow member utilities and related organizations to “pool resources to develop a strong, stable workforce” by increasing the visibility of the industry and recently having a successful pilot campaign through social media in 2025.¹¹

In 2025, the state adopted the Water Professionals International’s (WPI) 2025 Standardized Certification exams to align with industry best practices and safety

protocols.¹² The Water Environment Association of South Carolina (WEASC) and the South Carolina American Water Works Association (SCAWWA), or known together as the South Carolina Water Associations, continue to provide training resources as well as networking opportunities for industry professionals throughout the state.¹³ Even though statewide workforce data is lacking, these initiatives show the state is making efforts to recruit, educate, and maintain the workforce.

South Carolina DES drinking water enforcement section carries out enforcement actions on PWS compliance to ensure safe drinking water, thereby protecting the public’s health.

FUNDING AND FUTURE NEED

Currently, the State Revolving Fund (SRF) provides low-interest loans and can be applied to building or repairs of drinking water systems and is a part of the EPA Drinking Water State Revolving Fund (DWSRF) program. Examples of possible projects include creation of new wells, water metering, and lead service line replacement.¹⁴ In 2024, Hilton Head used this funding to install and expand their reverse osmosis drinking water treatment facility’s capacity and to expand their drinking water wells capacity.¹⁵ To provide context for the scale of funding, the Infrastructure Investment and Jobs Act (IIJA) supports State Revolving Funds, and brought more than \$182 million to the state for water improvements since 2022;¹⁶ of this, \$37 million was dedicated to the state-wide lead service line removal mentioned above and \$23 million was set aside for additional improvements to support lead pipe replacement.¹⁷ The SC Rural Infrastructure Authority (RIA), jointly with SCDES, administers the DWSRF low-interest loan program for drinking water and clean water infrastructure. RIA also awards smaller

competitive state grants twice yearly that can be applied to water utility improvements and administered the one-time SC Infrastructure Investment Program. Monthly water service charges range from \$16/month in areas like Walterboro to \$66/month on James Island for 5,000 gallons of use.¹⁸ The average residential water bill in the United States is approximately \$70–\$80 per month for a typical household, which generally corresponds to around 4,000–6,000 gallons of monthly water use.¹⁹ Based on the ACS from 2023, the median household income for the state is around \$70,000, which is lower than the national average of around \$78,000.²⁰ Approximating by using these statistics and their maximum range values, residents in SC would spend about 1% of their median household income on their water bill as the national average would be bit closer to 1.2%. Several utilities in the state have been raising rates, such as Greenville putting a roughly \$0.79/3,000 gallon increase effective January 1, 2026.²¹ Spartanburg raised their water rates by 6% in 2024.²²

FIGURE 1: HILTON HEAD REVERSE OSMOSIS TREATMENT FACILITY^[15]



The EPA's Drinking Water Infrastructure Needs Survey and Assessment provides a high-level estimate of the amount of investment needed by state over the next 20 years. The most recent report was released in 2023 with

the total anticipated level of drinking water infrastructure need for South Carolina totaling \$8 billion.²³ This is up from \$6.1 billion in 2018.²⁴ SC represents 1% of the overall national need and ranks 29th out of the 50 states.²³

TABLE 2: ECONOMIC VALUES OF SOUTH CAROLINA AND NATION-WIDE NEEDS FROM THE 7TH EPA'S DRINKING WATER INFRASTRUCTURE NEEDS SURVEY AND ASSESSMENT (REPRESENTED IN JANUARY 2021 DOLLARS)²³

Components of Drinking Water systems	South Carolina's Need (\$USD Million)	Nation Wide Need (\$USD Million)
Distribution and Transmission	5,531	420,245
Treatment	1,246	106,125
Storage	644	55,078
Source	415	24,842
Other	262	17,548
Total	8,099	623,839

For drinking water components, distribution and transmission has the largest demand at \$5.5 billion, or 67% of the overall need.²³ Funding for projects can come

from multiple sources from the federal to the municipal level. For example, O&M costs are partially funded by water rates and fees paid by the utility users.

PUBLIC SAFETY

During the 2024 Calendar Year, there were 317 violations pertaining to one of the following categories: Maximum Contaminant Level Violations (MCL), Treatment Technique Violation (TT), Monitoring and

Reporting Violations (M/R), Monitoring Violations (M), and Other across 173 PWSs or around 12% of the total PWSs in the state.¹ This is an increase from the 2023 report, of which there were only 186 violations.²⁵

TABLE 3: TYPE OF PWS VIOLATIONS BASED ON THE SCDES ANNUAL REPORT – CALENDAR YEAR 2024¹

Violation Category	# of Violations	# of Resolved Violations
Maximum Contaminant Level	16	7
Treatment Technique	56	25
Monitoring	41	28
Monitoring and Reporting	112	40
Reporting	49	23
Other	43	0
Totals	317	123

As an alternative, the Environmental Working Group (EWG) sets more stringent standards than the EPA. From July 2021 to June 2024, the CWS facilities that accrued the most violations were typically ones with

smaller populations served. There were 33 contaminants found to exceed the EWG standards, but only two contaminants (Radium and Uranium) were found to be above the legal limits.²⁶

RESILIENCE AND INNOVATION

The state is strengthening resilience across water-related systems. Regarding cybersecurity, SCDES has published guidance for utilities on protective measures against an increasing threat to water system control systems.²⁷ Hurricane Helene in September 2024 exposed resilience gaps in smaller systems — the towns of Allendale and Branchville both lost water service during extended power outages — prompting a wave of DWSRF applications for emergency generator installations.²⁸

In terms of innovation, a major initiative for the State of South Carolina has been an update to the State Water Plan which was completed in 2025 and provides a holistic view of how the state manages supply. The plan takes stock of the state's water availability and

review scenarios where supply may be strained, such as in a drought, increased population, or a combination of both and ensure supply delivery.²⁹ The plan also outlines innovative ways to upgrade the state's water treatment process and movement has been made in the state by:

- prioritize testing out PFAS removal technologies such as ion exchange through dedicated funds from the DWSRF³⁰
- utilizing reverse osmosis technology in coastal areas such as Mount Pleasant, which is useful in areas of higher salinity and mineral content so they can diversify their supply³¹
- and incorporating membrane filtration in places like Sewanee.³²

FIGURE 2: MEMBRANE FILTRATION IN SEWANEE³²





RECOMMENDATIONS TO RAISE THE GRADE

- Increase funding sources available for smaller/rural utilities and expand outreach on funding opportunities such as the DWSRF.
- Continue federal support through EPA grant and loan funds including the Clean Water State Revolving Loan Fund (CWSRF).
- Promote consolidation of small and rural water systems when feasible to improve operational efficiency and reduce per-customer costs.
- Encourage adoption of advanced technologies including smart metering, automated monitoring, and artificial intelligence tools for leak detection, predictive maintenance, and operational optimization.
- Start steps to create a statewide asset database with initial information collected from municipalities reporting on average pipe age range and pipe material; asset management has been emphasized through the DWSRF program.
- Invest in training programs to educate workforce on sampling and reporting requirements to minimize monitoring and reporting violations.
- Strengthen resilience planning and infrastructure standards including more durable pipe materials, updated emergency response plans, and backup power at critical system components.

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Drinking Water



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Ports



GRADE
COMPARISON

SC: B+

Nat'l: B



PORTS

EXECUTIVE SUMMARY

South Carolina's ports are a critical component of the state's transportation and economic infrastructure, supporting international trade, advanced manufacturing, and statewide logistics activity. The state's port system connects businesses to global markets and plays a vital role in key industries such as automotive, aerospace, and advanced manufacturing. Over the past decade, South Carolina has made significant investments in port infrastructure to increase capacity, improve efficiency, and strengthen supply chain reliability. These investments have enhanced the competitiveness of the state's ports and supported continued economic growth. Despite these advancements, ongoing investment will be necessary to address increasing freight demand, aging infrastructure, and emerging climate-related risks. The long-term performance of South Carolina's port system will depend not only on the condition and capacity of port facilities, but also on the reliability and resilience of the broader freight transportation network that connects them to markets throughout the state, nation, and world.

BACKGROUND

South Carolina's port system is centered around the Port of Charleston, one of the busiest container ports on the East Coast. The port supports a large share of the state's international trade and plays a major role in the regional economy. The system is managed by the SCPA, which operates marine terminals in Charleston as well as inland intermodal ports.

Inland Port Greer and Inland Port Dillon extend the reach of the port system into the Upstate and Pee

Dee regions by connecting containerized freight to rail networks. These inland facilities allow cargo to move efficiently between marine terminals and inland markets while reducing truck congestion near coastal terminals.

South Carolina's economy is heavily dependent on global trade, particularly in the automotive, aerospace, and advanced manufacturing sectors. As a result, port infrastructure plays a central role in supporting the state's economic competitiveness and supply chain resilience.

South Carolina's ports have expanded significantly in recent years to accommodate growing freight demand. A major milestone was the 2022 completion of the Charleston Harbor Deepening Project, which increased the harbor's authorized depth to 52 feet,

FIGURE 1. MAP OF SOUTH CAROLINA PORTS



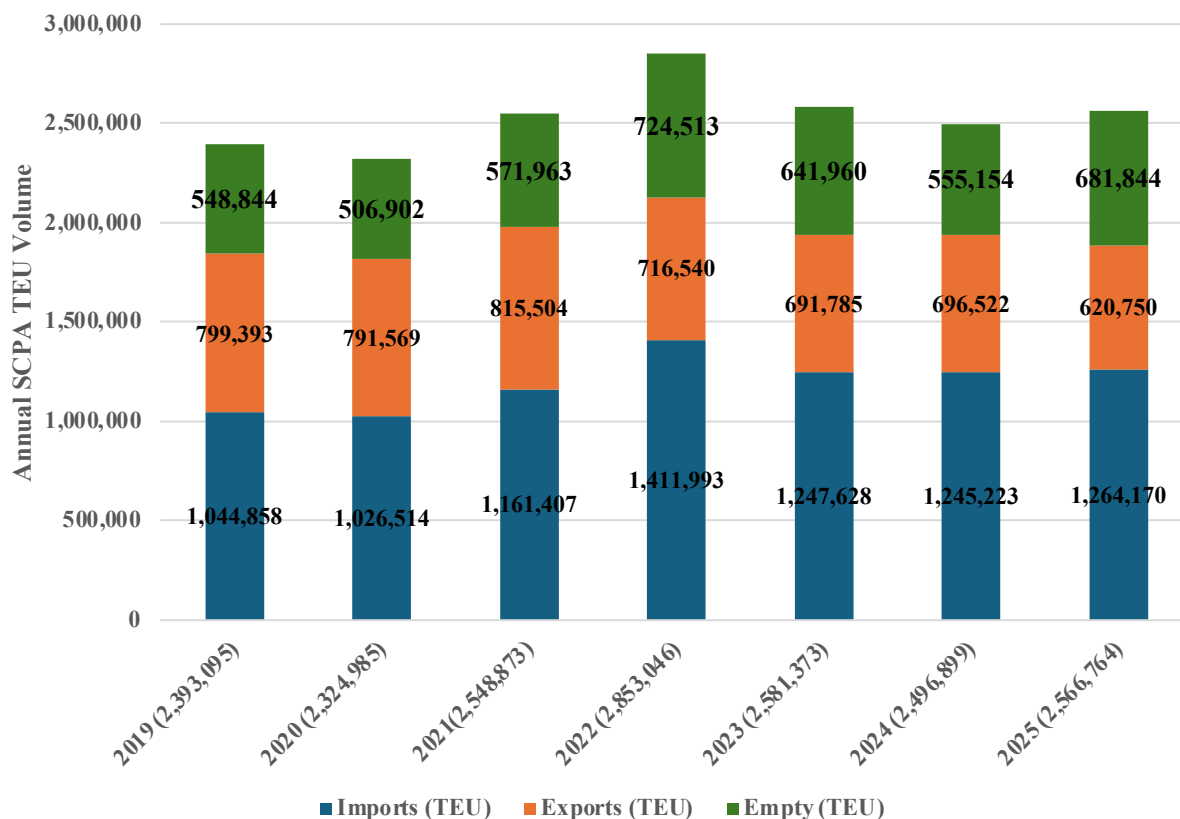
As the eighth largest U.S. container port, SCPA continues to invest strategically in terminal infrastructure, intermodal connectivity, and cargo-handling capacity to ensure efficient movement of goods through regional and global supply chains. Container throughput at South Carolina ports has increased substantially over the past decade. According to the South Carolina Ports Authority, container volumes grew from approximately 1.5 million twenty-foot equivalent units (TEUs) in Fiscal Year (FY) 2013 to roughly 2.6 million TEUs in FY 2024, representing an increase of more than 70% over the past decade. Container volumes increased substantially during the pandemic-era supply chain surge, rising from approximately 2.4 million TEUs in 2019 to a peak of about 2.9 million TEUs in 2022, before stabilizing near 2.6 million TEUs in 2025. This growth reflects the rapid expansion of manufacturing and distribution activity across the Southeast, particularly in the automotive and advanced manufacturing industries.

These capacity improvements have helped position South Carolina's ports as one of the leading container gateways on the East Coast. South Carolina has also continued to expand its inland intermodal capacity to support increasing freight demand. Inland Port Greer recorded 205,523 rail lifts in FY 2025, approaching its

expanded capacity of 300,000 annual lifts following recent infrastructure upgrades, including 9,000 feet of additional rail track. To further strengthen the state's freight network, SC Ports is developing the Navy Base Intermodal Facility near the Port of Charleston.

Once completed, the facility is expected to provide approximately 1 million annual rail lifts, substantially increasing near-dock rail capacity, reducing truck traffic, and improving the movement of containerized cargo between marine terminals and inland markets.

FIGURE 2. ANNUAL CONTAINER THROUGHPUT AT SOUTH CAROLINA PORTS AUTHORITY (SCPA), FISCAL YEARS 2013–2025, MEASURED IN TWENTY-FOOT EQUIVALENT UNITS (TEUS)



Source: South Carolina Ports Authority.

CONDITION

Overall, South Carolina's port infrastructure—which encompasses specialized marine terminals, deep-water berths, docks, heavy-duty cargo cranes, container storage yards, and connected inland intermodal rail facilities—is in relatively good condition due to sustained investment and modernization over the past decade. Several key SCPA facilities have been upgraded or expanded, including improvements to Wando Welch Terminal and the continued buildout of Hugh K. Leatherman Terminal at the Port of Charleston. The completion of the Charleston Harbor Deepening Project enhanced navigation capacity by providing a 52-foot

channel depth—the deepest on the East Coast—allowing fully loaded post-Panamax vessels to access the port without tidal restrictions. However, achieving this depth establishes a permanent baseline for intense operations and maintenance; the harbor requires continuous annual maintenance dredging by the U.S. Army Corps of Engineers to mitigate natural siltation and prevent the channel from shoaling back to shallower depths. In addition, regional intermodal hubs have undergone significant technological and physical modernization to keep pace with main terminal upgrades. For example, a \$55 million modernization project at Inland Port

Greer integrated 9,000 feet of additional rail track to efficiently process longer, 10,000-to-12,000-foot trains, while adding 18 acres of container yard footprint and new heavy-lift cranes. These terminal-efficiency upgrades have optimized cargo velocity, boosting the facility’s modern handling capacity to 300,000 annual rail lifts. Collectively, these targeted intermodal investments indicate that the state’s logistical networks are continually modernized to maintain a state of good repair and sustain high-velocity cargo throughput.

