2025 REPORT CARD FOR FLORIDA'S INFRASTRUCTURE

ASCE
FLORIDA SECTION

TABLE OF CONTENTS

Cover Photo Courtesy: Brightline

EXECUTIVE SUMMARY

Florida's infrastructure is the backbone of its economy, communities, and environment. It supports a rapidly growing population of more than twenty-three million residents, connects global commerce, and sustains coastal communities and fragile ecosystems. In recent years, strategic federal and state investments, along with advances in materials, technology, and construction practices, have contributed to meaningful improvements across several sectors.

Florida's energy grid is undergoing significant modernization to strengthen resilience and reliability. Renewable resources provided about 10% of in-state electricity generation in 2024, driven overwhelmingly by solar deployment. Florida's bridge network also shows strong performance: nearly 60% of bridges are in good condition, while less than 3% are rated poor—well below the national average. Federal investments through the Infrastructure Investment and Jobs Act have strengthened transit agencies statewide, supporting aging systems that require modernization to keep pace with current safety and capacity demands.

Florida's ports, rail, highways, and airports continue to serve as global gateways and major economic drivers. Sustained investment has helped expand capacity and maintain competitiveness, particularly at major facilities such as PortMiami, which is undergoing large-scale transformation through federal and state funding and technological upgrades. Florida's roads are generally in good condition, and the state has launched targeted programs—such as the $4 billion Moving Florida Forward initiative—to accelerate congestion-relief and safety projects that respond to rapid population growth.

Despite these advances, Florida's infrastructure faces mounting strain. Extreme weather, aging assets, and rapid population growth pose persistent challenges. Hurricanes have repeatedly illustrated these vulnerabilities; in 2022, Hurricane Ian destroyed the Sanibel Causeway, severing access to Sanibel and Captiva Islands and underscoring the risks facing critical evacuation routes. More broadly, many systems remain aging, underfunded, and increasingly vulnerable to climate impacts.

Water infrastructure is particularly challenged. Drinking water systems face more than $30 billion in needs over the next two decades. Many wastewater systems are highly exposed to storms, sea-level rise, and erosion. Aging dams and levees require strengthened state standards, updated enforcement, and additional financial support. Improved use of revolving loan programs, increased bonding capacity for utilities, and continued access to federal funding will be essential for rehabilitation and resilience.

Other systems also face growing pressures. Solid waste infrastructure is generally robust but threatened by emerging contaminants and climate risks. Florida's schools rely heavily on local property taxes for capital improvements, highlighting the need for consistent, inflation-sensitive state support. Public parks face higher costs due to increased attendance and aging assets, requiring strategic investment to maintain equitable access and protect natural resources.

Strategic, sustained investment and innovation remain essential to ensure Florida's infrastructure keeps pace with growth, withstands climate pressures, and supports a thriving future for the state. The 2025 Report Card for Florida's Infrastructure evaluates 16 categories—aviation, bridges, coastal areas, dams, drinking water, energy, levees, public parks, ports, rail, roads, schools, solid waste, stormwater, transit, and wastewater—to help residents, businesses, and policymakers understand current conditions and plan for long-term improvement.

RECOMMENDATIONS TO RAISE THE GRADE

1. Increase funding for maintenance and modernization of aging infrastructure to prepare systems for the future by providing robust, sustained infrastructure investment for all infrastructure sectors. Outdated infrastructure significantly impacts economic growth, causing inefficiencies and increasing operational costs. Aging roads, electricity grids, and stormwater systems reduce productivity, and exacerbate public safety concerns.

2. Prioritize safety and accessibility in all modes of transportation for all users. The Federal Highway Administration Safe System approach aims to eliminate fatal & serious injuries for all road users that anticipates human mistakes and mitigate bodily harm impact on the human body. Solutions include integrating active transportation (physical activity as the primary means of getting from place to place) as well as incorporating speed management solutions and strategies to improve pedestrian and bicyclist safety on our roadways.

3. Support research and development to produce knowledge that can be used to generate new technologies and innovations. Technology innovation is crucial for achieving sustainable development goals to enable the development of clean technologies, renewable energy solutions, and environmentally-friendly practices. Research and development funding can strengthen the capacity of institutions and firms to conduct cutting-edge scientific research and develop innovative technologies in turn advancing the global competitiveness of institutions and firms.

4. Build sustainable, resilient infrastructure to supply critical services, protecting society and the environment, from extreme weather or economic events. Florida faces unique challenges from extreme weather events, prompting significant action to improve infrastructure enhancing resilience and protect communities. Strengthening the power grid, improving building standards, and fortifying coastal defenses will minimize devasting and destabilizing effects on our state.

5. Increase funding and support for educational programs to develop the future workforce in the architecture, engineering, and construction industry. It is vital for our economy to create or expand training programs, to fund career and technical education workforce development programs, and to ensure that workers are connected to job opportunities.

GRADING METHODOLOGY

The 2025 Report Card for Florida's Infrastructure was written by a committee of more than 50 civil engineers across Florida who volunteered their time to collect and analyze data, prepare and review their findings and present their conclusions. The committee worked with staff from ASCE National and ASCE's Committee on America's Infrastructure to provide a snapshot of our state's infrastructure, as it relates to us locally and on a national level. The Report Card Sections are graded based on the following eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience and innovation. ASCE defines these grades as follows:

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 multihazard threats and incidents? How able is it to quickly recover and reconstitute critical services with minimum consequences for 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

A 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.

B 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.

C 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.

D 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.

F 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 2025 Report Card on Florida's Infrastructure

Overall GPA
C+

Aviation **C-**	Bridges **B**	Coastal Areas **C**	Dams **D-**
Drinking Water **B-**	Energy **B-**	Levees **D+**	Ports **B+**
Public Parks **B-**	Rail **C**	Roads **C+**	Schools **D+**
Solid Waste **B**	Stormwater **C**	Transit **C+**	Wastewater **C+**

Comparison of 2021 and 2025 Grades

Category	2021	Trend	2025	National
Aviation	C+	↓	C-	D+
Bridges	B	↔	B	C
Coastal Areas	C-	↑	C	-
Dams	D-	↔	D-	D+
Drinking Water	C	↑	B-	C-
Energy	C+	↑	B-	D+
Levees	D-	↑	D+	D+
Ports	B	↑	B+	B
Public Parks	-		B-	C-
Rail	-		C	B-
Roads	C+	↔	C+	D+
Schools	D+	↔	D+	D+
Solid Waste	B+	↓	B	C+
Stormwater	C-	↑	C	D
Transit	C	↑	C+	D
Wastewater	C	↑	C+	D+

C-

Florida's Infrastructure

AVIATION

EXECUTIVE SUMMARY

Aviation is critical to the Florida economy, contributing to tourism, agriculture, aerospace, and manufacturing. Today, the industry contributes to over 1.3 million jobs, up 40% from just 10 years ago, and aviation's economic impact has grown from $175 billion in 2019 to $336 billion in 2022. The system includes four large hub airports (MCO - Orlando, MIA - Miami, FLL – Fort Lauderdale, and TPA – Tampa Bay), 19 commercial service, and 87 general aviation airports supporting nearly 170 million commercial airline passengers annually. Over the next five years, the Florida Department of Transportation has identified approximately $10 billion in funding needs for Florida's airports. Florida has numerous initiatives to improve safety, efficiency, capacity and environmental impacts of the state's airports.

Condition and Capacity

With a 23-minute, 18-mile trip across Tampa Bay in 1914, Florida became home to the first recognized commercial flight in world history. More than a century later, Florida now has four large hub airports (MCO - Orlando, MIA - Miami, FLL – Fort Lauderdale, and TPA – Tampa Bay), 19 commercial service, and 87 general aviation airports that support nearly 170 million commercial airline passengers annually. Florida's airports are a critical component to the state's diverse economy driven by tourism, agriculture, aerospace, and manufacturing. Florida's aviation infrastructure also provides critical services to communities such as medical transportation, law enforcement, search and rescue, and disaster response and recovery.

According to the U.S. Census Bureau's estimates, Florida is the third-most populous state with almost 24 million residents. Therefore, as aviation demands change and capacity enhancement projects emerge, federal and state agencies, including the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT), monitor the aviation environment, analyze population projections and airport operations data, and recommend ways to meet evolving needs. Notably, in early 2020, these organizations were required to adapt to the COVID-19 pandemic. Due to the onset of the pandemic, the aviation sector's capacity was dramatically impacted as a drastic decline was seen in passenger boardings while cargo volumes increased due to the expansion of "e-commerce." The industry has bounced back from the pandemic's effects and is stronger than ever.

Florida's Airports System Plan (FASP) published regional forecasts that evaluated the ratio of aircraft operations (terminal and runway demand) to the annual service volume (ASV – terminal and runway capacity). When the ratio reaches 60%, airports are advised to begin planning for capacity enhancements.

Partially contributing to these capacity needs is the projected 2.1% annual growth that is anticipated in Florida's air cargo sector. International air cargo is a multi-billion-dollar industry with Florida serving as Latin America's largest gateway into the U.S. In 2014, 2.7 million tons of domestic and international air cargo passed through Florida's airports, and by 2035, that value is projected to increase to 4.1 million tons. Forecasts by FDOT anticipate aircraft based at Florida airports to grow from 12,629 to 16,118, general aviation operations to grow from 6.9 million to 8.3 million, commercial operations to grow from 2.4 million to 3.8 million, and enplanements to grow from 100 million to 166 million between now and 2045.