Terminal infrastructure in Charleston has benefited from investments in modern cranes, expanded container yards, and upgraded cargo-handling systems. The Port of Charleston operates a core fleet of 25 massive ship-to-shore (STS) container cranes across its major facilities, backed by dozens of hybrid rubber-tired gantry (RTG) yard cranes. At the state’s busiest hub, the Wando Welch Terminal, the crane fleet has been heavily modernized to include 13 ultra-large cranes boasting a 155-foot lift height to handle 14,000-TEU ships simultaneously. Furthermore, the first phase of the Hugh K. Leatherman Terminal added 5 of the tallest STS cranes on the U.S. East Coast, featuring a 169-foot lift height and 228-foot outreach to service mega-vessels up to 20,000 TEUs. These targeted terminal equipment upgrades have substantially increased operational efficiency, maximized container velocity, and severely reduced vessel turnaround times.

Despite these improvements, ongoing maintenance and modernization will be necessary to ensure long-term reliability. Navigation channels require continuous dredging to maintain authorized depths, and port infrastructure must be regularly upgraded to accommodate evolving vessel sizes and cargo-handling technologies.

As cargo volumes grow and infrastructure ages, maintaining a state of good repair will require sustained investment in both marine and landside facilities. This ongoing commitment to asset management is highlighted by comparing current asset ages to standard engineering service lives. While heavy marine structures and intermodal rail yards carry standard design lives of 40 and 30 years respectively, South Carolina’s aggressive \$3 billion modernization pipeline over the last decade has effectively insulated the network from critical aging bottlenecks. Major mechanical components—such as the port’s 25 ship-to-shore cranes—boast an average active age well under 10 years against a 20-to-25-year design life. However, because specialized marine concrete, terminal pavement, and container yards depreciate under intense physical wear, continuous lifecycle investment remains mandatory to prevent the state’s modernized baseline from entering a simultaneous period of structural fatigue over the next two decades.

TABLE 1. SOUTH CAROLINA PORT CONDITIONS

Facility	Status	Key Condition Notes
Charleston Harbor	Operational	52-ft depth — deepest on U.S. East Coast; widened turning basins allow simultaneous two-way vessel passage
Wando Welch Terminal (WWT)	Recently Modernized	3 big-ship berths; 2.4M TEU capacity; new steel toe-wall reinforcement completed; dedicated I-526 truck access road planned by SCDOT
Hugh Leatherman Terminal (HLT)	Under Construction (Ph. 2)	1 berth (700K TEUs) operational; new 1,600-ft berth + additional ship-to-shore cranes underway; full buildout = 3 berths / 2.4M TEUs
North Charleston Terminal (NCT)	Expansion Planned	280-acre adjacent industrial site along Cooper River acquired; future: 5M TEU capacity / 5,000-ft berth space
Columbus Street Terminal (CST)	Operational	Active finished-vehicle (automotive) terminal; critical sector for SC imports and exports
Inland Port Greer	Recently Expanded	9,000 ft new rail added; expanded chassis lot; new annual capacity: 300,000 rail lifts; record 205,523 moves in FY2025
Inland Port Dillon	Operational	I-95 corridor; CSX rail connection to Charleston; serves Pee Dee region farmers and retailers; reaches 95M people within 500 miles
Navy Base Intermodal Facility	Under Construction	Less than 1 mile from HLT; 72,000+ ft of track installed; buildings and concrete paving complete; 6 RMG cranes being commissioned

Source: SC Ports FY 25 Report

As an enterprise fund of the state, the South Carolina Ports Authority generates its core operating revenue entirely from commercial terminal operations—including container handling fees, vessel docking charges, and intermodal rail services—without relying on direct annual state taxpayer subsidies. Supported by these independent revenue streams, the SCPA has maintained a strong financial position in recent years, supporting continued investment in port infrastructure and operations.

FUNDING

South Carolina has made substantial financial investments in port infrastructure over the past decade. The South Carolina Ports Authority reports more than \$2 billion in completed capital investments between 2013 and 2023, including terminal expansions, harbor deepening, and intermodal facilities.

As an enterprise fund of the state, the South Carolina Ports Authority generates its core operating revenue entirely from commercial terminal operations—including container handling fees, vessel docking charges, and intermodal rail services—without relying on direct annual state taxpayer subsidies. Supported by these independent revenue streams, the SCPA has maintained a strong financial position in recent years, supporting continued investment in port infrastructure and operations. The authority's operating revenue increased from \$404 million in FY 2024 to \$426.5 million in FY 2025, a 5.6% increase, while the authority returned to an operating surplus of \$26.7 million after a small operating loss the previous year. Cash flow from operations also increased to \$125.4 million, indicating improved operational performance and financial stability. In addition, total assets grew to \$3.1 billion, and total net position increased by nearly 28%, reflecting continued investment in port infrastructure and long-term financial capacity to support system improvements and expansion.

Additional investments exceeding \$2 billion are planned in the coming years to support terminal expansions, near-dock rail infrastructure, and supporting logistics facilities. These investments are intended to accommodate projected growth in cargo volumes and improve operational efficiency.

Federal funding also plays an important role in supporting port infrastructure, particularly regarding deep-draft

waterways. While capital improvements like harbor-deepening projects rely on custom federal-state construction cost-sharing agreements, routine navigation channel maintenance and annual maintenance dredging are primarily financed through the federal Harbor Maintenance Trust Fund (HMTF). Administered by the U.S. Army Corps of Engineers (USACE), the HMTF utilizes revenues collected from maritime shippers via the Harbor Maintenance Tax to cover the ongoing operational costs of clearing siltation. Continued, robust federal allocations from this trust fund are essential to preserving the newly achieved 52-foot authorized depth and ensuring the uninterrupted navigability of Charleston Harbor for mega-container vessels.

The Infrastructure Investment and Jobs Act of 2021 (IIJA) significantly augmented federal capital pools available for regional maritime facilities via discretionary programs like the Port Infrastructure Development Program (PIDP) administered by the Maritime Administration (MARAD). South Carolina has leveraged these exact competitive federal tracks to eliminate acute land-to-water bottlenecks. Specifically, the Port of Charleston utilized a \$11.2 million PIDP grant to anchor a critical \$23 million berth stabilization and deepening project at the Wando Welch Terminal. The project successfully installed an underwater steel sheet pile toe wall to reinforce the wharf slope, allowing the berth pockets to match the harbor's 52-foot depth specification. This federal-local capital combination has directly scaled terminal velocity, giving the facility the structural resilience required to work three 14,000-TEU mega-ships concurrently at any tide cycle. Despite these investments, long-term funding needs remain significant as port infrastructure must continue to expand and adapt to increasing cargo volumes and changing supply chain patterns.

TABLE 2. KEY FINANCIAL PERFORMANCE INDICATORS, FY 2024 VS. FY 2025.

Metric	FY2024	FY2025	Change
Operating Revenue	\$404.0M	\$426.5M	+5.6%
Operating Income / (Loss)	(\$2.3M)	\$26.7M	Returned to surplus
Cash Flow from Operations	\$114.1M	\$125.4M	+9.9%
Total Assets	\$2,783.4M	\$3,056.3M	+9.8%
Total Net Position	\$1,014.5M	\$1,297.2M	+27.9%

Source: SC Ports Condensed Financial Statements, June 30, 2025

FUTURE NEED

South Carolina's ports are expected to experience sustained growth in cargo demand over the coming decades, creating both waterside and landside infrastructure needs. On the waterside, continued growth in vessel size and container volumes will require ongoing maintenance of the 52-foot Charleston Harbor, expansion of marine terminal capacity, additional berth and container yard space, and continued investment in cargo-handling equipment capable of serving larger post-Panamax vessels. On the landside, increasing freight activity will place additional demands on rail infrastructure, intermodal facilities, highway corridors, and truck access serving the Port of Charleston and the state's inland ports. Maintaining efficient connections between marine terminals and inland distribution centers will be essential to preserving the competitiveness of South Carolina's port system.

These future infrastructure needs will be driven by several long-term demographic and economic trends. According to SCDOT's Momentum 2050 plan, South Carolina's population is projected to increase by more than 15% (approximately 815,000 residents) between 2023 and 2035, while continued growth in advanced manufacturing, logistics, e-commerce distribution, and reshoring of domestic manufacturing is expected to increase freight movement throughout the state. South Carolina's continued growth in automotive, aerospace, battery manufacturing, and other advanced manufacturing industries is also expected to increase demand for containerized imports of raw materials and exports of high-value manufactured goods. At the same time, SC Ports project annual container volumes to

increase from approximately 3.6 million TEUs in 2024 to nearly 10 million TEUs by 2050, underscoring the need for continued expansion of marine terminals, rail infrastructure, intermodal facilities, and landside freight corridors.

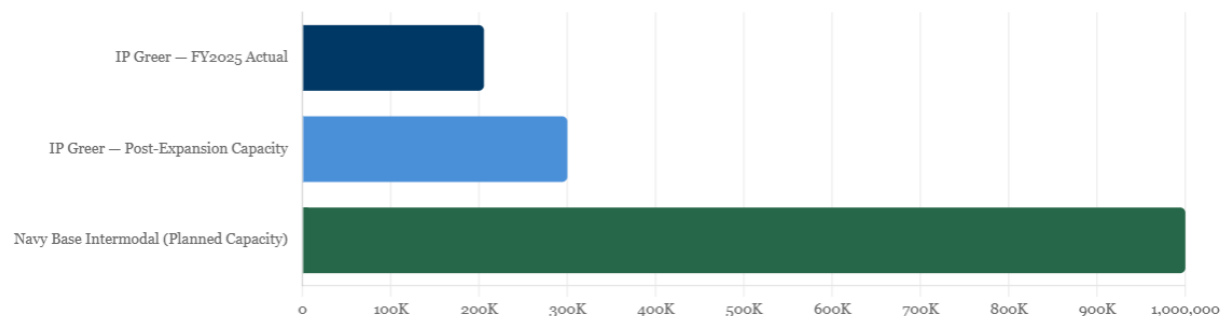
Meeting this demand will require continued expansion of marine terminal capacity, improved rail connectivity, and upgrades to the landside transportation infrastructure serving port facilities.

The planned Navy Base Intermodal Facility near the Port of Charleston is expected to provide up to approximately one million annual rail lifts, significantly increasing the region's inland freight capacity and supporting future growth in containerized cargo.

Other key projects to meet future needs include continued expansion of the Hugh K. Leatherman Terminal and modernization of existing facilities at Wando Welch Terminal in Charleston, continued maintenance dredging of Charleston Harbor, expansion of near-dock rail infrastructure through the planned Navy Base Intermodal Facility, and improvements to major freight corridors—particularly Interstate 26 and connecting highway and rail networks serving the Port of Charleston. Together, these investments are intended to accommodate projected cargo growth while improving freight mobility throughout the state.

Future investments must therefore consider the broader freight transportation network that supports port operations rather than focusing solely on marine terminal infrastructure.

FIGURE 3. SC PORTS RAIL LIFT CAPACITY — FY 2025 ACTUAL VS. PLANNED INTERMODAL EXPANSIONS (ANNUAL LIFTS)



Inland Port Greer set a fiscal year record in FY2025 with 205,523 rail moves (up 4% YoY). Post-expansion capacity: 300,000 annual lifts (+9,000 ft of new rail added; expanded chassis lot). Navy Base Intermodal Facility funded at \$550M in state appropriations; 72,000+ ft of track installed as of report date; 6 rail-mounted gantry (RMG) cranes being commissioned.

Source: SC Ports FY25 Annual Report

OPERATION AND MAINTENANCE

Operation and maintenance activities are essential to reliable port performance. Routine maintenance includes dredging of navigation channels, upkeep of terminal infrastructure, maintenance of cargo-handling equipment, and management of intermodal connections.

Navigation channels serving the Port of Charleston require ongoing dredging to maintain authorized depths. These activities are typically conducted by the USACE through federally funded operations and maintenance programs. South Carolina ports, particularly Charleston, have benefitted from reform of the Harbor Maintenance Trust Fund which has provided consistent funding to the Corps for maintenance dredging which is typically needed and performed on an annual basis as part of an innovative regional contract by the Corps. In addition, Georgetown port is under discussion for development again if reliable and consistent funding for maintenance dredging is available.

Effective operation and maintenance also depend on the availability of a skilled workforce, including

equipment operators, maintenance technicians, electricians, mechanics, engineers, and longshore workers. As South Carolina's port system continues to expand and adopt more advanced cargo-handling technologies, maintaining a well-trained workforce will remain essential to ensuring safe, reliable, and efficient port operations.

Beyond federally funded navigation channel dredging, SC Ports is responsible for maintaining much of the infrastructure within its facilities, including wharves, cranes, cargo-handling equipment, container yards, rail infrastructure, utilities, buildings, and terminal support systems. Routine inspection, repair, and replacement of these assets are essential to ensuring safe, reliable, and efficient port operations. As port infrastructure continues to age and cargo volumes increase, operation and maintenance requirements are expected to grow. Ensuring stable funding for maintenance activities will be critical to sustaining long-term port performance.

PUBLIC SAFETY

Public safety is an important consideration for port operations due to the scale of maritime traffic, cargo-handling activities, and hazardous materials that may pass through port facilities.

Ports must maintain strict safety standards related to vessel navigation, cargo handling, and worker safety. The U.S. Coast Guard plays a central role in overseeing maritime safety and security within port waters.

Emergency preparedness planning is particularly important for South Carolina's ports because of the state's exposure to hurricanes, storm surge, and coastal flooding. During Hurricane Ian in September 2022, SC Ports maintained normal marine terminal operations through September 29 but closed all marine terminals on September 30 as the storm approached the South Carolina coast. Wando Welch, North Charleston, and

Hugh Leatherman terminals reopened the following day, October 1, with operating hours from 8:00 a.m. to 5:00 p.m., and additional weekend gate hours were provided on October 2 to support recovery of cargo operations. Inland Ports Greer and Dillon remained open during their normal operating hours. This relatively brief and targeted disruption illustrates the importance of advance storm planning and operational coordination in

RESILIENCE

South Carolina's ports face increasing risks from coastal hazards, including hurricanes, storm surge, tidal flooding, and long-term sea level rise. NOAA tide gauge records from Charleston Harbor indicate more than a foot of relative sea level rise over the past century, with an accelerated rate in recent decades.

Increasing tidal flooding and severe weather events can disrupt port operations and damage infrastructure. These risks extend beyond marine terminals to the surrounding highway and rail networks that support port operations. The need for long-term resilience planning is underscored by the increasing frequency of high-tide flooding in the Charleston area. NOAA reports that high-tide flooding has increased from approximately two days per year in the 1970s to about eleven days

protecting workers and infrastructure while supporting rapid restoration of port services. Maintaining strong coordination among SC Ports, the U.S. Coast Guard, U.S. Customs and Border Protection, state and local emergency management agencies, and local law enforcement remains essential to protecting workers, cargo, and critical port infrastructure during severe weather events.

per year by the early 2010s, with continued increases projected as sea levels rise. SCPA has implemented emergency preparedness procedures and operational recovery plans to address storm-related disruptions. However, long-term resilience will require continued investment in measures such as elevating electrical and communications infrastructure, improving terminal drainage systems, strengthening wharves and bulkheads to withstand storm surge, and incorporating higher design elevations and climate adaptation considerations into future terminal expansion projects. As climate-related risks continue to evolve, integrating resilience into planning, design, construction, and maintenance of port infrastructure will be essential to protecting assets and maintaining reliable freight movement.

INNOVATION

South Carolina's ports have adopted a variety of technological and operational innovations to improve efficiency and reliability. Investments in modern cargo-handling equipment, expanded intermodal facilities, and digital logistics systems have increased cargo-handling capacity, improved truck and rail operations, and reduced vessel turnaround times. These innovations have enabled SC Ports to efficiently handle more than 2.6 million TEUs annually while strengthening coordination among shipping lines, terminal operators, rail providers, and logistics partners through digital cargo visibility systems.

SCPA has implemented several operational innovations aimed at improving efficiency while reducing environmental impacts. The Port of Charleston has deployed 42 hybrid rubber-tired gantry (RTG) cranes, which reduce diesel fuel consumption by approximately 50% and lower air emissions by more than 90% compared with conventional diesel-powered RTGs.

In addition, the port's inland rail system provides significant environmental benefits by shifting cargo movement from trucks to rail, which can reduce freight transportation emissions by up to roughly 90% depending on distance and operating conditions. These operational innovations are complemented by environmental stewardship initiatives, including partnerships that have helped protect or conserve more than 3,400 acres of environmentally significant land throughout South Carolina, including projects in the Wando River watershed, Cooper River Historic District, Four Holes Swamp Watershed, and near Inland Port Dillon. Together, these initiatives demonstrate SCPA's efforts to integrate sustainability, technology, and logistics innovation into its infrastructure system.

Continued innovation will be important for improving operational efficiency, reducing environmental impacts, and adapting to future supply chain challenges.

Ports



RECOMMENDATIONS TO RAISE THE GRADE

- Expand marine terminal capacity to accommodate projected growth in containerized freight.
- Invest in landside transportation infrastructure to reduce congestion on major freight corridors serving port facilities.
- Maintain consistent federal funding for dredging and navigation channel maintenance.
- Strengthen resilience planning to address sea level rise, flooding, and severe weather risks.
- Continue modernization of cargo-handling equipment and digital logistics systems.

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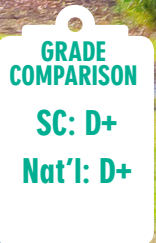


Photo: Hilton Head Island, South Carolina; TRAVEL EASY



ROADS

EXECUTIVE SUMMARY

South Carolina maintains over 143,000 miles of public roadway, ranking fourth in the nation. The state faces a \$20 billion road funding shortfall over the next 20 years. Recent increases in state and federal funding, including \$5.2 billion from a 2023 bill, have helped but remain short-term solutions and do not close the long-term gap. Without major new investment, a significant share of South Carolina's roads could fall into poor condition by 2034. In the Twin Cities, congestion continues to rise: the average driver now spends 73 hours in traffic each year, costing \$1,598 per person. While COVID-19 briefly eased congestion, 2024 levels have surpassed those of 2019 and are increasing. The state's primary transportation revenue sources—fuel, registration, vehicle sales, and property taxes—are no longer sufficient to meet growing needs.

CAPACITY

South Carolina has a large roadway network, with over 60,000 public road miles. SCDOT plans, maintains, and operates about 41,295 centerline miles, making it the fourth largest state-owned system in the U.S. The State

Highway System encompasses interstates, primary highways, and both federal-aid and non-federal-aid secondary roads. Local roads are not included. Table 1 shows the SCDOT Roadway Inventory.

TABLE 1: 2022 SCDOT ROADWAY INVENTORY

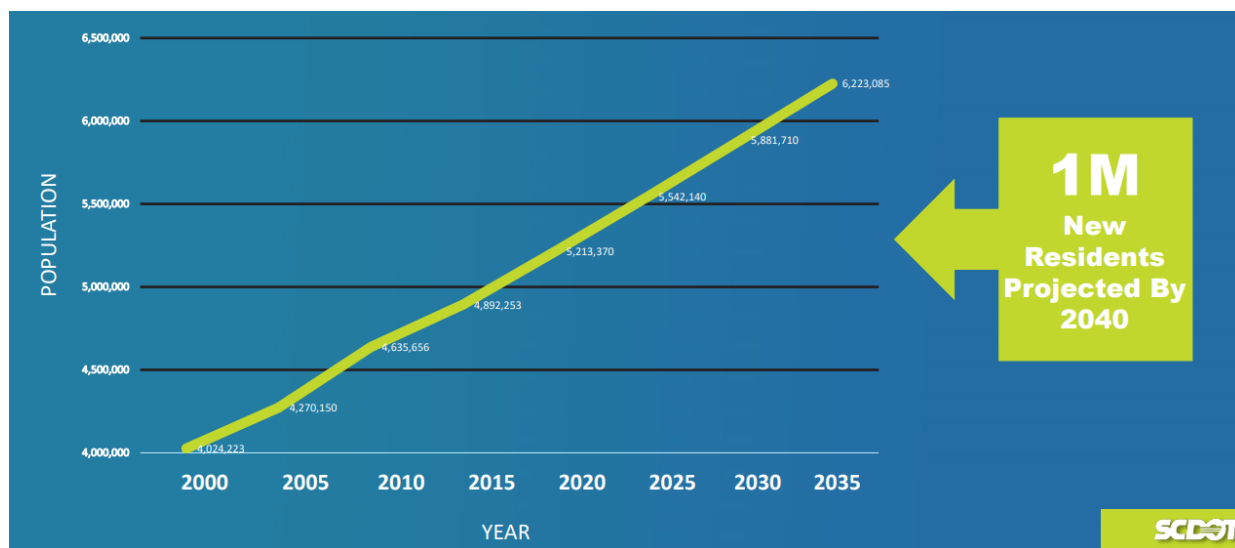
System Functional Tier	State-maintained Centerline-miles	State-maintained Lane-miles	Daily Vehicle Miles Traveled (DVMT)
Interstate (NHS/SHS)	851 (2.0%)	3,866 (4.2%)	45,575,948 (31%)
Non-Interstate NHS (NHS/SHS)	2,749 (6.6%)	9,391 (10.4%)	39,868,469 (27%)
Non-NHS Primary (SHS)	6,765 (16.4%)	14,930 (16.5%)	30,201,491 (20%)
Federal Aid Secondary (SHS)	10,349 (25.1%)	21,270 (23.4%)	23,707,180 (16%)
Non-Federal Aid Secondary (SHS)	20,591 (49.95%)	41,271 (45.5%)	8,946,010 (6%)
TOTAL	41,295 (100%)	90,728 (100%)	148,299,098 (100%)

Source: SCDOT Strategic 10-Year Asset Management Plan (STAMP)

In 2023, travel on the state-maintained roadway system totaled approximately 57.1 billion vehicle-miles traveled (VMT). Although interstates account for only about 2% of the system's centerline mileage, they accommodate a disproportionately large share of travel demand, carrying roughly 30% of total VMT and nearly half (47%) of all truck travel. Primary roads also play a critical role, conveying about 48% of statewide VMT while representing just 23% of the system's total centerline miles.

South Carolina has experienced sustained population growth over the past two decades and is projected to continue growing significantly. The state's population increased from approximately 4 million in 2000 to about 5.6 million in 2025 and is projected to reach more than 6.2 million by 2035, according to SCDOT projections (Figure 1).

FIGURE 1: SOUTH CAROLINA'S ACCELERATING POPULATION GROWTH



Source: State of South Carolina's Transportation Network, p. 14

Recent growth has been driven primarily by domestic migration, with the state adding roughly 91,000 residents between 2023 and 2024 alone. Growth has been concentrated in metropolitan and suburban counties, particularly in coastal regions and the Upstate, where all metropolitan statistical areas have continued to expand. This sustained and geographically concentrated population growth is increasing travel demand because residents typically rely on personal vehicles for daily travel. As VMT has risen, congestion has intensified on urban interstates and major arterials, especially in fast-growing regions. These trends place increasing pressure on the transportation system, highlighting the need for additional capacity improvements and operational strategies to accommodate continued growth.

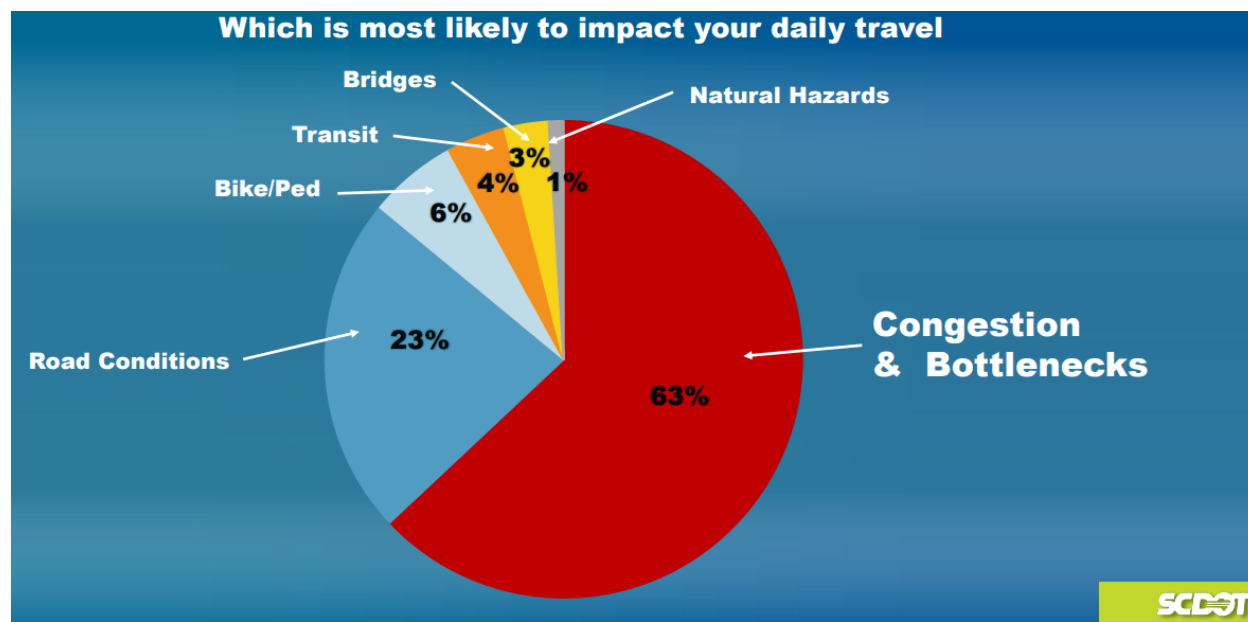
SCDOT uses vehicle GPS-based travel time data, including information from the National Performance Management Research Data Set (NPMRDS), to

monitor congestion, travel delay, and reliability across interstates and major arterial routes on the National Highway System (NHS). Since 2020, travel delays on the SC NHS have steadily increased, reflecting rising traffic volumes and growing congestion pressures, though 2023 delay levels remain 6% below those observed in 2017, mostly due to impacts from COVID-19 pandemic. Detailed travel time analysis also shows significant regional variation in congestion, with the highest average weekday delays occurring in Charleston, Richland, Greenville, and Horry Counties, where a large share of delay is concentrated on the interstate system. Figure 2 shows that congestion and roadway bottlenecks are by far the most significant factors affecting daily travel in South Carolina, representing 63% of reported impacts. Road conditions account for an additional 23%, while bicycle and pedestrian facilities (6%), transit services (4%), bridges (3%), and natural hazards (1%) collectively comprise just 14% of reported travel impacts.

South Carolina experiences moderate congestion levels relative to other states. National comparisons indicate the state ranks 23rd in traffic congestion, with drivers spending an average of approximately 17 hours per year in congested conditions. While congestion levels remain

lower than in many states with larger metropolitan areas, continued population growth and economic development are expected to increase demand on key corridors, particularly in rapidly growing urban regions such as Charleston, Greenville–Spartanburg, and Columbia.

FIGURE 2: CONGESTION AND DELAY



Source: State of South Carolina's Transportation Network, p.15

CONDITION

SCDOT conducts annual, automated pavement data collection efforts to inventory and evaluate the condition of all federally and state-maintained highways in South Carolina. Pavement condition is assessed using the Pavement Quality Index (PQI), which classifies roadway segments as good, fair, or poor. Between 2016 and September of 2024, SCDOT paved approximately 8,800 miles of state-owned roadways, resulting in measurable improvements in pavement condition across multiple functional classes.