To offset the growing demand, Florida airports are actively working on capacity expansions with 38% of commercial airports having terminal expansion projects in design or construction. Orlando International Airport (MCO) recently completed the South Terminal Complex which added 15 gates capable of accommodating up to 18 aircraft depending on the fleet mix. The project also consists of the Intermodal Terminal Facility which links the South Terminal Complex to the other terminals but also provides space for up to three regional rail systems (SunRail commuter rail, Brightline inter-city rail, and possibly a third system for the International Drive area). At Tampa International Airport (TPA), capacity improvements started with a new Rental Car Facility followed by capacity improvements which help decongest curbsides, roads and the Main Terminal. In June of 2019, the Miami-Dade County Board of County Commissioners adopted a new CIP at Miami International Airport (MIA) that will fund up to $5 billion in airport wide modernization projects over the next five to 15 years, paving the way for future growth in passenger and cargo traffic at MIA - projected to reach 77 million travelers and more than four million tons of freight by the year 2040.

A specific concern for Florida is the need for hangars at all airports. With our growing weather concerns, the need to protect expensive aircraft from weather conditions is a primary concern for aircraft owners. The most recent Florida Aviation System Plan analysis revealed that box, commercial and T-Hangar capacity is at 99% statewide. With the rapidly increasing cost of general aviation aircraft, hangar space is an area of immediate concern to serve the flying community.

Condition, Operation, and Maintenance

A critical factor contributing to the aviation system's safe and efficient operation is pavement condition, particularly for runways, taxiways, aprons, and other areas supporting aircraft operations. To qualify for federal Airport Improvement Program (AIP) Grant Program funding, airports are required by the FAA to develop and implement a pavement maintenance program. Therefore, to identify, prioritize, and schedule pavement maintenance, repair, and major rehabilitation projects, the FDOT leads the Statewide Airfield Pavement Management Program (SAPMP). The SAPMP assists airports in performing routine inspections and analyzing data, and it benefits from data sharing and participation from more than 90 public use airport facilities throughout the seven FDOT Districts.

C-

AVIATION

The FDOT Aviation Office evaluates airport pavement conditions on a continuous 3-year cycle using the pavement condition index (PCI) methodology that characterizes the types, severity level, and quantity of distress. This information is utilized to calculate a PCI numeric value that represents the overall condition of the pavement and ranges from 0 (a condition category of "FAILED") to 100 ("GOOD"). The PCI methodology also provides an indication of the degree of maintenance, repair, or rehabilitation efforts that will be required to sustain functional pavement.

According to the 2025 FASP Annual Report, of the participating airports (general aviation, commercial, and reliever airports), about 74% of statewide primary runway pavement was "acceptable" with 26% falling below the PCI score of 70 indicating need of rehabilitation or repair. Florida airports' primary taxiways are in similar condition. Overall, 66% of airports have primary taxiways in acceptable or better condition —slightly lower than the percentage for runways but still representing two-thirds of all primary taxiways. However, 26% of taxiways require major rehabilitation, a higher share than that observed for runways. In order address immediate needs for airport runways below the critical PCI of 65, approximately $1.2 billion dollars would be needed. An additional $2 billion in rehabilitation would be required over a ten-year period.

Aging terminal and landside infrastructure is always in a state of upgrade and repair. Typically, these areas of the airport are addressed as the airport expands to increase capacity, and modernization of the airport occurs. With increasing traffic, parking is a major concern at airports throughout the state. The need to add parking becomes difficult when aging parking garages need to be replaced, since available space on airports for temporary or new parking is difficult. Maintenance of existing parking structures and terminal access is crucial to the function of airports.

Funding and Future Need

The FDOT maintains a grant program to assist in providing a safe, cost-effective, and efficient statewide aviation system. FDOT grant funds help airports build and maintain runways and taxiways, eliminate airport hazards, protect airspace, develop plans, acquire land, build terminals and other facilities, and complete other types of airport improvement projects. The Florida Aviation Grant Program is funded through the State Transportation Trust Fund (STTF), which, in turn, is partially funded by 6.9 cents per gallon tax imposed on qualifying aviation fuel sales.

In addition, most Florida airports are eligible to apply for and receive grants from the FAA. Through the AIP, the FAA provides funding to airports included in the National Plan of Integrated Airport Systems (NPIAS). Nearly $211 million was provided to Florida in AIP funding in FY2025. In addition, the state has benefitted from increased airport funding from the Infrastructure Investment and Jobs Act (IIJA). This includes $124 million in funding to support the Terminal C expansion at Orlando International Airport. As of January 2025, Florida received over $990 million in Airport Infrastructure Grant funding from the FAA. These projects include pavement rehabilitation and expansion, terminal modernization and expansion, lighting and NAVAIDs upgrades and safety enhancements to airfields among other items.

Over the next five years, the FDOT Work Program identified over $10 billion in funding needs for Florida's more than 100 NPIAS airports. The combined requests from federal, state, and local funding sources comprise the total airport development needs of the Florida airport system. These needs range from $1.7 billion to nearly $3.0 billion per year over the next five years.

Florida System Airport Funding Requests, 2024 to 2028[1]

Requested Funding Source	2024	2025	2026	2027	2028
Federal Grant Funding	$1,120,306,871	$1,457,642,769	$1,075,933,388	$625,065,400	$1,170,912,628
State Grant Funding	$550,354,662	$441,542,916	$376,908,843	$481,110,784	$362,906,384
Local Share	$1,081,043,288	$1,058,424,262	$957,094,628	$596,281,293	$390,675,592
Total Cost of Airport Development Needs	**$2,751,704,821**	**$2,957,609,947**	**$2,409,936,859**	**$1,702,457,477**	**$1,924,494,604**

1. *JACIP*

The Passenger Facility Charge (PFC) program allows airports that enplane at least 2,500 passengers per year to impose a facility fee of up to $4.50 per each flight segment, for a maximum of $18.00 roundtrip total. Collected revenue from PFCs may fund preapproved safety, security, capacity, noise reduction, and air carrier competition enhancements. Since the 1990s, the total PFCs collected by various airports in Florida range from nearly $400,000 to over $5 billion. With over 90 million passengers enplaning each year at Florida's commercial service airports, PFCs are an effective way to close the gap between the FAA's estimates and the anticipated state and federal funding identified for the same period.

With limited grant funding available, airports are looking to raise capital funds on their own rather than solely relying on federal and state grants. Furthermore, these capital resources are expected to help meet the local funding match that is required to receive grants.

Public Safety

Airport safety depends on infrastructure both inside and outside the terminals. Along the airfield, "Hot Spots" are a safety related problem typically involving complex or confusing intersections of runways and taxiways that may result in pilot error and issues of runway and taxiway incursions. Currently, 14% of Florida airports have at least one hot spot. Another area critical for protecting the public is the Runway Safety Area (RSA) which reduces the risk of damaging airplanes in the event of an undershoot, overshoot, or excursion from the runway. Just over half of all Florida airports' primary runways meet FAA standards. Taxiways meet standards at a much higher level than runways. About 93% (99 airports) of the airports have primary taxiways that meet FAA standards. For 81% of Florida airports, the primary runway meets FAA design standards for RSA, ROFA, and Part 77 Surfaces. The category with the most room for improvement is RPZ design standards. Nearly three-fifths of Florida airports' primary runway RPZ meets FAA standards while the other forty percent do not. Nearly one-quarter (24 airports) of Florida's 106 airports have at least one hot spot.

Most Florida airports (82%) have either a non-precision approach or a more advanced precision approach available on at least one end of a runway. A non-precision approach uses basic navigation aids—such as VHF radio beacons, a localizer (which guides pilots left or right), or GPS/RNAV—to help aircraft line up with the runway in low visibility. More advanced precision approaches, like an Instrument Landing System (ILS) Category I–III, provide both side-to-side and up-and-down guidance, supporting safer landings in poor weather conditions. This represents a strong level of service for a broad range of users. Use of virtual towers at non-towered airports is becoming more common as airports like Bartow Executive and Homestead Air Reserve Base implement digital towered systems with cameras and sensors to provide a remote view of an airport to improve safety and efficiency.

Terminal safety upgrades typically revolve around space and flow for TSA that minimize the footprint and time associated with security while maintaining a safe environment. Newer TSA equipment for scanning bags is being installed in most commercial service airports to improve safety while minimizing the time necessary for the security process.

Innovation and Resilience

The FAA has sought to roll out the NextGen system to modernize the nation's aviation infrastructure. One component of this system is the Electronic Airport Layout Plan which uses GIS rather than the traditional static-map format for navigation to allow airports and the FAA to collect, store and update important information about the airport in an efficient, usable format. Currently, only 41% of Florida airports have adopted this level of innovation.
All but eight airports within the state of Florida are utilizing Virtower at their airports to monitor operations, pavement usage, based aircraft and noise abatement and complaints. Virtower provides data tracking of all of the movements on the airport to provide real world data on the use of the airport, giving the airports more accurate information for planning upgrades and making cases for improvements to the FAA and FDOT. Virtower also helps monitor for UAS traffic near the airport.

Airports are a critical piece of a community's resilience because they can be used to provide rapid response to emergency situations or as a staging ground for recovery efforts in the wake of disasters. However, a little more than half of Florida airports (about 56%) have a backup power source for their terminal. Additionally, only two-thirds (67%) have backup power for the airfield lighting.

FDOT has encouraged all airports to implement stormwater management plans (SWMP) since 2008, however, at this time, only 54% have implemented them. This is an important area of needed improvement since stormwater management in Florida is a key design component, and recent changes to stormwater permitting will require more space for treatment.

Overall, 27% of system airports (29 airports) have already implemented charging stations for passenger vehicles, and 32% (34 airports) are planning projects for this. For charging electric aircraft, no airports in any of the districts have implemented charging stations, but 45 airports system wide have plans to do so. Overall, that translates to 42% of system airports planning to implement charging stations for electric aircraft. To better prepare for advancements in electrification, the FDOT AO designated this topic as worthy of additional investigation. Research was conducted on the progress of the development of electric aircraft, funding sources for airport electrification, and potential steps airports could take in preparation for future electric aircraft and vehicles.