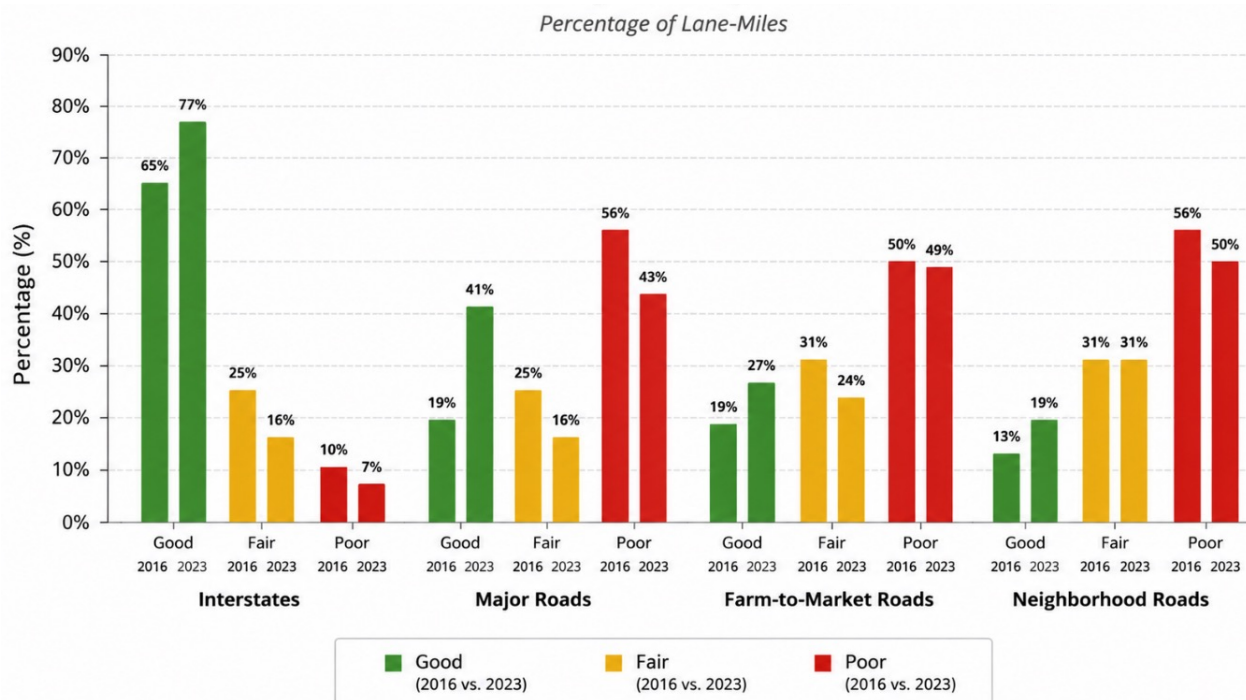
Interstates, which represent only about 2% of South Carolina's state-maintained roadway mileage, continue to perform best overall. The proportion of Interstate pavement rated in good condition increased from 65% in 2016 to 77% in 2023, while the share rated poor declined from 10% to 7% over the same period. Major roads experienced the largest improvement in pavement condition, with the percentage of roadway mileage in

good condition more than doubling from 19% to 41% and the percentage in poor condition declining from 56% to 43%. While these gains demonstrate the positive impact of sustained investment, the fact that 43% of major roads remain in poor condition highlights the magnitude of the existing backlog and the continued need for preservation funding. Improvements on lower-volume routes were more modest. For farm-to-market roads, the percentage of pavement in good condition increased from 19% in 2016 to 27% in 2023, while pavement in poor condition decreased slightly from 50% to 49%. Neighborhood roads also saw incremental gains, with pavement in good condition rising from 13% to 19%, and pavement in poor condition declining from 56% to 50%. These smaller improvements reflect SCDOT's asset management strategy, which prioritizes investments on higher-volume corridors with greater traffic demand, freight movement, safety needs, and economic significance while continuing to preserve lower-volume

roadways as funding allows. Pavement condition trends by roadway functional class between 2016 and 2023 are summarized in Figure 3. These trends indicate that, while targeted investments have led to substantial but

uneven gains on higher-priority routes, a significant portion of the non-Interstate network has room for improvement, underscoring the continued need for sustained preservation funding.

FIGURE 3: CHANGE IN PAVEMENT CONDITION BY FUNCTIONAL CLASS (2016-2023)



Source: SCDOT The Strategic 10-Year Asset Management Plan (STAMP)

Approximately 45% of South Carolina’s major roadways are in poor or fair condition, and roadway deterioration is estimated to impose about \$3 billion in annual costs on

motorists statewide (roughly \$731 per driver) through increased vehicle repair expenses, accelerated depreciation, higher fuel consumption, and greater tire wear.

OPERATION AND MAINTENANCE

South Carolina has increased investment in roadway maintenance and system upkeep. National comparisons place the state fourth in maintenance spending, which includes activities such as pavement resurfacing and pothole repair. However, South Carolina’s roadway system places substantial demands on operations and maintenance due to its size, age, and centralized maintenance structure. Operation and maintenance activities are coordinated through a structured, statewide framework anchored by SCDOT’s Strategic 10-Year Asset Management Plan (STAMP), and the Momentum 2050 implementation strategy.

Supported by increased state and federal investment, SCDOT’s capacity to maintain roads and highways has expanded in recent years. In addition to completing approximately 8,800 miles of paving, SCDOT has invested in more than 360 bridges, initiated improvements on over 100 miles of Interstates, and delivered more than 1,100 miles of safety projects. As a result of sustained state and federal investment, including the 2017 Roads Bill, increased federal formula funding, discretionary grants, American Rescue Plan Act (ARPA) funding, and the Infrastructure Investment

and Jobs Act (IIJA), SCDOT's annual construction and maintenance program has grown from approximately \$1 billion in 2009 to more than \$6.2 billion in 2024, enabling expanded paving, safety improvements, and bridge work statewide, though staffing and equipment demands continue to rise alongside program delivery.

FUNDING

Funding for South Carolina's roadway system comes from a combination of federal, state, and limited local sources, with the state bearing a large share of responsibility due to its centralized maintenance structure. Federal funds, primarily through the Federal Highway Administration (FHWA), support major capital projects, Interstate improvements, freight corridors, and safety programs, but typically require state matching funds and are not sufficient to address routine maintenance needs. State-generated revenues provide the primary support for roadway operations, maintenance, and preservation, while local governments play a comparatively smaller role since SCDOT maintains approximately 63% of all public roadway miles statewide.

At the state level, roadway funding is supported largely through motor fuel taxes, vehicle-related fees, and the Infrastructure Maintenance Trust Fund (IMTF), which provides dedicated funding for roadway preservation and improvement projects. In 2017, the South Carolina General Assembly enacted Act 40, authorizing a 12-cent per gallon gas tax increase, phased in at two cents per year over six years, with revenues deposited into the IMTF. That legislation also provided approximately \$600 million in additional annual state funding to address urgent transportation needs. Despite this progress, South Carolina's gas tax remains below the national average when adjusted for inflation, and improvements in vehicle fuel efficiency continue to reduce the purchasing power of fuel-based revenues over time. As of July 2025, state gas tax rates ranged from \$0.71 per gallon in California to \$0.09 per gallon in Alaska; South Carolina's rate of \$0.29 per gallon ranked 30th nationally, placing it below the national average. In response, SCDOT has implemented a diversified revenue approach, and the phased gas tax increase provided a gradual funding transition that supported expansion of the transportation construction program.

While SCDOT has made measurable progress, current funding levels are not sufficient to fully meet ongoing operations and maintenance needs. As a result, preservation and maintenance needs must compete directly with safety, capacity, and modernization projects, constraining the state's ability to fully address systemwide deficiencies.

To further support system recovery, the General Assembly approved \$453 million in one-time funding through ARPA in 2022. In addition, federal transportation funding increased by more than 30% following the enactment of the IIJA in 2021. Together, these state and federal investments have supported implementation of SCDOT's STAMP, which is focused on returning the roadway system to a state of good repair. However, available funding has not fully closed the gap between system needs and long-term investment requirements. As a result, the agency has significantly expanded its construction and maintenance program, with the annual work program increasing from approximately \$1 billion in 2009 to more than \$6.2 billion in 2024.

In State Fiscal Year (SFY) 2025, SCDOT reported approximately \$2.6 billion in total revenues, with funding derived from a combination of federal reimbursements, state-generated revenues, trust funds, and partner contributions. State funding is supported primarily through motor fuel taxes, vehicle-related fees, and the IMTF, while federal funding has increased under the IIJA. Although revenues are projected to continue growing over the next several years, available funding remains insufficient to meet the state's long-term transportation needs.

Local governments in South Carolina have limited independent revenue authority for roadway funding. Municipalities and counties rely primarily on local option sales taxes, hospitality and accommodation taxes in tourism-driven areas, General Fund revenues, and impact fees to fund local roadway improvements. While these sources support targeted projects, they are not sufficient to offset statewide preservation, capacity, and safety funding gaps, particularly in fast-growing metropolitan and suburban areas.

FUTURE NEED

Travel demand in South Carolina is projected to continue increasing due to population growth, economic development, freight movement, and tourism, which will contribute to worsening congestion, particularly on urban Interstates and major corridors. To address current and future congestion while balancing the need to preserve existing infrastructure within available funding, SCDOT's Interstate Program focuses on targeted capacity expansion where feasible, complemented by operational strategies such as interchange improvements, traffic signal optimization, and expanded Transportation Systems Management and Operations (TSMO) and Intelligent Transportation Systems (ITS) deployments.

The Statewide Multimodal Transportation Plan estimates annual multimodal transportation needs between 2023 and 2050 total \$3.3 billion, which is \$971 million more than the current expenditure of \$2.3 billion. Highway

pavement preservation represents one of the largest needs, with SCDOT spending approximately \$768 million annually to maintain the state's 41,000 centerline miles of roadway. Routine highway maintenance alone requires approximately \$240 million annually, but current expenditures are \$184 million per year, leaving a shortfall of roughly \$56 million annually.

Safety investments are also a major future need. SCDOT currently spends approximately \$130 million annually on safety projects, with an additional \$117 million appropriated by the General Assembly in 2024 to further accelerate safety improvements; however, total annual safety needs are estimated at approximately \$230 million, requiring an additional \$100 million per year to fully implement statewide safety initiatives. These gaps highlight the inability of current funding levels to meet even baseline preservation and safety needs.

PUBLIC SAFETY

According to state-by-state fatality data from the Insurance Institute for Highway Safety (IIHS) and national crash statistics published by the National Highway Traffic Safety Administration (NHTSA), South Carolina ranks among the most dangerous states for roadway fatalities. NHTSA data indicates that, while the national average traffic fatality rate is approximately 1.2 fatalities per 100 million VMT, South Carolina's rate has remained significantly higher, generally between 1.7 and 1.9, ranking it as the third highest state in traffic fatalities. South Carolina's persistently high fatality rate is influenced in part by its extensive rural roadway network, high-speed travel, and a high proportion of

roadway departure and intersection crashes. From a public health perspective, South Carolina also recorded 18.9 traffic fatalities per 100,000 population in 2024, placing it among the four highest states nationally. However, traffic fatalities in South Carolina declined from 1,198 in 2021 to 1,041 in 2024, with the fatality rate decreasing from 2.1 to 1.7 fatalities per 100 million VMT. Both the fatality rate per 100 million VMT and the fatality rate per 100,000 population declined during this period, indicating modest improvements in roadway safety, although South Carolina continues to rank among the nation's highest in traffic fatalities.

TABLE 3: CHANGE HIGHWAY SAFETY TRENDS IN THE SC, 2024-2026

PERFORMANCE MEASURES	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fatalities	1,020	989	1,036	1,006	1,066	1,198	1,094	1,047	1,041
Serious Injuries	3,049	2,851	2,642	3,237	2,607	2,974	2,563	2,488	2,612
Fatality rate (per HMVMT)	1.870	1.780	1.820	1.740	1.980	2.080	1.850	1.730	1.710
Serious injury rate (per HMVMT)	5.590	5.140	4.650	5.590	4.840	5.170	4.340	4.050	4.220
Number non-motorized fatalities	173	172	190	192	203	214	199	214	192
Number of non-motorized serious injuries	239	258	249	266	260	285	259	246	297

Source: South Carolina Highway Safety Improvement Program, 2025 Annual Report

In 2024, traffic crashes in South Carolina resulted in an estimated \$8 billion in total economic impacts. According to TRIP, insufficient roadway safety features likely contributed to roughly one-third of fatal crashes, accounting for approximately \$2.7 billion in economic losses.

SCDOT has responded through coordinated safety investments that integrate engineering, enforcement, education, and data-driven evaluation. The Rural Roads Safety Program, established in 2017 and supported by a minimum annual budget of \$50 million, focuses on implementing low-case, systematic safety improvements such as shoulder widening, rumble strips and others on high-risk corridors. The program has improved more than 1,116 miles of high-risk rural roads, resulting in a 20% reduction in fatal and serious injury crashes and a 49% reduction in roadway departure crashes on treated

corridors. While these improvements have enhanced roadway safety, continued investment in pedestrian and bicycle infrastructure remains essential to address the disproportionate risks faced by vulnerable road users. In 2023, 187 pedestrians and 26 bicyclists were killed in traffic crashes in South Carolina, representing increases from 173 and 25 fatalities, respectively, in 2022. In addition, 40 bicyclists sustained serious injuries and another 368 were injured in traffic crashes during 2023. In addition, South Carolina ranks 41st nationally in urban fatality rates and 44th in rural fatality rates. These rankings highlight ongoing safety concerns across both urban and rural roadway networks and emphasize the need for continued investment in roadway design improvements, safety programs, pedestrian and bicycle infrastructure, and traffic operations strategies.

RESILIENCE AND INNOVATION

South Carolina's transportation system faces growing risks from natural hazards, particularly flooding, hurricanes, and tropical storms, which disrupt roadway operations, damage infrastructure, and increase long-term maintenance costs. Flooding poses the greatest threat to roadway resilience, affecting critical coastal evacuation routes, emergency response corridors, and economic recovery, as documented by recurring closures in SCDOT's Hurricane Road Closure database (2015–2023). In

response, the state has strengthened coordination and data-driven resilience planning, including the 2023 Strategic Statewide Resilience and Risk Reduction Plan developed by the South Carolina Office of Resilience, and ongoing efforts to improve flood vulnerability data using First Street's flood layers. Resilience is also embedded in SCDOT's STAMP and, following the IJIA, resilience and extreme weather considerations have been further integrated into life-cycle planning and risk management.

Innovation complements these efforts through expanded use of Transportation Systems Management and Operations (TSMO) to optimize traffic operations; Intelligent Transportation Systems (ITS), including traffic cameras, dynamic message signs, and real-time traffic monitoring; e-Construction to improve project delivery through digital documentation; automated pavement monitoring; and FHWA's Every Day Counts (EDC) initiative to accelerate deployment of proven transportation innovations. Emerging technologies including the Connected Vehicle Testbed on Interstate 85, freight ITS initiatives, SC+EV charging deployment, the Charleston County SMART Grant, which deploys connected vehicle technology and intelligent signal

systems along the Calhoun Street corridor and Safe Streets and Roads for All (SS4A) projects such as the City of Columbia's Safety Action Plan for speed management, pedestrian crossings, and transit access; Lexington County's Target Zero initiative to address high-injury corridors; and regional safety planning in the Rock Hill–Fort Mill area, demonstrate the state's commitment to advancing transportation technology. These initiatives demonstrate meaningful progress, but most are still limited to specific corridors or pilot projects. Expanding them statewide will be important to improve resilience, mobility, and safety as South Carolina continues to face growing transportation demands and climate-related challenges.



Photo: Highway into Columbia, South Carolina; Sean Pavone



RECOMMENDATIONS TO RAISE THE GRADE

To improve the condition, safety, reliability, and resilience of South Carolina's roadway system, the following actions are recommended:

- **Expand Sustainable Transportation Funding**
South Carolina should pursue additional user-based and inflation-adjusted revenue mechanisms to address its annual funding gap and ensure long-term preservation of its roadway system.
- **Accelerate Pavement Preservation on Non-Interstate Roads**
With 45% of major roads in fair or poor condition, increased investment in preventive maintenance on primary and secondary roads is needed to reduce life-cycle costs and motorist expenses.
- **Strengthen Rural and Systemic Safety Programs**
Expand proven safety countermeasures across both urban and rural networks, with particular emphasis on high-risk rural corridors, intersections, and infrastructure that improves safety for pedestrians, bicyclists, and other vulnerable road users. These investments will help reduce South Carolina's persistently high traffic fatality rates.
- **Manage Congestion Through Operations and Multimodal Strategies**
Greater use of TSMO, ITS, and demand-management strategies, along with coordinated investments in transit and active transportation, can address growing congestion without relying solely on roadway expansion.
- **Integrate Resilience into Planning and Design**
Continued incorporation of flood risk, extreme weather, and resilience considerations into asset management and project design will improve system reliability and protect critical corridors.