PENSACOLA INTERNATIONAL AIRPORT
FLORIDA

C-

AVIATION

Recommendations to Raise the Aviation Grade

- To continue preparing for and prioritizing capacity enhancements, the FDOT should maintain a database of demand/capacity needs that are updated on a rolling basis as individual airport master plans and other studies are completed.
- Adapt to the growing influence of unmanned aircraft systems (UAS) and electric vehicles
- Address aviation sector funding shortfalls by educating legislators at the state and federal levels.
- Raise or eliminate the cap on the Passenger Facility Charge (PFC) to allow airports the needed revenue to invest in their infrastructure.
- Foster technological innovation and support the implementation of new technologies, like NextGen, that offer the ability to reduce congestion and improve capacity.
- Protect airspace and promote compatible land uses around airports.

Sources

- Federal Aviation Administration, "2025 Airport Improvement Program (AIP)," 2025.
- Federal Aviation Administration, "FAA Infrastructure Investment and Jobs Act - Airport Infrastructure Grants (AIG)," n.d.
- Florida Department of Transportation, "2043 Florida Aviation System Plan," n.d.

Florida's Infrastructure

BRIDGES

EXECUTIVE SUMMARY

Florida has 13,036 structures in its bridge management system, including conventional bridges and culverts spanning over 20 feet. The state maintains 7,374 (56.5%) bridges, county governments maintain 4,034 bridges (31%) and cities and towns maintain 1,304 bridges (10%). Other entities, such as railroads and parks, maintain the remaining 324 (2.6%) bridges. The Florida Department of Transportation (FDOT) inspects and rates most of the bridges in Florida. Florida has 364 poor bridges (2.8%), and 894 (6.9%) bridges are posted or closed.

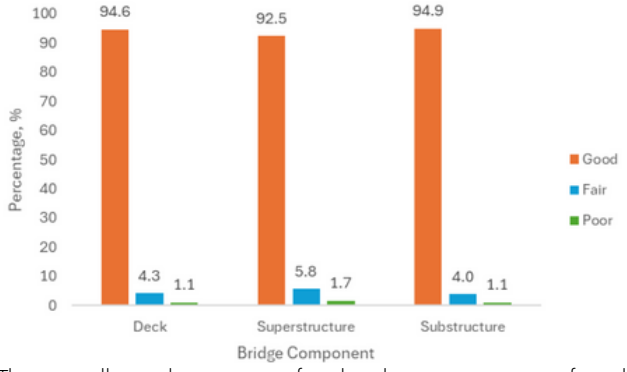
Florida's bridges outperform national trends in overall condition. Nearly 60% of the state's bridges are rated in "good" condition, compared to a smaller share nationally. At the same time, only 2.8% of Florida bridges are rated "poor," which is well below the national average. The remaining 37.7% fall into the "fair" category. FDOT, cities, and counties have done an exemplary job of prioritizing bridge preventative maintenance, routine maintenance, and repair and rehabilitation.

Condition & Capacity

The 13,036 bridges in the State carry approximately 258 million daily crossings. Bridges generally consist of three components: the deck or riding surface, the superstructure for supporting the deck, and the substructure which transfers loads to the ground. A numerical condition rating is assigned to each of these components, and the Overall Condition Rating for a bridge represents the component with the lowest rating. The ratings are divided into three categories: good, fair, and poor.

The following charts depict the Condition Rating for each of the three components.

Overall Condition Rating

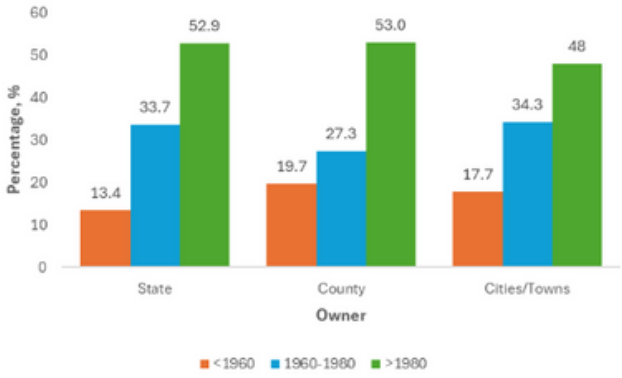


The overall condition rating for the three components for all Florida bridges demonstrate that the owners have worked to diligently maintain a state of good repair. This leads to the ability to extend serviceability beyond the anticipated design lives of the bridges and to preserve these conditions at lower costs.

Bridge Age

While bridge age is not necessarily an indication of condition, age can necessitate significant additional funding for maintenance and repair. Most bridges were designed for a service life of 50 years. The older bridge populations are concentrated in the rural and older urban areas. New bridges must now be designed for a 75-year service life per AASHTO.

Bridge Age - Year Built



Poor Bridges

Since 2018 the Federal Highway Association (FHWA) has defined a poor bridge as one that has any component (deck, superstructure or substructure) in poor or worse condition.

The FDOT follows the FHWA's definition for poor bridges. In addition, a bridge is considered poor if it cannot carry its legal load or is not serviceable during floods.

Nearly 60% of Florida's bridges are rated in "good" condition —above the national average of 44.1%—while only 2.8% (364 total) are considered "poor," well below the national rate of 6.8%. The remaining 37.7% are rated "fair." Currently 68 of the state's "poor" bridges (or 18.7%) are state-maintained bridges, while 243 (66.8%) are maintained by the counties. Cities and other local agencies maintain the remaining 53 (14.5%).

Posted and Closed Bridges

If a bridge cannot carry applied legal loads due to condition or capacity concerns, it is necessary to post weight restrictions and at times even close the bridge to traffic. This may be due to significant wear and tear or outdated design features. There are

currently a total of 894 posted or closed bridges across Florida – or about 6.9% of the state's bridges. The state has maintenance responsibilities for 56 (6.3%) of the bridges, county governments have maintenance responsibilities for 593 (66.3%) of the bridges, and city and town governments have maintenance responsibilities for over 22% of the bridges. Posted and closed bridges can impact trucks, school buses, and ambulance traffic by forcing these vehicles to take alternate, and often much lengthier, routes.

Funding and Future Need

The federally funded Infrastructure Investment and Jobs Act (IIJA) is providing Florida with a total of $263.4 million in bridge formula funds over the five-year duration of the legislation. Florida currently has access to $210.7, and has committed $193.4 million towards 66 projects as of June 2025. To support Florida's infrastructure the State's FY 2025-2026 Budget invested $13.7 billion for the state transportation work program which includes $961.2 million for repair of 40 bridges and replacement of 21 bridges bringing the cumulative number repaired or replaced since 2019 to 739 bridges. FDOT is also looking for funding in the amount of $2 million to recruit and retrain skilled transportation talent to build on the Department's professional certification programs which include Bridge Inspectors and Surveyors.

On July 17, 2024, President Biden announced award of $5 billion in federal grants for replacement or improvement of aging bridges. In Florida, Miami-Dade County will receive $101 million to replace eleven Venetian Causeway bridges that are nearly a century old.

In May 2025 U.S. Transportation Secretary Sean P. Duffy announced more than $1.5 billion in federal funding to help states and U.S. territories accelerate repairs to roads, bridges and other transportation infrastructure damaged by natural disasters. The FHWA is providing the funds to repair and reconstruct federal-aid highways and federally owned roads in 36 states. Florida is receiving $44.6 million of which more than $43 million is for Hurricanes Milton, Helene and Debby damage.

Florida is currently experiencing unprecedented population growth and as the state continues to experience this rapid growth, it has launched the Moving Florida Forward Infrastructure Initiative, which focuses on critical improvements to ensure that transportation infrastructure can meet the demands of current and future residents and visitors. As part of the initiative, FDOT identified a selection of critical needs on state-owned roadways. $4 billion from the General Revenue Surplus has been dedicated to the Moving Florida Forward Infrastructure Initiative to advance construction on projects around the state that will address improved safety, ensure the resiliency of the transportation network, and enhance Florida's supply chain and economic growth.

The Florida Transportation Plan (FTP) is Florida's overarching statewide plan that guides the future of transportation. The plan is updated every five years and is a collaborative effort of state, regional, and local transportation partners in the public and private sectors. The newest version of the FTP is being developed as part of its regular update cycle, looking ahead 30 years to 2055. The 2055 FTP will contain statewide goals and regional objectives to ensure the state transportation system remains efficient, safe, and sustainable.

The Capital Region Transportation Planning Agency (CRTPA) convened in June 2025 to discuss transportation needs and funding challenges facing the state capital region of Leon County. The meeting highlighted significant discrepancies between projected project costs and anticipated revenue, raising concerns about the feasibility of future transportation plans. Five years ago, the forecast for state and federal funding for road improvements was nearly $700 million. The latest estimates have plummeted to just $73 million for the life of the plan from 2031 to 2050. This shortfall is not unique to the Capital Region as officials indicated that similar revenue corrections are being experienced statewide. Brevard County, which includes Cape Canaveral, is predicting an 83% funding shortfall for needed road projects between 2030 and 2050.

Florida must develop new transportation funding strategies, such as increased vehicle fees, as transportation funds collected from gas tax revenue have been running low due to stagnant gas tax rates1, inflation, and increased fuel efficiency2. As the demands on roads increase from users who don't pay gas taxes transportation funding models are diverging from their original user pays revenue strategies. Other suggested sources of revenue include raising the motor fuel tax, indexing the tax to motor fuel use, increasing tolls, establishing public-private partnerships, and increasing car rental taxes.

Operation & Maintenance

The FDOT's operating policy for repair, rehabilitation or replacement of poor bridges is to program all poor bridges, and bridges posted for weight restriction, for construction within 6 years of deficiency identification.

FDOT's policy for economy replacement is to program all bridges needing structural repair for construction within 9 years of deficiency identification.

FDOT's target is to have at least 90% of bridges maintained by the Department achieve a National Bridge Inventory (NBI) rating of 6 (good) or higher. For FY 2024, 95.1% of state highway system bridges met this rating.

In compliance with FHWAs mandate for all states, the FDOT created and implemented a Transportation Asset Management Plan (TAMP) to identify the statewide average of all bridges on the National Highway System. Data collected from bridge inspections determines the most cost effective measures of preventative maintenance, routine maintenance and repair over the life of the bridge.

Resilience

FDOT has a long-standing commitment to improving the state transportation system and has developed a Resiliency Policy that defines the ability of the transportation system to support the safety and mobility of Florida while preserving the quality of the environment. The FDOT's Resiliency Policy is implemented within internal manuals and guidelines as recently developed and completed through a Resilience Action Plan required by Section 339.157, Florida Statutes.

Resilience refers to the overall bridge and transportation system's capacity to rebound after an event or protect against significant multi-hazard threats and incidents and the ability to expeditiously recover and reconstitute critical services with minimum damage to public safety and health, the economy, and national security.

1. *https://www.ncsl.org/transportation/variable-rate-gas-taxes%22%20/t%20%22_blank*
2. *https://www.ncsl.org/state-legislatures-news/details/states-steering-toward-alternatives-as-gas-tax-revenue-dips%22%20/t%20%22_blank*

The most serious threat to bridges in Florida is the corrosion of steel reinforced concrete substructures in coastal regions. Advancements in material specifications and design practices have helped to meet this challenge.

Bridge failures are also caused by extreme events, such as flooding and scour. There is now a statewide Bridge Scour Evaluation and Remediation Program to identify scour critical bridges and to provide scour countermeasures as a corrective action where required. The program evaluates state-owned and local government bridges over tidal and non-tidal waterways with scourable beds to determine the risk of failure from scour. To provide guidance on evaluating scour at bridges FDOT has published a Bridge Scour Manual that also provides predictive equations for estimating scour depths. A multi-disciplined team of engineers is assembled in each District of FDOT that has expertise in bridge hydraulics/hydrology, structures and geotechnolgy.

Causeways throughout the state are critical evacuation routes for barrier island residents and are subject to the devastating effects of storm surge and storm scour. This fact was exemplified in September 2022 when Hurricane Ian destroyed the causeway cutting off Sanibel and Captiva Islands from the rest of the state of Florida. Two portions of the ramp and a section of roadway that crossed an island in the middle of the causeway washed away in the storm. The $328 million restoration included an innovative scour prevention system utilizing 25,225 square yards of gabion marine mattress and 79,00 tons of coastal rip rap and bedding stone. In 2024 three hurricanes struck Florida resulting in additional damage to infrastructure. FDOT is currently funding $1 million to repair several causeway bridges in Brevard County on the east coast of Florida after sustaining damage from Hurricane Milton in 2024.

Innovation

Innovation refers to the implementation and strategic use of innovative techniques and delivery methods. FDOT has implemented the use of new materials and technologies in its bridge construction and repair/rehabilitation program. FDOT integrates new bridge and pavement materials which require less frequent maintenance and renovation such as High Performance Concrete (HPC) and Carbon Fiber Reinforced Polymers. The new concrete mixtures are less permeable to water and more resistant to environmental degradation. Ultra High Performance Concrete (UHPC) is part of FHWA's Every Day Counts, a state-based model that identifies and deploys proven, yet underutilized innovations intended to highlight advantages of accelerated project delivery and long-term durability. Both the FHWA and FDOT support the use of accelerated project delivery techniques such as UHPC and Prefabricated Bridge Elements and Systems (PBES) as an economical way to increase quality, reduce long-term maintenance costs and construction time. Use of innovative concepts aids in solving many constructability and durability challenges, with the potential of revolutionizing bridge construction in the United States.

In addition, FDOT's State Materials Office is a nationally and internationally recognized leader in materials testing and research. The FDOT has spearheaded research and evaluation of corrosion behavior on marine structures and experimentation with new materials for corrosion prevention and corrosion control for over twenty years. Cathodic Protection Systems have been implemented as an effective, long term corrosion control method on Florida's bridges. New coating products are currently being tested in an effort to identify effective materials and practices to make Florida bridges more durable and reduce life-cycle maintenance costs. Environmentally friendly sealers and coatings are now available without harmful solvents or volatile organic compounds (VOCs).

"Smart" bridge technology consisting of wireless sensors mounted on a bridge can measure vibration, strain, temperature and changes in bridge condition such as steel corrosion and concrete deterioration. Information is then passed to a computer for analysis allowing continuous monitoring of the bridge's structural integrity. Digital twin is a developing technology that creates a 3D model which is a digital version of a bridge that updates in real-time through sensors that collect data and feed it back to the digital twin.

SUNSHINE SKYWAY BRIDGE
TAMPA, FLORIDA

Recommendations to Raise the Bridges Grade

- Advance the adoption of FHWA's Center for Accelerating Innovation - Every Day Counts (EDC) program initiatives by the implementation of innovative technologies.
- Fund repair and rehabilitative strengthening measures thereby increasing the service life of existing bridges to bridge the gap between designated need for replacement and budgeted work programs.
- Increase investment from all levels of government and the private sector, to repair, improve, and expand the state's highway and bridge systems to keep bridges from falling into poor condition.
- Develop performance-based investment strategies which will ensure available resources are directed to those projects with the highest performance return on investment, and encourage the use of asset management programs.
- Fund research into innovative technologies, materials and construction techniques to extend and preserve the life of bridges.

Sources

- Alliance for Transportation Electrification, "Florida Highway Funding Gap," 2025.
- American Road and Transportation Builders Association, "Bridge Report," 2024.
- Citizen Portal, "FDOT Reports $500 Million Shortfall in Project Revenue Forecasts for Upcoming Plans," 2025.
- Executive Office of the Governor Ron DeSantis, "Governor Ron DeSantis Signs Florida Fiscal Year 2025-2026 Budget," 2025.
- Florida Construction News, "Florida allocates $15.1 billion for transportation projects in 2025-2026," 2025.
- Florida Department of Transportation, "Moving Florida Forward – Infrastructure Initiative," 2025.
- PEW, "More EVs, Less Gas Tax Revenues Create State Transportation Budget Issues," 2025.
- U.S. Department of Transportation, Federal Highway Administration, "About Every Day Counts (EDC)," 2025.
- Live to Plant, "Innovative Approaches to Bridge Maintenance and Repair," 2025.
- Transportation Institute, University of Florida, "There is a Secret Behind Smarter Bridges: Digital Twin Technology," 2024.
- U.S. Department of Transportation Federal Highway Administration, "National Bridge Inventory," 2024.
- U.S. Department of Transportation, "U.S. Transportation Secretary Sean P. Duffy Announces Over $1.5 Billion to Repair Roads and Bridges Damaged by Natural Disasters, Including Hurricane Helene," 2025.

Florida's Infrastructure

COASTAL AREAS

EXECUTIVE SUMMARY

Florida's economy is heavily dependent upon tourism from its natural costal environment. An estimated 1.17 billion beach visits occurred in Florida in 2019, representing a significant impact on the state's economy. Beach-oriented tourists in Florida generate $23.3 billion in tax revenues annually. Aside from their significant economic impacts, beaches reduce storm damage to coastal infrastructure and communities. Unfortunately, erosion caused by natural changes and human activities such as navigation inlets and coastal development threaten Florida's coastal areas. According to a 2025 Florida Department of Environmental Protection report, approximately 540 of Florida's 825 miles of sandy shoreline shows signs of erosion, an increase from 504 miles in 2016. Ameliorating this erosion requires nearly $6.3 billion, but the state is only allocating $50 million per year with little guarantee of future funding at this level. It should be noted that recent federal disaster funding has helped lessen the funding gap in the short-term, but significant work remains.

Capacity

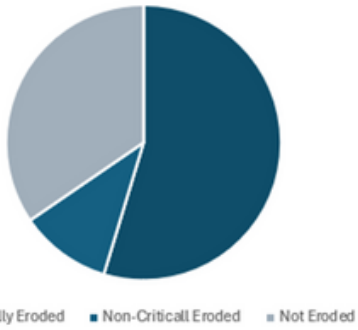
The Florida Department of Environmental Protection (FDEP) updated its Strategic Beach Management Plans for seven regions throughout the state in May 2023. The regional plans provide inventories of beach projects, background information, strategies to address critically eroded beaches, regional barrier inlet inventories, and inlet management strategies. Overall, the state's capacity to implement beach nourishment projects faces three specific challenges: (1) reduced availability of sources of sand, (2) environmental constraints, and (3) political boundaries. Many years of active beach nourishment in Florida have depleted or severely diminished nearshore sand sources driving local, state and federal projects to rely upon inland sources of mined sands to be trucked to project locations, increasing overall costs. Environmental concerns also impose constraints on beach maintenance and preservation efforts. For instance, the presence of nearshore hardbottom areas limit the potential width and length of nourished beaches which is critical to the longevity and efficiency of beach nourishment projects. Other nearshore resources, such as corals, sponges, or seagrasses also impose constraints on the size of a project, potentially decreasing the expected area. Additionally, permitting agencies generally require detailed environmental studies to minimize impacts to these natural resources due to their ecological importance.