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Transit





TRANSIT

EXECUTIVE SUMMARY

Public transportation in South Carolina provides essential mobility across 41 of the state's 46 counties, connecting residents to employment, health care, education, and community services, particularly for seniors, individuals with disabilities, and rural populations. In 2024, transit providers delivered approximately 11.7 million passenger trips. Despite this role, transit remains underutilized statewide. Fewer than 1% of workers commute by transit, while approximately 80% rely on single-occupancy vehicles. Although approximately 95% of transit facilities remain in a state of good repair, growing deferred maintenance needs and limited service frequency and geographic coverage continue to constrain the overall performance of South Carolina's transit system. Funding remains a central challenge. Farebox revenues cover only about 12% of operating costs, and statewide transit funding would need to double from approximately \$6 million to \$12 million annually to meet projected needs through 2050. Major investments signal progress, but sustained state funding, expanded high-frequency service, and resilient infrastructure will be essential to improving mobility and strengthening South Carolina's transit system.

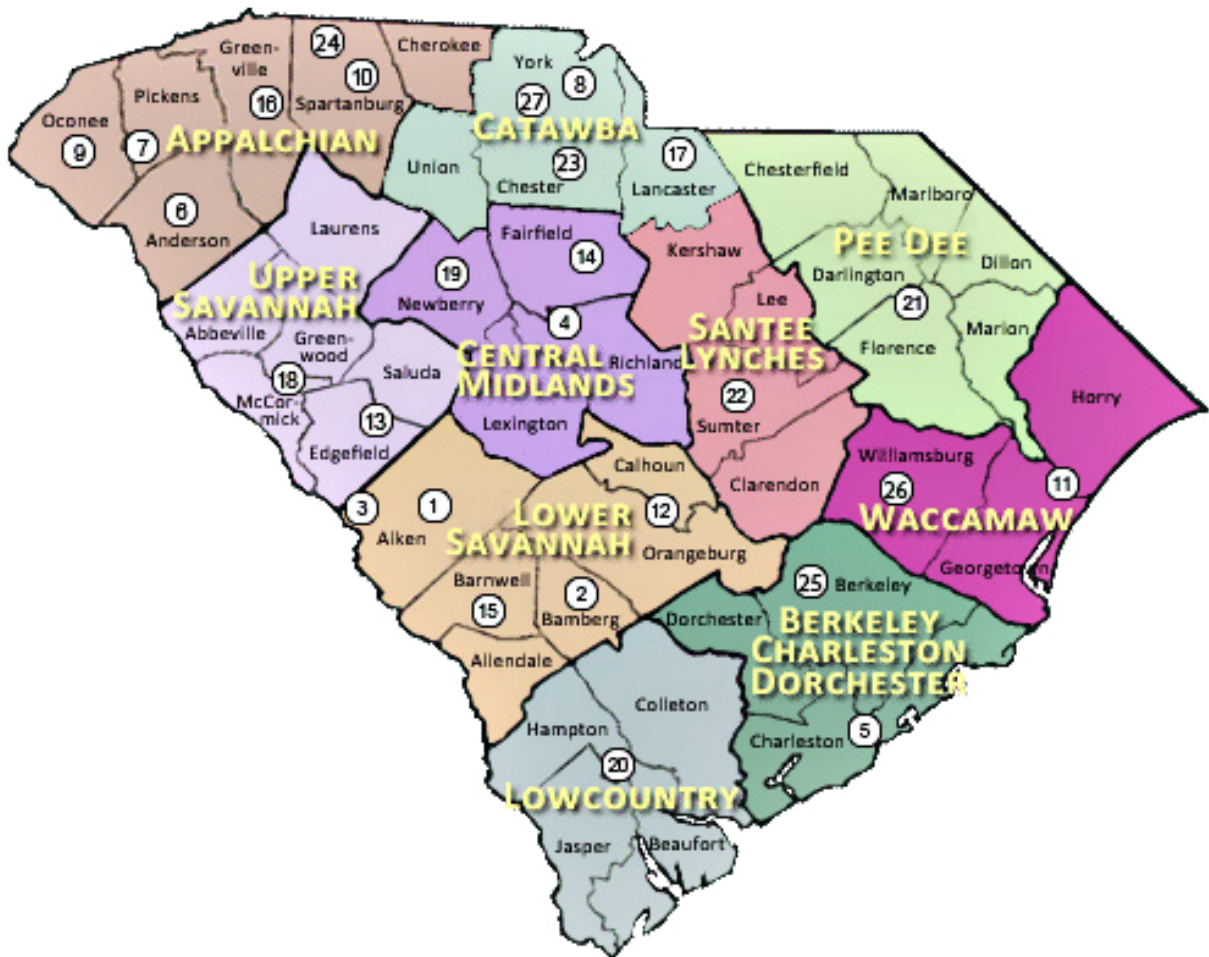
CONDITION AND CAPACITY

South Carolina's transportation system is critical to the state's economic activity and overall quality of life. As part of this network, public transit plays an important role in providing mobility across urban, suburban, and rural communities. The statewide network, coordinated through the South Carolina Department of Transportation (SCDOT) Office of Public Transit (OPT), provides service in 41 of the state's 46 counties through a combination of fixed-route buses, demand-response services, Americans with Disabilities Act-compliant paratransit, vanpool programs, intercity buses, Amtrak passenger rail, and two ferry systems. This is illustrated in Figure 1, where the circled numbers indicate the number of transit providers and their respective operating location. The statewide

transit network includes 14 fixed-route bus providers, 12 rural and on-demand service options, and intercity bus carriers. Although this broad geographic coverage allows transit to reach much of the state, the level of service varies considerably between regions.

All public transit providers in South Carolina are classified as Tier II agencies under FTA requirements, meaning they operate 100 or fewer vehicles in maximum service and participate in a group Transportation Asset Management (TAM) Plan. South Carolina does not operate FTA-regulated commuter rail, underground urban transit, subway networks, or heavy/light rail systems.

**FIGURE 1: PUBLIC TRANSIT PROVIDER LOCATIONS AND SERVICE COVERAGE
ACROSS SOUTH CAROLINA**

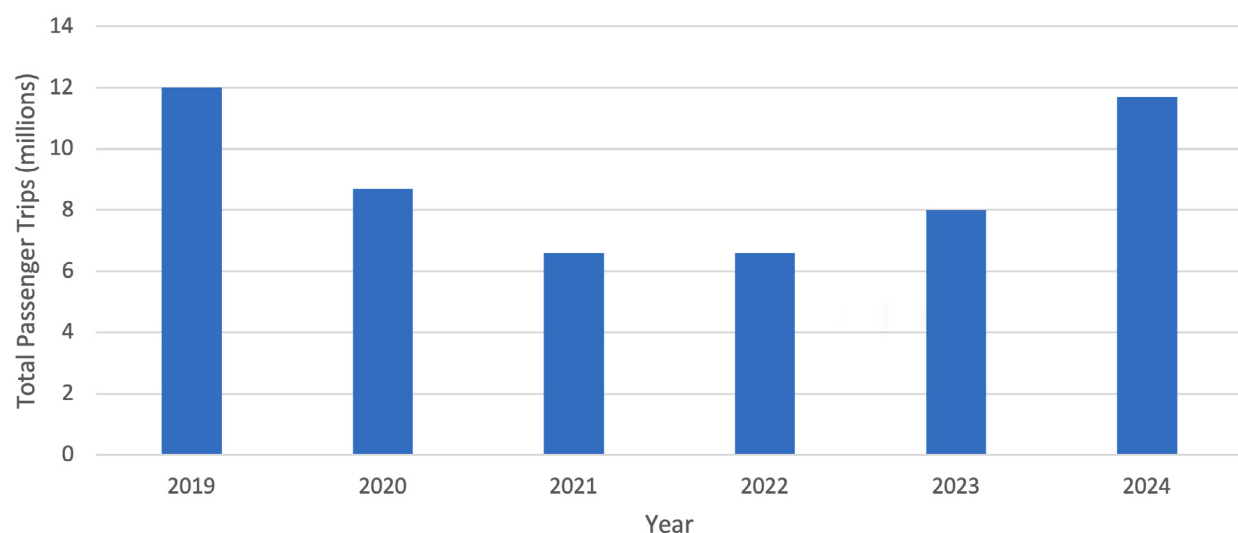


Source: SCDOT Public Transit Providers

According to the SCDOT 2024 Public Transit Annual Report, South Carolina transit providers delivered approximately 11.7 million passenger trips in 2024, including about 8.7 million fixed-route and general public trips and 2.9 million demand-response and human services trips. Demand-response services represent roughly one-quarter of all trips, highlighting the critical role transit plays for seniors, individuals with disabilities, and residents of rural areas. Travel behavior in the state remains heavily auto-oriented, with approximately 80% of workers commuting alone by personal vehicle, 8.6% carpooling, 7.2% teleworking, and fewer than 1% using public transit. Fewer than 4% of commuters rely on other modes, such as walking, bicycling, rideshare, or

motorcycles. This heavy reliance on personal vehicles contributes to increasing congestion in many of the state's fast-growing metropolitan areas, particularly along major corridors in the Charleston, Columbia, and Greenville regions. Although statewide transit ridership has not fully returned to pre-pandemic levels, service provision has generally stabilized, but remains limited in frequency and geographic coverage. Several agencies are pursuing service growth through microtransit pilots, expanded operating hours, and first- and last-mile connectivity initiatives rather than reducing routes. As shown in Figure 2, transit ridership declined significantly during the COVID-19 pandemic, but has partially recovered in recent years.

FIGURE 2: SOUTH CAROLINA TRANSIT RIDERSHIP TRENDS



Source: SCDOT OPT Annual Reports

Ridership patterns vary significantly between urban and rural transit systems. Urban fixed-route services in larger regions such as Charleston, Columbia, and Greenville account for the majority of total passenger trips, while rural transit providers primarily operate demand-response and human services transportation programs. Rural systems typically serve lower passenger volumes, but provide essential mobility for transit-dependent populations, particularly seniors and individuals with disabilities.

Facility condition assessments conducted by the SC transit agencies between 2021 and 2024, in accordance with FTA TAM requirements, show that nearly all transit administrative, maintenance, passenger, and storage facilities across the state are rated “4 – Good” on the FTA Transit Economic Requirements Model (TERM) scale. A TERM rating of 3 (Adequate) or higher indicates that a facility is in acceptable condition and capable of meeting its intended function. Of the more than 30 transit facilities assessed statewide, over 95%

are classified as being in a state of good repair (TERM ≥ 3). Only one facility—Orangeburg County Transit’s administrative building—received a median rating of “5—Excellent”, while no facilities were rated 2 (Marginal) or 1 (Poor), indicating overall system stability.

The condition of South Carolina’s transit vehicle fleet is more varied than that of its facilities. The SCDOT Transit Asset Management Plan reports that fleet age and the proportion of vehicles at or beyond their Useful Life Benchmark (ULB) vary considerably by vehicle type (Table 1). Over-the-road buses have the oldest average age at 15.7 years, with 83.3% at or past their ULB. In comparison, 21.1% of conventional buses and 20.8% of cutaway buses have reached or exceeded their ULB. Vans comprise a comparatively young portion of the fleet, averaging 2.9 years of age, with only 1.6% at or beyond their ULB. Although much of the revenue fleet remains within its expected useful life, certain vehicle classes, such as over-the-road buses, have more substantial replacement needs.

TABLE 1: SOUTH CAROLINA TRANSIT VEHICLE FLEET AGE AND USEFUL LIFE BENCHMARK (ULB) STATUS BY VEHICLE TYPE

Vehicle Type	Number of Vehicles	Average Age (years)	% At or Past ULB
Over-the-road Bus	6	15.7	83.33%
Bus	76	8.6	21.05%
Cutaway Bus	289	6.7	20.76%
Mini-van	2	0.0	0.00%
Trolleybus	6	7.3	33.33%
Van	62	2.9	1.61%

Source: SCDOT Transit Asset Management Plan, 2023–2024 Targets

South Carolina is working on its first high-capacity mass transit system through the Lowcountry Rapid Transit (LCRT) project, the largest transit investment in the state’s history. LCRT is a modern bus rapid transit (BRT) system that will connect the Charleston region’s communities with major employment centers and key destinations. Managed by SCDOT’s OPT, the project will improve regional mobility by providing frequent, reliable bus service while also expanding bicycle and

pedestrian facilities along the corridor. The system will serve Charleston, North Charleston, and Ladson, with funding provided through the FTA’s Capital Investment Grants (CIG) program and Charleston County sales tax revenues. Construction of the project is anticipated to begin in 2027. While LCRT represents a major step forward, it will serve a limited portion of the state and does not address broader statewide service gaps.

OPERATION AND MAINTENANCE

Transit accessibility varies widely across South Carolina due to differences in population density, land use patterns, and service frequency. While transit services operate in 41 of the state’s 46 counties, many areas rely primarily on demand-response or limited fixed-route services rather than high-frequency transit. As a result, access to frequent transit service is concentrated primarily in larger metropolitan regions such as Charleston, Columbia, and Greenville, while rural areas depend on scheduled or on-demand services. Transit operations and maintenance in South Carolina are guided by SCDOT’s statewide TAM framework, which requires transit agencies to assess and report facility conditions at least every four years. Revenue vehicles are managed through agency-specific Fleet Maintenance Plans that include routine preventive maintenance and annual reporting of vehicle age and ULB performance to the National Transit Database (NTD). Facilities are evaluated across 10 primary asset categories, including structural components, heating,

ventilation, and air conditioning (HVAC) systems, electrical systems, equipment, and site infrastructure. Overall facility condition ratings are calculated using a median-value methodology, ensuring that at least 50% of assessed components meet or exceed the reported condition rating, consistent with FTA guidance.

Between 2021 and 2024, median facility ratings remained generally stable, indicating that most transit facilities continue to function in a state of good repair. However, inspections identified recurring maintenance challenges across multiple agencies, including deteriorated parking lots, roof and gutter failures, aging HVAC systems, obsolete maintenance equipment, and inadequate security infrastructure. Several agencies reported partially or fully unusable maintenance bays due to access constraints, failing bay doors, or hydraulic lifts exceeding their useful life, directly affecting fleet maintenance efficiency. These findings indicate that

many facilities remain operational but are increasingly strained by deferred maintenance. These maintenance needs are increasing and may lead to higher future capital costs or service disruptions if not addressed.