Politics, in the form of "sand wars," also play a significant role in the capacity of coastal areas. While the state of Florida generally recognizes sand located offshore, counties in state waters follow the county lines until reaching the federal limits, three miles offshore. Therefore, the state does not regulate sand taken from federal waters. In these waters, the federal government currently does not follow county political boundaries. Instead, any public entity may use this sand resource. Consequently, the difference in these political boundaries often results in communities fighting over the use of federal sand resources used to improve coastal areas.

Condition

Of the 825 miles of sandy shoreline, 453.8 miles has been designated as critically eroded beach per the FDEP Critically Eroded Beaches in Florida Report of 2025. Over 65% of Florida's sandy beaches (540.0 miles) are eroded or eroding. The FDEP designates 9.1 miles of inlet shoreline as critically eroded and 3.2 miles as non-critically eroded. Since 1989, when the FDEP generated its first list of erosion areas, the miles of critically eroding shorelines have increased by 107% (217.6 to 451.1 miles) as of this last years (2025) report. From 2020 to 2024, the total length of critically eroded shoreline increased by 7.5% (419.6 to 451.1 miles). By inference, the erosive threat to upland development, recreational interests, wildlife habitat and important cultural resources have also increased.

Coastal Erosion Classification



2019 Critical Erosion Areas of Florida

Florida has 66 coastal barrier inlets in Florida (21 on the Atlantic coast and 45 on the Gulf coast). Studies have shown that inlets created and enhanced to provide more direct access for commercial shipping to the ocean from inland waterways are responsible for approximately 80% to 85% of beach erosion on the east coast and to a lesser extent on the west coast of Florida. The FDEP Strategic Beach Management Plan provides a list of planned beach restoration projects, sand resources and innovative technologies, and identifies bypassing objectives and actions to balance sediment budgets on adjacent beaches.

Operation and Maintenance

Beaches and inlets exist in highly dynamic environments, constantly shaped by the forces of waves, tides, and currents. Because the stability of surrounding infrastructure depends on them, regular maintenance is the most critical aspect of managing these systems.

In Florida, the environmental health of beaches and waterways is also vital for sustaining tourism. As a result, construction windows for beach nourishment projects are restricted to just a few months each year. Most work can only take place during the winter, outside of both the sea turtle nesting season (May-October) and the peak summer tourism months. However, winter conditions often present additional challenges: low-pressure systems over the Atlantic generate stronger waves, which accelerate erosion during construction. This increases the amount of sand required and, in turn, drives up project costs.

In addition, operation and maintenance is needed during the state's annual hurricane season, running June through November. The Federal Emergency Management Agency (FEMA) recommends adding "beach nourishment" like sand, hard armor structures like seawalls and revetments to block waves, and natural solutions such as reinforcing dunes with vegetation and coir logs. However, these strategies aren't always implemented, and the consequences can be drastic. For example, Florida was hit by three major hurricanes: Debby, Helene and Milton. As a result, Coquina beach in Manatee County lost 210,500 cubic yards of sand and the newly constructed (2024) Ponte Vedra Beach project lost an estimated 300,000 cubic yards of sand from Hurricane Milton alone. More funding and organization in extreme weather prevention could have prevented these losses.

Public Safety

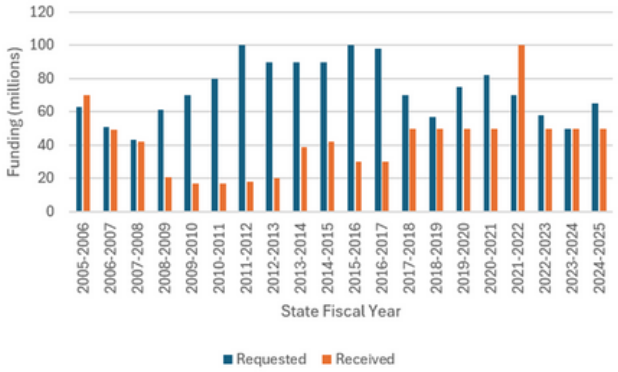
Developed and natural areas within the coastal regions of Florida incur the risk of short-term effects from extreme events and long-term effects associated with a changing climate and human-related impacts. Many coastal areas in Florida are experiencing erosion, which results in increased risk exposure to storm damage and public safety effects. Developing and applying local and regional beach management strategies proves essential to decreasing the risk exposure in coastal areas and providing storm damage reduction benefits. In addition to typical residential development, many key infrastructure elements in Florida, such as the St. Lucie Power Plant and the Virginia Key Wastewater Treatment Plant, lie adjacent to the coast. In the case of severe beach erosion, both infrastructure sites could result in significant public safety issues as well as financial loss. These areas represent two of the many examples throughout Florida directly affected by coastal management strategies and timely implementation.

In addition, coral reef decline is resulting in increased impacts from storm surges. Ninety percent of deaths from hurricanes are caused by drowning in storm surges and flooding, and coral reefs protect shorelines by breaking waves, reducing wave energy by up to 97%. Florida's Coral Reef spans roughly 350 miles, beginning near North Palm Beach and extending south through the Florida Keys to the Dry Tortugas. This natural barrier plays a critical role in protecting densely populated coastal communities—such as Fort Lauderdale, Miami, and Key West—from hurricane impacts. Each year, the reef system provides flood protection for more than 5,600 people and prevents an estimated $675 million in property damage and economic losses. However, its degradation poses serious risks to public safety: a 3.2-foot reduction in reef height would increase flooding from a 100-year storm by 7.7 square miles, placing an additional 24,000 people and $2.9 billion in property and economic activity in harm's way.

Funding

State funding for coastal areas is focused on preserving the economic benefits from tourism and recreational activities. Federal funding, on the other hand, primarily focuses on storm damage reduction. At the local level, tourist development taxes generally form the primary means of paying for beach projects and maintenance efforts. In addition, some local governments collect additional ad valorem taxes or approved municipal service or tax benefits to support beach management activities.

State Funding Per Fiscal Year



During the two-year period following Fiscal Year 2016-2017, a nearly $50 million decline in requested statewide funding occurred, likely due to an influx of federal dollars from post-disaster grants related to Hurricanes Irma and Michael. From 2017 to 2025, appropriated funding has remained steady at $50 million per year. In Fiscal Year 2024-2025, the State appropriated 77% of the $64.9 million requests. The funding request for Fiscal Year 2025-2026 is at $122.6 million, which is 88% higher than the previous fiscal year.

In terms of federal funding, small grants have been awarded on a case-by-case basis for specific projects and storms by organizations such as the Bureau of Ocean Energy Management (BOEM), The Environmental Protection Agency (EPA), and the U.S. Army Corps of Engineers (USACE). In addition, the Infrastructure Investment and Jobs Act (IIJA), dedicated 78.7 million-dollars to be administered by agencies like National Oceanic and Atmospheric Administration (NOAA) and the National Fish and Wildlife Foundation (NFWF) via the National Coastal Resilience Fund (NCRF) for *"…projects across Florida to make communities and the economy more resilient to climate change."* Data on how much of this funding was

directed towards coastal communities are unavailable.

In April, 2025, FEMA canceled the Building Resilient Infrastructure and Communities (BRIC program), a program launched in 2020 to provide aid for hazard mitigation projects for natural disasters. This resulted in lost funds across the state, including about $148 million intended for the South Florida Water Management District for canal basin upgrades. Federal courts later temporarily blocked the reallocation, but the funds have not been released to the states and are still subject to legal challenges.

Future Need

To estimate a future long-term funding need, the USACE developed an approximate 20-year cost for managing its 137 miles of federal Florida beach projects. This estimate corresponds to about $693,000 per year per mile of beach. If Florida must actively manage all current critical erosion areas, that equates to managing 453.8 miles of shoreline. Applying the above costs per year per mile yields a potential 20-year need of $6.3 billion. Beach and inlet projects are eligible for state funding. However, the Land Acquisition Trust Fund does not guarantee any funding for these projects. While a consistent allocation of $50 million per year has occurred over the past three years, there is no guarantee of future funding at this level.

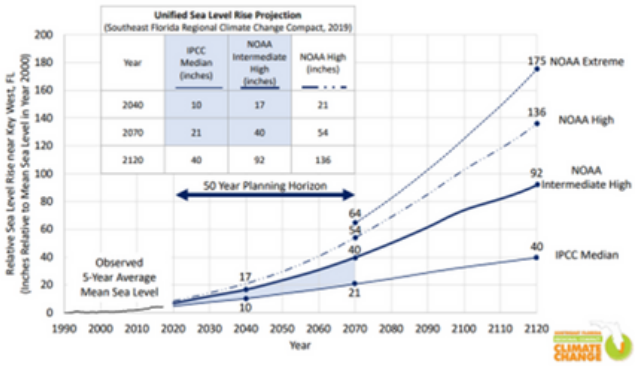
Federal funding is also unpredictable. Future federal funding will likely continue to relate to storm recovery efforts. Given these circumstances, local governments may have to carry a larger financial burden to manage beaches within their communities. Notably, Florida's Gulf coast counties have received funds resulting from the RESTORE Act, which allocates Clean Water Act administrative and civil penalties paid by parties responsible for the Deepwater Horizon oil spill in 2012. The five affected Gulf coast states, including Florida, have received funds to restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf coast region. Some of these funds may directly benefit coastal areas infrastructure.

In 2022, the USACE released the Final Report of the South Atlantic Coastal Study (SACS) which targets several goals that promote sustainable and resilient long-term projects throughout the South Atlantic region. This study was granted $18 million dollars in federal funding and is broken down into two tiers. Tier 1 Risk Assessment Analysis focused on developing a Coastal Hazard System grid for the East Coast. In August of 2019, Tier 1 concluded their findings and developed a framework that helps asses risk with the creation of the Composite Risk Index. Tier 2 Economic Risk Assessment focused on developing a detailed risk management measure and cost library with a standardized list of risk reduction actions specifically targeted to Focus Areas. The Economic Risk Assessment identified the current economic risk from storm surge for Florida is $9 billion (FY 2018), increasing to $24 billion with three feet of sea level rise. The Priority Recommendations in SACS emphasize construction of ongoing Coastal Storm Risk Management (CSRM) Feasibility Study recommended plans and continuation of existing CSRM projects with recommendations for improvement to include incorporation of resiliency features such as dunes, quantification of environmental benefits, and regional sediment management opportunities. The Priority Recommendations also include identification of back bay areas expected to see a significant increase in coastal storm risk as a result of sea level rise that warrant follow-on feasibility studies.

Resilience

Resiliency in Florida's coastal areas depends on the ability to consistently withstand or quickly recover from storm effects, higher water levels (short and long term), and the associated changes in shoreline position. Due to significant coastal development and associated infrastructure along the Florida coast, maintenance of beaches, wetlands and other natural protective features proves critical in limiting risk exposure.

Sea Level Rise Projection near Key West, Florida



However, due to the human footprint, as population growth and development has invaded these natural systems the effect has limited nature's ability to recover from extreme events, as well as adapt to potential long-term changes, such as sea level rise. Therefore, human support is required to maintain these systems and their ability to protect at a level suitable for the nearby infrastructure. Since human intervention is generally required for the expeditious recovery of a beach and dune system, the regulatory and funding process to accomplish this task is often the critical challenge. A holistic, multi-faceted approach on a regional basis might represent the most ideal means of management; however, it is not always applied. As a result, the current approach to coastal storm risk management occurs as a myriad of individual projects addressing independent problems with multiple stakeholders, funding sources, cultural resources, environmental impacts, and other concerns. Recent severe storm impacts along with expanded research on long-term trends may be shifting the paradigm from reactive to proactive.

The future of resilience in the state of Florida has shown promising signs of implementation with the creation of the Office of Resilience and Coastal Protection. The purpose of creating this office is aimed at helping coastal communities and habitats to not only combat issues concerning sea level rise, but also to provide a source of funding, technical assistance and coordination among all branches of government. This initiative will further enhance resilience strategies in Florida. Particularly, the Office of Resilience and Coastal Protection will oppose all off-shore oil and gas pursuits off the coast of Florida and prevent any hydraulic fracturing from occurring in the state.

Innovation

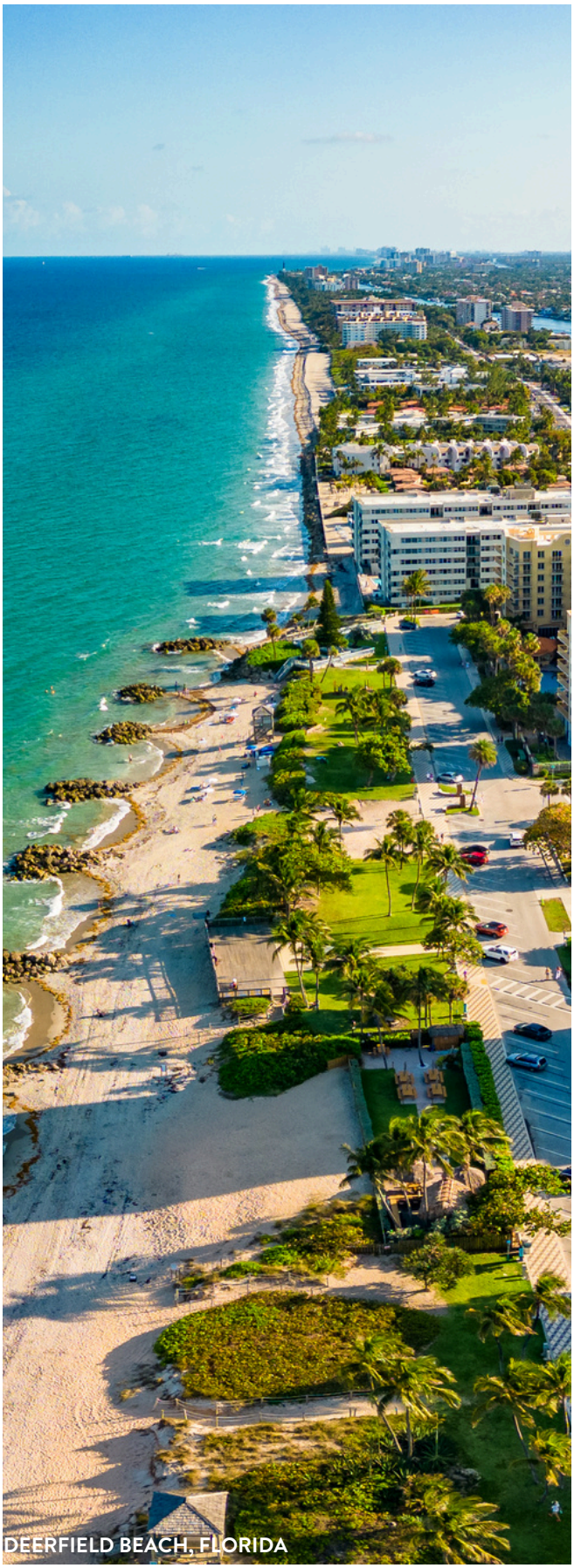
Innovations in Florida's coastal areas generally revolve around managing sediments within a region in a sustainable manner. Notably, a recent success story of regional sediment management (RSM) practices includes a navigation and beach project involving St. Augustine Inlet in St. Johns County. In

2012, the USACE and St. Johns County dredged 2.1 million cubic yards from three inlet elements — Porpoise Point area near the inlet, the inlet's navigation channel, and a small portion of the inlet's ebb shoal — to nourish 2.3 miles of critically eroding St. Augustine Beach. The Porpoise Point and navigation channel dredging served to make the inlet channel safely navigable while minimizing the amount of sand taken from the ebb shoal, which acts as a sediment sink that could adversely affect beaches to the north of inlet.

Together, the USACE and FDEP are also examining nearshore disposal of inlet-trapped sediments that are too fine for beach placement that otherwise become "lost" from the coastal system. In many cases, these sediments originate from the ocean but become finer as they move to interior waterways. Furthermore, the FDEP has periodically evaluated innovative technologies as alternatives to traditional dredge and fill projects to determine the most effective and less costly techniques for beach nourishment. While it has not done so since 2008, it has authorized the use of coastal structures to lengthen intervals between beach nourishments.

Finally, many agencies, such as FEMA, are currently emphasizing "living shorelines," natural or nature-based structures such as oyster shell breakwaters designed to protect property from extreme storms and flooding in addition to hard protection measures such as seawalls or causeway fortification. In Florida, these efforts have generally limited themselves to individual property owners located on inland waterways without a comprehensive, statewide approach to implementing these innovations.

DUBOIS PARK
JUPITER, FLORIDA



DEERFIELD BEACH, FLORIDA

Recommendations to Raise the Coastal Areas Grade

- Provide consistent, reliable, and sufficient funding at all levels — federal (FEMA, NOAA, USACE, etc), state (FDEP) and local.
- Identify, quantify, and implement regional sediment management (RSM) strategies.
- Adopt regionalization management approach to constructing and maintaining beaches. RSM practices have contributed to this approach. Bidding projects together can help spread the financial burden of maintaining a healthy and protective coastal area.
- Improve inlet management. Despite many well-intentioned efforts, sediments still become captured within flood and ebb shoals and further inland. Implement ways, through for example nearshore berms, to reintroduce lost sediments into the littoral system that one cannot place directly on beach.
- Reevaluate policies allowing construction seaward of Coastal Construction Control Line.
- Strategically acquire coastal lands to protect Florida's remaining undeveloped coastal lands and increase the resiliency of Florida's natural, economic, and social infrastructures.
- Consider relocating infrastructure from high-risk areas where feasible and/or apply relevant coastal design conditions.

Sources

- City of Virginia Beach, "Beach replenishment," n.d.
- Florida Department of Environmental Protection, "Critically eroded beaches in Florida," 2025.
- Florida Department of Environmental Protection, "Financial Summary and Accountability Report Fiscal Year 2024-25," 2025.
- Florida Department of Environmental Protection, "Florida Budget Summary FY 2025–26: Natural Resources, Environment, Growth Management, and Transportation (NREGMT)," 2025.
- Florida Department of Environmental Protection, "Hurricanes Debby Helene and Milton Recovery Plan," 2025.
- Florida Department of Environmental Protection, "Strategic Beach Management Plan: Introduction," 2023.
- FloridaDisaster.org, "Cancelled Building Resilient Infrastructure and Communities (BRIC) grant program," n.d.
- National Geographic, "Why hurricane flooding is about to get even more dangerous in Florida," 2025.
- National Oceanic and Atmospheric Administration, "Biden-Harris Administration recommends funding of $78.7 million for projects in Florida to strengthen climate-ready coasts as part of investing in America agenda," 2023.
- Office of Economic & Demographic Research, "Annual Assessment of Florida's Beaches," 2024.
- Office of Economic & Demographic Research, "Economic Evaluation of Florida's Investment in Beaches," 2015.
- Shore & Beach, "The economic value of America's beaches," 2024.
- Shore & Beach, "The recreational and economic value of Florida beaches," 2024.Office of Economic & Demographic Research, "Annual Assessment of Florida's Beaches," 2024.
- Florida Department of Environmental Protection, "Critically eroded beaches in Florida," 2025.
- City of Virginia Beach, "Beach replenishment," n.d.
- National Oceanic and Atmospheric Administration, "Biden-Harris Administration recommends funding of $78.7 million for projects in Florida to strengthen climate-ready coasts as part of investing in America agenda," 2023.
- FloridaDisaster.org, "Cancelled Building Resilient Infrastructure and Communities (BRIC) grant program," n.d.
- Office of Economic & Demographic Research, "Economic Evaluation of Florida's Investment in Beaches," 2015.
- Florida Department of Environmental Protection, "Financial Summary and Accountability Report Fiscal Year 2024-25," 2025.
- Florida Department of Environmental Protection, "Florida Budget Summary FY 2025–26: Natural Resources, Environment, Growth Management, and Transportation (NREGMT)," 2025.
- Florida Department of Environmental Protection, "Hurricanes Debby Helene and Milton Recovery Plan," 2025.
- Florida Department of Environmental Protection, "Strategic Beach Management Plan: Introduction," 2023.
- National Geographic, "Why hurricane flooding is about to get even more dangerous in Florida," 2025.
- Shore & Beach, "The recreational and economic value of Florida beaches," 2024.
- Shore & Beach, "The economic value of America's beaches," 2024.