In 2024, SCDOT's OPT resumed a State Mass Transit Fund (SMTF) study to better align maintenance investments with service needs and economic development. SCDOT also supported targeted capital improvements, including a new operations and maintenance facility for the Greenville Transit Authority, funded with \$1.8 million in state funds and \$8.6 million in FTA capital assistance, strengthening long-term maintenance capacity and system reliability statewide.

Like many transit systems across the United States, South Carolina transit providers also face workforce challenges, particularly in recruiting and retaining bus operators, mechanics, and maintenance personnel. Workforce shortages directly affect service reliability,

route availability, and maintenance capacity. Transit agencies are responding through targeted recruitment efforts, workforce training programs, and partnerships with community colleges and workforce development organizations to help build a sustainable transit workforce. For example, Clemson Area Transit partners with Clemson University and Tri-County Technical College (TCTC), and local municipalities to support transit operations, and Charleston Area Regional Transportation Authority (CARTA) partners with College of Charleston (CofC), Medical University of South Carolina (MUSC) and others to offer discounted or free tickets and passes for students, faculty, and staff. Other transit agencies across the state leverage FTA workforce development programs and local workforce organizations such as SC Works to recruit and train transit operators and maintenance personnel.

FUNDING AND FUTURE NEED

State support for public transit in South Carolina has historically been limited compared to many other states. Public transit in South Carolina is funded primarily through a combination of federal and state sources, with relatively limited local financial participation. Federal funding is provided through FTA formula and discretionary programs, while state support is administered by SCDOT through the State Mass Transit Fund (SMTF), which is supported by a dedicated ¼ cent of the South Carolina Motor Fuel User Fee. These funds may be used for operating assistance, capital investments, planning activities, and technical support.

For Federal Fiscal Year (FFY) 2024, South Carolina received approximately \$83.5 million in FTA funds, including funding provided through the Infrastructure Investment and Jobs Act (IIJA). This federal investment was matched with approximately \$6 million from the SMTF. Transit funding allocations are approved annually by the SCDOT Commission and programmed through the Statewide Transportation Improvement Program (STIP), which serves as the state's six-year federally constrained capital program. The IIJA, enacted in November 2021, increased SC's annual federal transit funding by approximately 25.6% compared with pre-IIJA levels, providing transit agencies with substantially greater

resources to modernize fleets, rehabilitate facilities, improve technology, and expand mobility services. IIJA programs such as the Low or No Emission Grant Program, Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310), and the Grants for Buses and Bus Facilities Program have enabled agencies to accelerate vehicle replacement cycles, invest in cleaner technologies, and improve service reliability statewide. A notable example that benefited by major federal transit investments is the Greenville Transit Authority (Greenlink) Operations and Maintenance Facility, which received an \$11 million FTA competitive grant for buses and bus facilities, covering approximately 80% of the project's construction cost. The remaining project costs were supported through local funding from the City of Greenville and Greenville County, with additional federal and state funding later providing compressed natural gas and battery-electric bus charging infrastructure.

SC's heavy reliance on federal funding creates long-term vulnerability to policy changes and funding uncertainty. Sustaining these higher funding levels will be critical to maintaining recent progress once IIJA authorization expires after FY2026. Nationally, the future of transit funding beyond IIJA remains uncertain.

Farebox recovery across South Carolina's transit systems remains low, consistent with peer rural and small-urban transit agencies nationwide. On average, about 12% of operating expenses are covered by passenger fares and other directly generated revenues, with approximately 88% funded through public subsidies. This reflects the essential-service nature of transit in South Carolina, particularly for seniors, persons with disabilities, rural residents, and individuals without access to private vehicles, rather than a revenue-generating model.

Transit operations and maintenance costs vary by provider and service type, but statewide funding data indicate that SCDOT currently administers and sub allocates approximately \$6 million annually in state transit funding, primarily to leverage federal funds and provide limited operating assistance, including support for two public ferry systems. Planning documents estimate that an additional \$6 million per year is needed to meet federal matching requirements and maintain existing transit services.

Looking forward, transit demand in South Carolina is expected to increase, driven largely by demographic shifts. By 2035, more than 20% of the state's population is projected to be over age 65, increasing demand for demand-response and paratransit transportation. Without increased investment, the system will struggle to meet growing demand, particularly for demand-response services. Transit agencies are preparing for higher trip volumes, longer average trip lengths, and increased per-trip operating costs. Recent initiatives, including \$500,000 in awards to 25 agencies through the American Rescue Plan Act, expanded microtransit pilots and major capital investments, such as the \$10.4 million Greenville Transit Authority operations and maintenance facility, as seen in Figure 3, demonstrate progress. However, a growing backlog remains for facility rehabilitation, maintenance equipment replacement, fleet modernization, and alternative-fuel infrastructure.

FIGURE 3: GREENLINK OPERATIONS & MAINTENANCE FACILITY SITE PLAN



Overall, while South Carolina has made notable strides through increased federal investment and targeted state support, current funding levels are insufficient to fully

meet long-term transit operating, capital, and service expansion needs.

PUBLIC SAFETY

While statewide traffic safety remains a concern, particularly on rural and non-interstate roads, transit vehicle involvement in fatal crashes is rare. According to the SC Traffic Collision Report, no fatalities involving passenger buses were reported in either 2022 or 2023. Passenger bus-related fatalities have remained consistently low over recent years, totaling eight fatalities between 2019 and 2021. This aligns with national trends showing transit buses to be among the safest motorized travel modes. Also, no recent large-scale system failures (e.g., fires, derailments, or structural collapses) have been reported, though aging facilities underscore the importance of continued reinvestment.

Most transit-related safety risks occur outside the vehicle, especially at bus stops located along high-speed roadways with limited pedestrian infrastructure, where pedestrian access, roadway crossings, and mixed-traffic operations increase safety concerns. These risks disproportionately affect transit-dependent populations, including seniors and individuals without access to private vehicles. Accordingly, South Carolina transit agencies have focused safety efforts on improvements to stop design, lighting, visibility, driver training, and coordination with local jurisdictions to enhance

pedestrian access and traffic control near transit facilities. Although comprehensive statewide rider safety perception surveys are not currently conducted, agencies continue to implement measures such as onboard security cameras, facility security upgrades, enhanced lighting, and operator training to improve rider comfort and personal safety. Together, these strategies support safe and equitable access to transit for all users and reinforce transit's role as a safe and reliable mobility option within South Carolina's transportation system.

South Carolina transit agencies have focused safety efforts on improvements to stop design, lighting, visibility, driver training, and coordination with local jurisdictions to enhance pedestrian access and traffic control near transit facilities.

RESILIENCE

South Carolina's transit system is increasingly exposed to flooding, hurricanes, and extreme weather, particularly in coastal and low-lying regions, which can disrupt service, damage facilities, and accelerate asset deterioration. Frequent flooding and storm events pose ongoing risks to service continuity, particularly in coastal and low-lying regions. These risks are particularly significant for bus-based systems that operate in mixed traffic and rely on at-grade facilities. Flooding and storm impacts, including Hurricane Ian in 2022, have periodically caused service suspensions and access challenges, highlighting vulnerabilities related to drainage and aging infrastructure.

Although South Carolina does not mandate a formal sustainability certification program for transit projects,

all transit providers participate in SCDOT's TAM plan in accordance with FTA requirements. Resilience and sustainability considerations are typically addressed through federal environmental compliance processes and project-level design decisions. Recent capital investments have prioritized energy-efficient systems, modern HVAC upgrades, and improved site design to enhance infrastructure durability, strengthen resilience to environmental stressors, and reduce long-term operating and maintenance costs. Coordination between transit agencies, regional planning organizations, and emergency management entities also plays an important role in maintaining service continuity during severe weather events and supporting evacuation and emergency response operations. However, resilience efforts remain largely project-based rather than systemwide.

INNOVATION

Innovation in South Carolina's transit systems has increasingly focused on improving service flexibility, integrating new technologies, and enhancing first- and last-mile connectivity. One of the most significant initiatives is the Lowcountry Rapid Transit (LCRT)

project (Figure 3). As the state's first high-capacity transit investment, LCRT will introduce bus rapid transit service in the Charleston region, improving travel reliability while integrating pedestrian and bicycle infrastructure along the corridor.

FIGURE 4: PROPOSED LCRT ROUTE AND STATION LOCATIONS



Source: LCRT Website)

Transit agencies across the state are also deploying flexible service models to better serve lower-density communities. Microtransit pilots, including services such as the Central Midlands Regional Transit Authority's COMET ReFlex and Spartanburg's SpartaGo, use app-based booking systems and dynamically routed vehicles to provide on-demand transit options where fixed-route services may not be feasible. These services improve flexibility but come with higher per-trip costs and limited scalability.

Technology deployment is also improving the passenger experience. Many transit providers have implemented real-time vehicle location systems, mobile ticketing platforms, and integrated trip-planning applications that allow riders to track buses and plan trips more efficiently. While these technologies improve some users'

experience, they do not address fundamental limitations in service frequency and coverage. In addition, several agencies are investing in alternative-fuel fleets and safety technologies supported by federal programs such as the Strengthening Mobility and Revolutionizing Transportation Grants Program and the Safe Streets and Roads for All Grant Program. Complementing these transit initiatives, urban bikeshare programs operating in cities such as Charleston, Greenville, and Spartanburg help strengthen multimodal connections and expand mobility options across the state. Together, these innovations and mobility initiatives are intended to improve the passenger experience, support more efficient transit operations, and expand multimodal travel options, particularly in areas where traditional fixed-route transit service is less feasible.



RECOMMENDATIONS TO RAISE THE GRADE

To improve South Carolina's transit system, the following actions are recommended:

- **Increase Dedicated State Transit Funding**
Expand annual SMTF allocations from approximately \$6 million to at least \$12 million annually to meet identified operating, maintenance, and federal match needs, consistent with statewide planning projections. Encourage increased local investment through dedicated funding mechanisms and regional partnerships to strengthen long-term financial sustainability and reduce reliance on federal funding.
- **Expand Flexible and Demand-Responsive Services**
Support continued deployment of microtransit, demand-response, and first-/last-mile programs to meet the needs of rural area residents, seniors, and lower-density communities where fixed-route service is not available.
- **Advance High-Capacity Transit and Regional Connectivity**
Evaluate opportunities for projects similar to LCRT high-performance transit corridors in other fast-growing regions of the state. Given limited funding, prioritization of corridors and services will be necessary.
- **Provide More High-Frequency Transit Services Where Population Density and Demand Can Support It**
Expand the provision of high-frequency transit services along major travel corridors to improve reliability, reduce wait times, and make transit a more competitive and attractive option for daily commuters and choice riders.
- **Integrate Resilience and Technology into Transit Investments**
Incorporate resilience planning, alternative-fuel vehicles, real-time information systems, and safety technologies into future transit projects to improve reliability and rider confidence.



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Wastewater



**GRADE
COMPARISON**

**SC: D
Nat'l: D+**

Photo: Engineer taking water from wastewater treatment pond to check the quality of the water; APChanel



WASTEWATER

EXECUTIVE SUMMARY

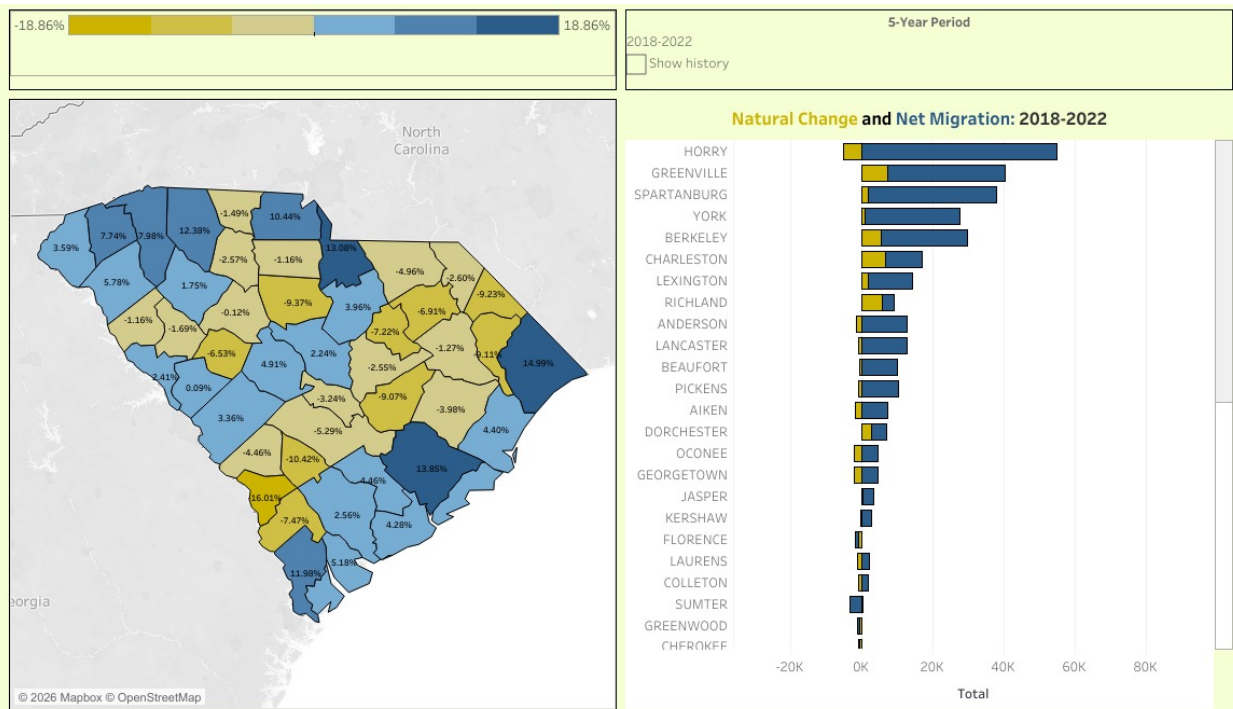
The state of South Carolina has seen rapid, concentrated population growth over the past decade, putting a strain on wastewater systems along the coast, midlands, and upstate. Many systems, particularly smaller ones, are trying to keep rates affordable while maintaining an aging wastewater system. Although reportable sanitary sewer overflows have increased, South Carolina Department of Environmental Services (DES) enforcement actions have decreased. In 2022 and 2023, \$575 million in American Rescue Plan Act (ARPA) funds were distributed directly towards wastewater projects throughout the state, helping rehabilitate, expand, and modernize wastewater systems. Continued funding is needed to keep pace with wastewater infrastructure needs including increasingly intense weather events and per- and polyfluoroalkyl (PFAS) regulations. Workforce trends are concerning as well with a declining workforce and a high demand for operators and engineers. To raise the grade, South Carolina must continue to invest in wastewater infrastructure. With the ARPA funding winding down, the state will need to allocate long term funding to the wastewater sector. Wastewater utilities will need to adapt to increasingly intense weather and focus more money on resilience. Lastly, the wastewater utilities, regulators, and vendors must invest in expanding the workforce. The exponential population growth will continue to put strain on wastewater systems and regulators throughout the state. Without new talent entering the workforce, the industry will not be able to keep pace with growth.