D-

Florida's Infrastructure

DAMS

EXECUTIVE SUMMARY

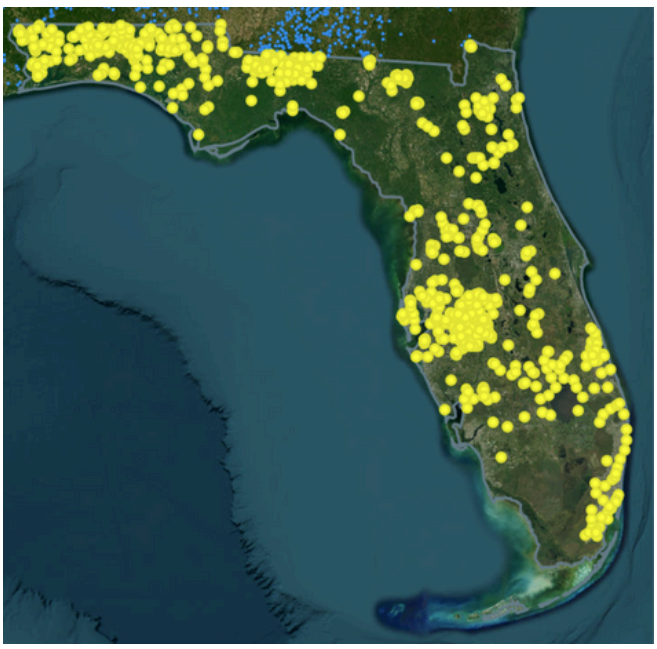
Florida is home to 1,080 dams that provide critical services such as flood protection, water supply, recreation, mine tailings containment, and habitat preservation. However, the state's dam infrastructure is aging, with an average age exceeding 56 years. Furthermore, more than 85% of dams lack condition assessments. Recent incidents in the state underscore the vulnerability of dams during extreme weather. With 79% of dams privately owned and only 18% having Emergency Action Plans, Florida lags behind national safety benchmarks. To address these challenges and improve public safety, Florida should improve state requirements and enforcement for dam safety and establish a grant or loan program to support rehabilitation, particularly for high hazard potential dams.

Background

Florida's inventory of 1,080 dams spans a wide range of structures that support critical water management functions, including flood control, water supply, recreation, mine tailings containment, and habitat preservation. These structures are located throughout the state and range in size, age, and ownership. Over 900 of the dams are earthen embankments, which is also the most common dam type nationwide. Approximately 360 dams in Florida are greater than 25 feet in height, and about 70 dams are 100 feet or taller.

Dam ownership in Florida is highly decentralized. Private citizens or organizations own approximately 79% of the dams, while state agencies account for 4%, local governments for 16%, the federal government for 2%, and public utilities for less than 1%. The U.S. Army Corps of Engineers (USACE) maintains the National Inventory of Dams (NID), which includes public data on over 90,000 dams nationwide, including those in Florida.

Location of Dams within Florida[1]



1. *USACE NID - https://nid.sec.usace.army.mil*

Operation & Maintenance

The 1,080 dams located within the state vary in size, age, structural type, ownership, and hazard potential. The condition and capacity of these structures vary widely across the state, with many showing signs of aging and limited ability to meet modern safety and performance standards.

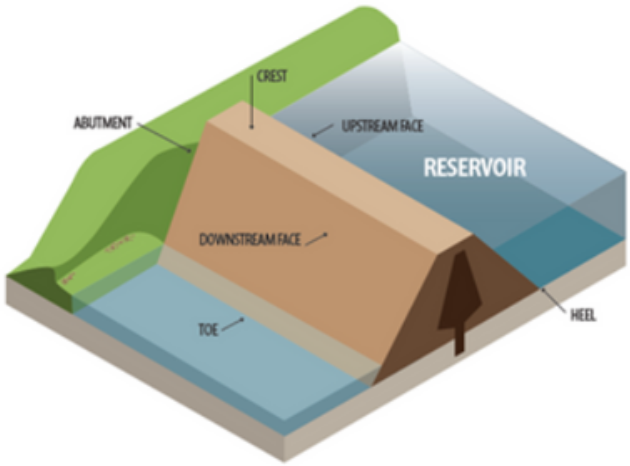
Dam Types

Most dams in Florida were constructed as earthen embankments, but other types of dam structures exist as well:

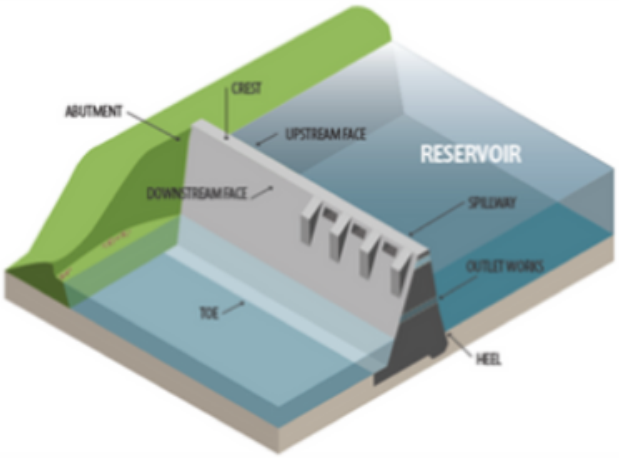
- Earth dams: 90.4%
- Concrete dams: 3.0%
- Unknown: 6.4%

This distribution reflects the state's relatively flat terrain, which favors the widespread use of earthen embankments that are cost-effective and suited for shallow impoundments.

Type of Dams in Florida - Earth[1]



Type of Dams in Florida - Concrete[1]



Hazard Potential Classification

Florida adopted the Federal Emergency Management Agency (FEMA) hazard potential classification system to assess the consequences of dam failure. These classifications consider only the likely outcomes of failure and do not represent the current condition of the dam or likelihood of the dam to fail. The following definitions have been summarized from FEMA's guidelines.

- High Hazard Potential (HHP): Failure or mis-operation of the dam will probably cause loss of human life.
- Significant Hazard Potential (SHP): Failure or mis-operation may cause significant economic loss, environmental damage, or disruption to critical infrastructure, but is not likely to cause loss of human life.
- Low Hazard Potential (LHP): Failure or mis-operation is unlikely to cause loss of human life or substantial property damage, with impacts generally limited to the dam owner's property.
- Undetermined: No hazard classification has been assigned due to lack of data.

The October 2025 data provided in the NID list Florida's dams classified as:

- High Hazard Potential (HHP): 105 dams (10%)
- Significant Hazard Potential (SHP): 335 dams (31%)
- Low Hazard Potential (LHP): 433 dams (40%)
- Undetermined: 207 dams (19%)

Ownership and Oversight

Florida's dam infrastructure is managed by a diverse mix of owners, reflecting a highly decentralized model of oversight and responsibility:

- Private owners: 850 dams (79%)
- State agencies: 38 dams (4%)
- Local governments: 170 dams (16%)
- Federal agencies: 17 dams (2%)
- Public Utility: 2 dams (<1%)
- Other/Not Listed: 3 dams (<1%)

Regulatory oversight for non-federal dams falls under the Florida Department of Environmental Protection (FDEP), with additional support from the five regional water management districts.

Average Age and Physical Condition

The average age of Florida dams is 56 years, which is consistent with the national average. Many were built before the development of modern design standards and changing land use conditions downstream.

Despite recent inspection efforts, condition assessments remain sparse. Only 147 dams (14%) in Florida have documented condition ratings in the National Inventory of Dams.

- Satisfactory: 58 (5%)
- Fair: 68 (6%)
- Poor: 11 (1%)
- Unsatisfactory: 10 (1%)
- Not Available: 9 (1%)
- Not Rated: 924 dams (86%)

Most High Hazard Potential dams have been inspected in the past five years. However, the absence of condition data across the broader inventory, particularly among privately owned or dams which out date the state regulatory requirements, limits the state's ability to prioritize maintenance or identify structural deficiencies.

Emergency Action Plans (EAPs)

Emergency Action Plans are a critical tool for ensuring public safety in the event of dam failure. In Florida:

- 194 (18%) dams have an EAP on record
- 754 (70%) dams have no EAP
- 132 (12%) dams are marked "Not Required"

This means only 18% of dams statewide have an EAP, which has been an improvement since 2021, but still well below the national average. According to the USACE, 76% of High Hazard Potential dams nationwide under USACE oversight have EAPs, highlighting a critical gap in emergency preparedness for Florida dams.

Operation and Maintenance

Florida's dam safety and maintenance responsibilities are spread across a mix of public and private entities. This decentralized ownership model adds complexity to routine maintenance and regulatory oversight.

State and Non-Federal Dams

The FDEP oversees the Florida Dam Safety Program (FDSP), which collaborates with the state's five water management districts to regulate and support dam safety activities. Despite these efforts, resource limitations have historically impeded comprehensive oversight.