BACKGROUND

South Carolina has seen sustained growth over the past two decades with a current estimated population of 5.5 million. This growth exponentially increased after the COVID-19 pandemic with seven metro areas ranked in the top one hundred nationally (Myrtle Beach, Spartanburg, Charlotte (Lancaster County within SC),

Charleston, Hilton Head, Greenville, and Columbia). As depicted in Figure 1, most of the growth has occurred along the coast, midlands, and upstate of South Carolina. The South Carolina Revenue and Fiscal Affairs Office estimates South Carolina's population reaching 6.6 million by 2040.

FIGURE 1: SOUTH CAROLINA POPULATION CHANGE 2018-2022, 5.08%



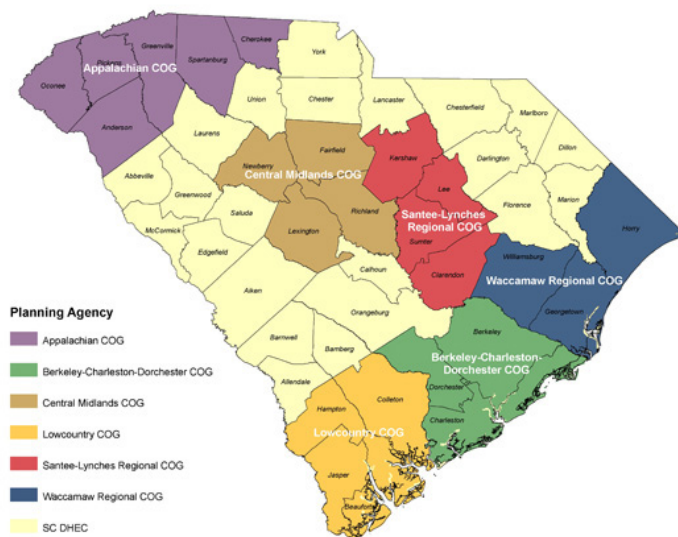
Source: South Carolina Revenue and Fiscal Affairs Office

In 2024, the South Carolina Department of Health and Environmental Control (DHEC), who permits the National Pollutant Discharge Elimination System (NPDES) and wastewater construction permits throughout the state, was restructured by separating public health and environmental services into two state cabinet agencies. The newly formed DES houses the Bureau of Water (BOW), allowing a more focused

effort on protecting and preserving South Carolina's environment and natural resources.

Six Council of Governments (COGs, overseen by a board of county officials), shown in Figure 2, approve wastewater expansions before permit applications are sent to DES. Wastewater planning for the twenty-two non-COG designated counties is managed by DES.

FIGURE 2: COG PLANNING AGENCIES



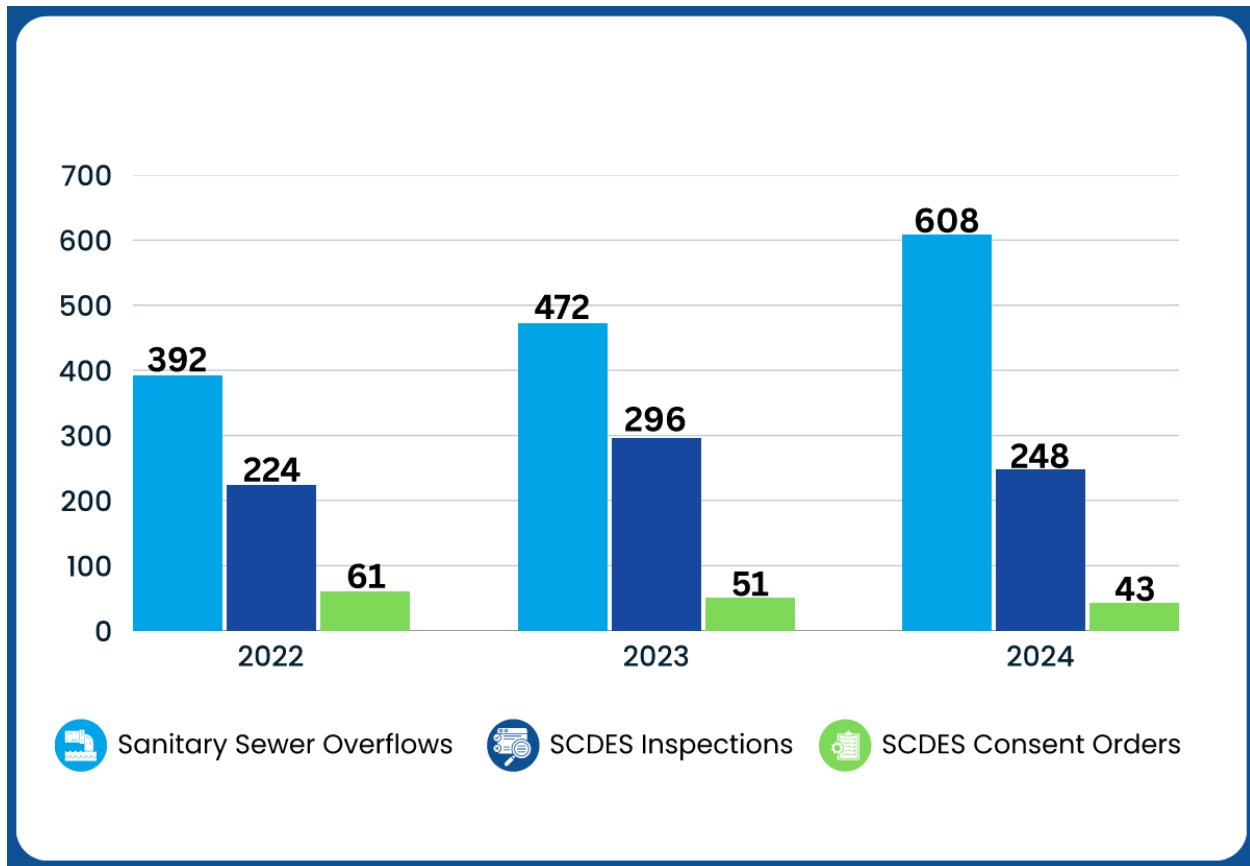
Source: DES

CONDITION AND CAPACITY

Population increases, particularly along the coast, midlands, and upstate, put additional stress and strain on the existing sanitary sewer systems. 161 centralized wastewater systems serve an estimated 3.8 million people, and 108 decentralized wastewater systems serve an estimated 60,000 people. Decentralized populations are classified as serving a population less than 2,500 and permitted community septic systems. The remaining estimated 1.7 million people are served through onsite wastewater systems.

Trends on sanitary sewer overflows (SSOs) from 2022 through 2024 increased approximately 346% as shown in Figure 3. One explanation is an increase in rainfall totals and intensity. South Carolina averages 47 inches of rain per year. From 2022-2024 state rainfall totals were 45 inches, 52 inches and 53 inches, respectively. During this same time, DES saw a reduction of administrative and consent orders issued by 35%, as shown in Figure 3. DES also averaged 256 inspections per year of permitted wastewater pretreatment, collection, and treatment systems.

FIGURE 3: SSO/CONSENT ORDERS/SCDES INSPECTIONS



Source: DES

As of 2025, the following are the ten (10) largest domestic wastewater treatment plants within South Carolina.

TABLE 1: TEN LARGEST DOMESTIC WASTEWATER PLANTS IN SOUTH CAROLINA

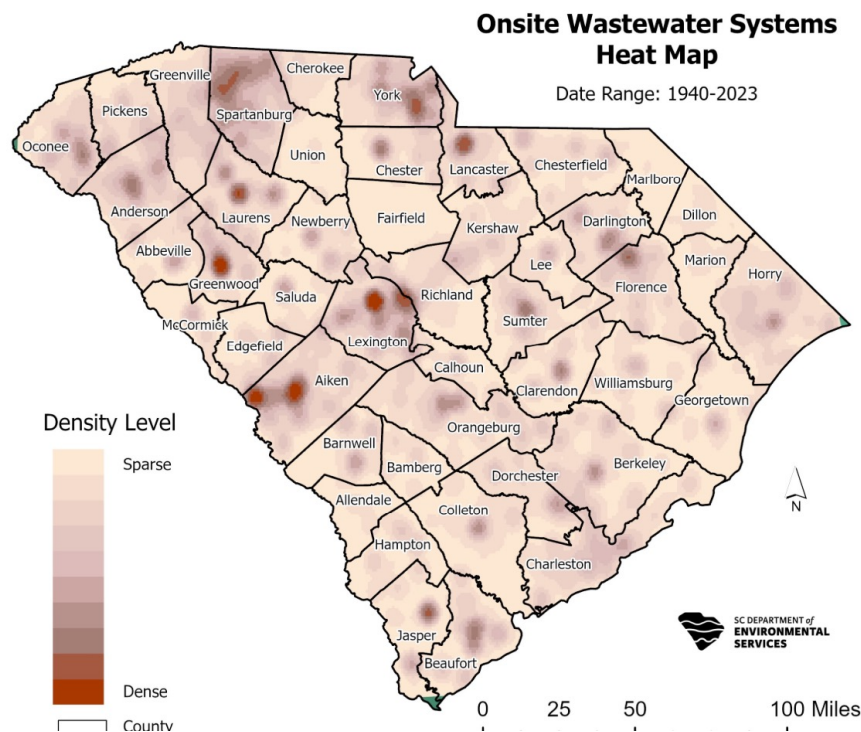
Permit No.	Permit Name	Flow (MGD)
SC0020940	CITY OF COLUMBIA	60
SC0037753	GRAND STRAND WATER & SEWER AUTHORITY	41.75
SC0021229	CHARLESTON WATER SYSTEM	36
SC0024783	NORTH CHARLESTON SEWER DISTRICT	32
SC0020435	SPARTANBURG SANITARY SEWER DISTRICT	30
SC0041211	RENEWABLE WATER RESOURCES/Mauldin Rd WWTP	29
SC0024147	CITY OF CAYCE	25
SC0027707	CITY OF SUMTER	24
SC0046060	BERKELEY COUNTY WATER & SANITATION AUTHORITY	22.5
SC0033804	RENEWABLE WATER RESOURCES/Pelham WWTP	22.5

Source: DES

Septic systems are another concern across South Carolina. Figure 4 shows the historical systems across the state starting back in 1940 when this data was first collected. The major concern with these historical septic

systems is potential structural and functional failure leading to pollution of waterways. There are no state laws requiring regular inspections of septic systems.

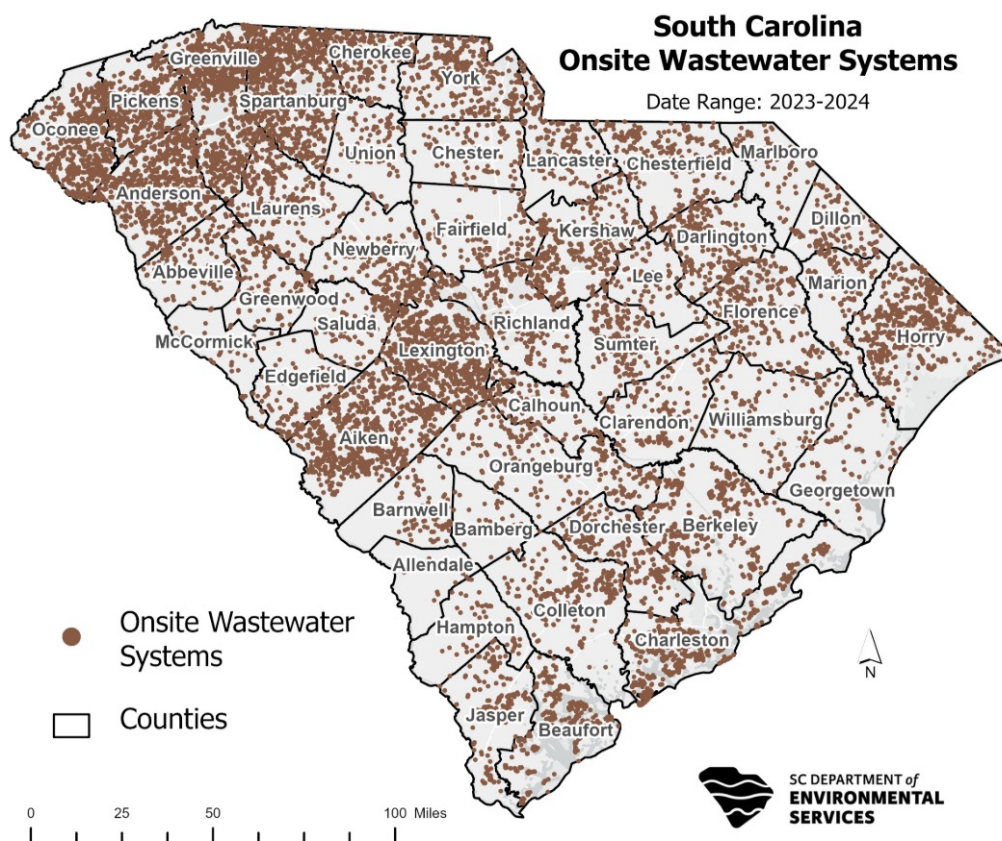
FIGURE 4: HISTORICAL SEPTIC SYSTEMS IN SOUTH CAROLINA



While there is a push to eliminate these septic systems when public sanitary sewer systems are available, there continues to be many new septic systems installed across South Carolina as shown in Figure 5. Most of

these systems were installed in rural locations upstate, followed by the midlands, and rural Horry County. These locations are where the population trends have increased the most in the last several years.

FIGURE 5: SOUTH CAROLINA ONSITE WASTEWATER SYSTEMS



Source: DES

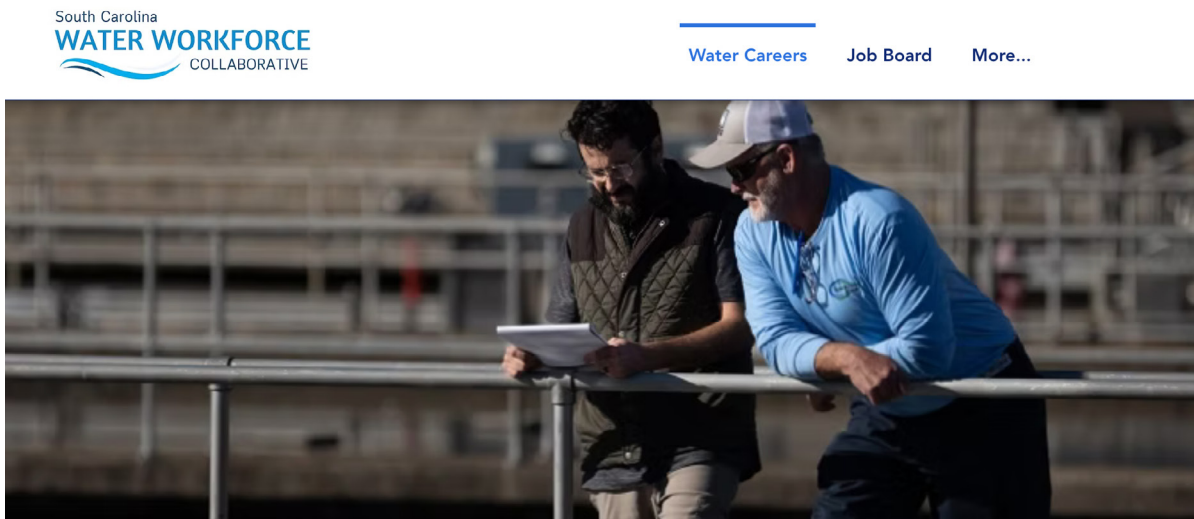
OPERATION AND MAINTENANCE

South Carolina wastewater utilities are responsible for operation and maintenance of their systems. DES is responsible for issuing permits and establishing rules and regulations for utilities to follow.

Unfortunately, wastewater workforce needs have not kept pace due to factors such as the great resignation following the COVID-19 pandemic and private industry opportunities. This combined with the high cost of living, particularly in Charleston, has led to a lack of available

talent within the wastewater sector resulting in high vacancy rates. In 2025, the South Carolina Water Environment Association and American Water Works Association established the South Carolina Water Workforce Collaborative. The Collaborative is funded by numerous water and wastewater utilities throughout the state and aims to promote the water industry, develop a high-performance workforce, and attract new workers to the water sector.

FIGURE 6: SOUTH CAROLINA WATER WORKFORCE COLLABORATIVE



Careers in Water

Water and wastewater utilities need skilled, dedicated people to keep water services flowing 24/7. From treatment operators to engineers and customer service reps, utilities have many careers available where you can make a difference for the environment and your community.

Source: SCWEA/SCAWWA

As previously stated, the water and wastewater sector is experiencing a significant reduction in workforce due to a high volume of retirements and a talent exodus to other, more profitable sectors. Projections indicate that a 6% decline in employment from 2023-2033 is expected despite an estimated 10,000 annual openings caused by aging infrastructure and industry turnover.

While the workforce has continued to shrink in this sector, this industry has continued to adopt more advanced asset management processes to better manage those wastewater systems. Most utilities have adopted some type of Computerized Maintenance Management Software (CMMS) to track and schedule necessary maintenance against these critical assets. Some more advanced utilities take it a step further and develop Strategic Asset Management Plans (SAMPs) that provide a roadway for the utility to better quantify its assets, the risk they pose, and a uniform system to assess the condition and Remaining Useful Life (RUL) for all assets within the utility. Advancing these asset management

philosophies allows utilities to better plan and manage their system. These tools help to keep costs down to rate payers, promoting a more sustainable local economy.

Lastly, as South Carolina continues to grow in population, all state infrastructure, including roadways, has had to grow as well. Roadway expansions impacting wastewater infrastructure required utilities to fund relocations, resulting in deferred maintenance on other assets. The state legislature passed the Act 36 Bill in 2019, also referred to as the Utility Relocation Bill, to address the financial burden of moving water/sewer lines during highway construction. The bill is structured between small and large utilities with small utilities (10,000 or fewer taps/connections serving a population under 30,000) having all relocation costs associated with a transportation project covered. Large utilities (more than 10,000 taps/connections) have their relocation costs covered up to 4% of the original contract bid. The Act 36 bill sunset was recently extended until 2032, continuing to reduce rate payers' burden for utility relocations.

FUNDING

Based on the 2025 Rural Infrastructure Authority's (RIA) Municipal and Special Purpose District (SPD) Water and Sewer Rate Survey, the average South Carolina resident pays \$46.53/month for wastewater service, normalized for a typical 5,000 gallon per month usage. This is a 36% increase from the average rate in 2020 of \$34.09/month. Current rates vary widely from \$24/month to \$89/month due to varying costs for collection and treatment in different locations throughout the state.

South Carolina's wastewater systems are mostly sustained through rate payers' fees. Some entities use state grants/loans administered through the RIA or federal grants/loans such as Community Development Block Grants (CDBG) and the United States Department of Agriculture (USDA) Water and Waste Disposal Grant Program to partially fund capital improvements. In addition to grants, low interest loans such as the Clean Water State Revolving Fund (CWSRF) or the Water Infrastructure Finance and Innovation Act (WIFIA) also provide avenues to supplement capital investments.

The RIA is the state entity charged with allocating state grants and administering the CWSRF program in

conjunction with DES (technical support). In the years 2022-2024, 39 state grants totaling \$49 million were awarded throughout the state for wastewater construction projects. During the same period the CWSRF allocated \$92 million in low interest loans to various wastewater projects around the state. Additional funding from the Infrastructure Investment and Jobs Act (IIJA) has infused millions into the CWSRF program to support more infrastructure projects throughout the state.

The 2021/2022 state legislative session concluded with the allocation of \$900 million to the South Carolina Infrastructure Investment Program (SCIIP). These funds were part of the 2021 American Rescue Plan Act (ARPA) funds distributed directly to the state. The RIA administered the SCIIP program designed to revitalize South Carolina's water, wastewater, and stormwater systems through planning, regional solutions, and construction. In 2022 and 2023, \$575 million in wastewater construction grants were awarded to entities across the state, with most grants requiring a 25% local match. This one-time grant program infused over \$700 million into South Carolina's wastewater infrastructure.

FUTURE NEED

South Carolina's future wastewater needs center around affordability, workforce, and small system viability. South Carolina's rapid growth has put a strain on certain wastewater systems to maintain capacity while the system continues to age. Capital programs have been accelerated to maintain and expand systems to keep up with the population growth. This, combined with post COVID-19 inflation, has caused capital budgets at many wastewater providers to increase exponentially, leading to steep rate increases. Some areas of the state are approaching EPA's affordability recommendation of households spending 3% to 4.5% of their median income on water services. Stricter regulations and the emergence of per- and polyfluoroalkyl (PFAS)

compounds will only increase future rates. The 2022 Clean Watersheds Needs Survey estimates \$7 billion is for wastewater infrastructure in South Carolina.

Lastly, small system viability continues to be a major concern in South Carolina. Over 95% of South Carolina's water and wastewater systems serve populations under 10,000. Small funding bases can make maintaining systems difficult while ensuring affordability. The RIA continues to support wastewater system consolidation by awarding \$1.7 million in planning grants in 2023 and 2024.

PUBLIC SAFETY AND RESILIENCE

As mentioned in the condition and capacity section, reported SSOs and the associated volumes have increased exponentially. While this is not an ideal trend for South Carolina, better reporting leads to better solutions for recurring problem areas. Another factor to consider with the rise in SSOs is the increase of the number of declared disasters and intensity of storms. During 2022-2025, 11 federal disasters were declared in South Carolina, including four hurricanes and one flood event leading to many of the recorded overflows.

Many overflows not related to storm events are the result of items not intended for the wastewater system causing blockages in pipes or damaging mechanical

equipment. In 2021, Charleston Water System (CWS) filed a class action lawsuit against several “flushable” wipe manufacturers. Wipes, along with other items such as fats, oils, grease (FOGs), cause significant problems within wastewater collection systems. These “flushable” wipes were not dispersing as advertised and causing other materials within the systems to bind together resulting in significant overflows and equipment repairs. In 2024, many manufacturers reached a settlement requiring flushable wipes nationwide to meet a dispersibility standard and to change labeling on non-flushable wipe packaging. Figure 7 shows a “flushable” wipe blockage within CWS’s system that required divers to remove.

FIGURE 7: “FLUSHABLE” WIPE CLOG



Source: CWS

PFAS, particularly PFOA (perfluorooctanoic acid) and PFOS (perfluorooctan sulfonic acid), have developed into a major health concern in water systems. These compounds, developed in the 1930s, are in many consumer products such as firefighting foam, non-stick cookware, food packaging, makeup, and carpeting to name a few. Many manufacturers are eliminating these chemicals from manufacturing and since 2000, measured levels of PFOS and PFOA in human bodies have dropped 85% and 70%, respectively. PFAS within

wastewater systems is passed through most treatment facilities and is either concentrated in the effluent or biosolid residuals.

Land application of biosolids is common practice in the U.S. with approximately 60% of generated biosolids being land applied to maintain soil quality due to their beneficial nutrient content. Studies are underway to determine what, if any, health hazards exist with land application of biosolids containing PFAS. Unfortunately,

there are no proven or cost-effective solutions for removing PFAS from biosolids. Alternative disposal through landfilling, or other disposal methods, would put undue strain on landfills, farmers, and utility providers.

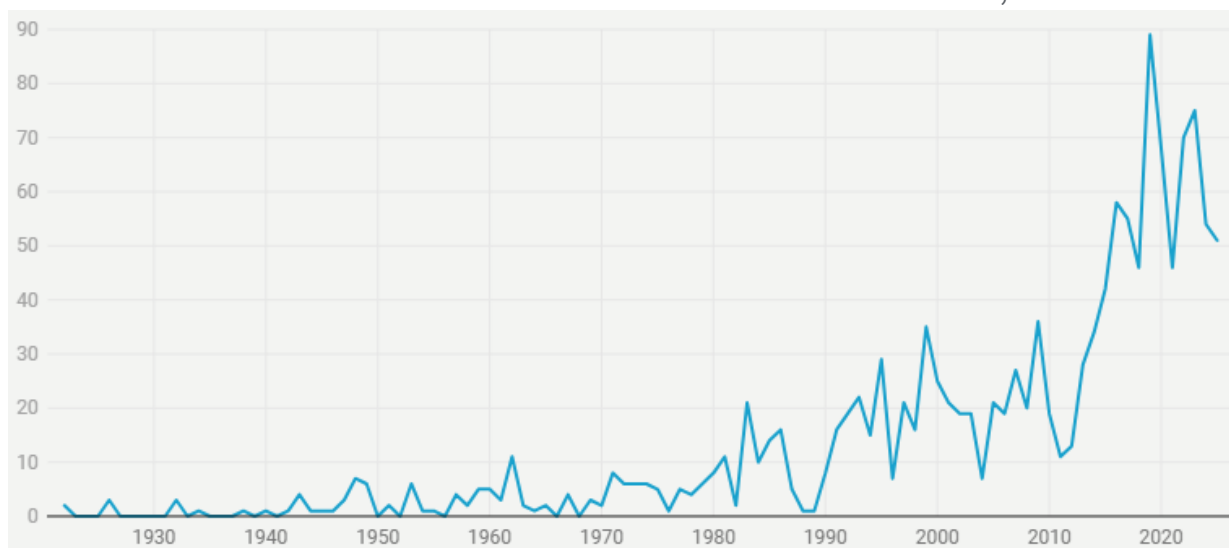
As wastewater utilities continue to prioritize the needs for their ratepayers, one emerging category is providing resilience to its operation during severe weather events.

In September of 2024, South Carolina was hit by the seventh costliest hurricane in U.S. history, Hurricane Helene. Helene caused damage to 33 counties across the state with the worst in the northwestern counties. The storm brought 21 tornadoes, hurricane-forced wind gust, heavy rain, and widespread flash and river flooding. 49 people died and nearly 5,000 homes were damaged. Numerous wastewater systems and septic systems, particularly in the upstate, were damaged or destroyed by Helene as inland areas were not as prepared for hurricanes.

The EPA allocated an additional \$12.5 million to the CWSRF for wastewater and septic resilience projects.

Hurricane Helene is an example of increasingly severe weather events damaging wastewater systems due to power outages and flooding. Utilities are having to incorporate resiliency design elements to be more prepared for these impacts. Tropical systems are not the only weather concerns as along the South Carolina coast, the number of sunny flooding days has increased over the last 5 - 10 years due to higher tidal levels. These flooding events compound issues surrounding defects within collection and conveyance systems, leading to non-revenue water taking up capacity within these systems. Utilities should now consider these impacts when making planning decisions regarding money spent on repair, rehabilitation, or replacement of assets.

FIGURE 8: ANNUAL FLOOD EVENTS IN CHARLESTON, SC



Source: National Weather Service via Post and Courier

Thankfully, there are funding opportunities for utilities for projects that include resilience. FEMA has their Hazard Mitigation Grant Program (HMGP) that provides funding to state, local, tribal, and territorial governments to develop hazard mitigation plans and rebuild in ways that reduce or mitigate future disaster losses in their communities. Examples of awarded projects are those that eliminate flooding in low-lying sanitary sewer manholes or other collection or conveyance assets. Other projects include raising

electrical controls above newly established FEMA flood elevation as well as installing emergency generators for sanitary sewer pump stations.

The funding becomes available following an emergency declaration for post-disaster rebuilding and risk reduction. In South Carolina, this is managed by the South Carolina Emergency Management Division (SCEMD). Recent awards include over \$1.8 million for Hurricane Ian (DR-4677-SC) and is funded on a 75% federal, 25% non-federal cost share basis.

INNOVATION

The introduction of Artificial Intelligence (AI) will continue to grow within the wastewater arena from inspection services to predictive modeling. Wastewater systems are monitored more closely than ever before allowing utilities to identify problem areas and engineer solutions. SCDES is currently evaluating AI to assist with permit writing to increase turnaround times and reduce the backlog of expired permits. The hope is AI will be able to supplement SCDES as workloads are outpacing staffing.

AI is also advancing operational and maintenance workflows. One example would be the inspection of wastewater collection and conveyance assets. Typically, manually inspecting these wastewater lines would average 900 - 1,500 linear feet a day depending on the condition and location of these assets. Using autonomous, closed-circuit television (CCTV) equipment that postprocesses the inspection data, daily inspections have increased 2.0 - 3.0 times by leveraging AI solutions. These machine

learning solutions still require some human interaction to review their repair or rehabilitation recommendations. However, this new technology is poised to help utilities become more responsive and proactive in the operation and maintenance of its collection and conveyance system.

Innovation will also play a crucial role in resiliency. South Carolina is particularly vulnerable to hurricanes and coastal flooding. Materially stronger and more reliable systems will be needed for wastewater systems to remain operational during events. For example, the City of Charleston is nearing completion of a storm water pump station. The station will reduce flooding in the medical district of the city leading to less stormwater entering and overloading the wastewater system. Charleston is also in discussions with the Army Corps of Engineers on a potential seawall, including green infrastructure, to prevent storm surge damage.



Photo: Water treatment tank with wastewater; DedMityay

Wastewater



RECOMMENDATIONS TO RAISE THE GRADE

- Continue to invest in wastewater infrastructure. SCIIIP was a great start, but many systems are at the end of their useful life.
- Expand wastewater systems to accommodate rapid population growth.
- Wastewater utilities must adapt to increasing extreme weather events and build resilient infrastructure.
- Work must continue to attract new talent to reduce workforce vacancy rates and prepare for retirements within an aging workforce.

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