Recognizing these challenges, recent initiatives have aimed to bolster dam safety throughout the state. In January 2023, the FDSP released an updated EAP template and instruction manual to help dam owners better prepare for potential emergencies. The program has also expanded its training offerings, including workshops and technical seminars on inspection requirements, routine maintenance, and emergency planning. Additionally, Florida continues to leverage FEMA's National Dam Safety Program State Assistance Grant to fund inspections, EAP

1. *USACE NID - https://nid.sec.usace.army.mil*

development, and staff training to provide vital resources for the state's under-resourced regulatory framework.

Despite these efforts, significant challenges persist. About 40% of Florida's dams are classified as pre-regulation, meaning they were constructed before permitting and inspection requirements were enacted. These dams are not subject to routine oversight unless they undergo modification or abandonment. Furthermore, less than 15% of dams in Florida have condition ratings listed in the National Inventory of Dams, limiting the state's ability to prioritize maintenance or identify deteriorating structures.

Federal Dams

The USACE is responsible for a small number of federally owned dams in Florida, most notably the Herbert Hoover Dike, a 143-mile earthen embankment surrounding Lake Okeechobee. Historically rated at the highest level of safety concern, the dike has been the subject of a major, ongoing, federally funded rehabilitation effort. This project is a national example of large-scale investment in dam safety, but it is an exception rather than the norm.

There is a clear difference between federal and non-federal dam maintenance capacity. Federal dams typically benefit from larger maintenance budgets, scheduled rehabilitation cycles, and robust emergency planning, while state and private dam owners often lack financial resources or regulatory requirements to ensure long-term performance.

Funding and Future Need

As Florida's dams age, many are in need of maintenance, upgrades, or complete rehabilitation. However, securing funding to address these needs remains a significant and ongoing challenge, especially for the large number of private dam owners.

The Association of State Dam Safety Officials (ASDSO) estimates that Florida will require approximately $1.84 billion to rehabilitate its dams to meet minimum safety and performance standards. Of that total, $120 million is needed specifically for the state's high hazard potential dams. These figures include both federal and non-federal dams and reflect increasing costs due to aging, evolving safety criteria, and rising construction and materials expenses.

Funding for Non-Federal Dams

Non-federal dams face the most significant funding gaps. Florida does not currently operate a state grant or revolving loan program to assist private or municipal dam owners with inspection, rehabilitation, or removal costs. As a result, many dam owners are left to shoulder maintenance expenses independently, which often leads to deferred upkeep, higher long-term risks, and increased rehabilitation costs.

The primary funding mechanism available to the state is the FEMA National Dam Safety Program, which provides annual State Assistance Grants. These grants support EAP development, inspections, and staff training but do not cover major rehabilitation work. Florida also received limited funds through the FEMA High Hazard Potential Dam Rehabilitation Grant Program, authorized by the Water Infrastructure Improvements for the Nation (WIIN) Act of 2016. However, this program remains competitive and underfunded at the national level relative to the need.

Private dam owners often do not have a stable revenue stream to fund large capital improvements. This severely limits their ability to undertake proactive upgrades or risk reduction measures. In the absence of financial incentives or support, the state's aging private dams are particularly vulnerable.

Federal Investment in Dams

Federally owned dams in Florida make up a small fraction of the overall inventory but include major infrastructure with high-risk profiles. The most prominent example is the Herbert Hoover Dike. The Dike has been undergoing extensive rehabilitation by the USACE since the mid-2000s, with rehabilitation efforts nearing completion.

The multibillion-dollar federal investment in the Dike included several rehabilitation efforts, including:

- Replacement of aging culverts and water control structures
- Seepage barrier wall installation
- Embankment stabilization projects

This level of funding is not generally available to non-federal dam owners, underscoring a sharp divide in resource availability. Nevertheless, federal projects provide valuable lessons in planning, construction, and long-term asset management.

Outlook

Looking ahead, Florida faces a stark funding gap between the infrastructure need and available financial resources. Without a state-supported funding mechanism, much of the responsibility for dam rehabilitation falls on owners who may lack technical or financial capacity to maintain their structures. As rehabilitation costs rise, Florida will need to evaluate options for:

- Establishing a state-level grant or loan program for HHP and SHP dams.
- Providing financial or tax incentives for voluntary upgrades or removals.
- Leveraging additional federal resources tied to infrastructure resilience and public safety.

Until these gaps are addressed, many of Florida's dams will remain at risk.

Public Safety

Dams are essential to Florida's water infrastructure, but aging structures, insufficient oversight, and extreme weather events continue to elevate risk to public safety. The state's flat terrain and coastal exposure increase the potential reach and severity of flooding should a dam or tailings impoundment fail. These hazards are compounded by limited emergency preparedness in many areas.

Emergency Action Plans (EAPs)

EAPs are a fundamental component of public safety for dam infrastructure. They outline procedures for warning, evacuation, and emergency response in the event of a dam failure. However, EAP adoption remains a challenge in Florida, with only 18% of the state's dams having EAPs and many high-risk structures still lacking documented plans. Of the 18% of dams with EAPs, there is no available data indicating whether these plans are regularly exercised through drills or updated to reflect current downstream conditions, changes in dam operations, or current contact information for notification. This lack of

verification poses a serious public safety concern, as regular testing and updates are essential for ensuring that emergency procedures are effective and that residents and emergency responders can act quickly and appropriately during a dam breach or potential failure.

Recent Incidents and Trends

Recent dam-related incidents in Florida, including the Port Orange Dam breach during Tropical Storm Nicole (2022), emergency releases at Lake Manatee Dam amid Hurricane Debby (2024), a liner tear at Mosaic's New Wales gypsum stack (2023–2024), and the ongoing closure of Piney Point phosphate facility after a major breach (2021–2025), illustrate the serious consequences of aging infrastructure, inadequate maintenance, and extreme weather. These events underscore the need for improved emergency planning, routine maintenance, and risk management to safeguard public safety and the environment.

Awareness, Communication, and Oversight Gaps

Despite inspection progress on most HHP dams, a significant portion of Florida's inventory remains outside routine oversight, particularly pre-regulation dams not subject to permitting or mandatory inspections. Many downstream residents are unaware they live within dam inundation zones.

FEMA's Living With Dams: Know Your Risks emphasizes the need for broad community awareness, clear risk communication, and routine emergency drills to reduce the likelihood of catastrophe during a failure event. Increasing the use of these measures across Florida would greatly enhance the public's awareness and improve their willingness to heed warnings in the event of a dam breach or potential failure.

Inspection and Staffing

Florida's dam inspection and enforcement responsibilities are shared among the FDEP and the five regional Water Management Districts. Together, they oversee the state's dam safety program, which primarily covers non-federal and non-exempt dams. However, this decentralized model faces persistent staffing and resource limitations.

Between 2010 and 2018, the Florida Dam Safety Program operated with the equivalent of just 20 full-time staff statewide, covering nearly 1,000 dams, a ratio significantly lower than the national average. Although HHP dams are generally inspected on a five-year cycle, thousands of lower-hazard or pre-regulation dams remain outside the inspection framework, unless triggered by modification, permit, or failure.

Florida's limited staffing hinders its ability to provide consistent oversight, perform inspections, and manage dam safety data across a growing and aging dam inventory. In particular, the limited staff face challenges in:

- Performing timely follow-up on identified deficiencies;
- Conducting routine visual inspections, particularly for dams without condition ratings;
- Providing oversight of aging or deteriorating tailings dams; and
- Overseeing regulatory enforcement, especially where owner cooperation or funding is lacking.

Expanding the state's technical staffing and inspection capacity is essential to supporting public safety and enabling risk-informed asset management.

Resilience and Innovation

Florida's dams face unique challenges to resilience due to the state's flat terrain, subtropical climate, frequent hurricanes and tropical storms, and aging infrastructure. With the average age of dams in the state now at 56 years, many were not designed to withstand increasing hazard loads, such as more frequent and intense rainfall events, prolonged flooding, and shifting hydrologic regimes driven by climate change.

Resilience Challenges

Dams throughout Florida are increasingly exposed to multi-hazard threats, including:

- Extreme rainfall and hurricanes, which increase the risk of overtopping and structural instability.
- Sea-level rise and saltwater intrusion, which can impact structural materials near coastal areas.
- Land subsidence and sinkhole activity, particularly in karst regions like central Florida, could contribute to internal erosion and foundation instability.

The state's high proportion of private dam ownership further complicates resilience planning. Many owners lack the resources to invest in structural upgrades or modernize aging systems, and without centralized asset management, tracking risks and prioritizing repairs is difficult.

Innovative Practices and Progress

Despite ongoing challenges, Florida has made notable progress in dam resilience and innovation. The Florida Dam Safety Program updated its EAP template in 2023 to encourage standardized emergency planning and the use of advanced flood modeling tools, aiding both operators and emergency agencies in effective evacuation planning. Additionally, dam owners are increasingly adopting drone and remote sensing technologies for inspecting hard-to-reach areas, particularly after severe weather events. Enhanced monitoring of tailings dams, sparked by incidents at Piney Point and Mosaic's New Wales facility, has led to better anticipation of seepage and liner risks. The state continues to oversee the comprehensive closure and remediation of the Piney Point facility, serving as a model for long-term legacy dam management. Furthermore, the SFWMD is integrating climate-adaptive strategies into its planning, advocating for updates to hydrologic design standards and adaptive management approaches, signaling a positive shift toward future-ready dam and levee policies.

Barriers to Innovation and Resilience

Despite these examples, Florida continues to face several systemic obstacles:

- No state funding mechanism exists to support resilience upgrades for private or municipal dam owners.
- Many pre-regulation dams lack permits or inspections, making it difficult to evaluate resilience without costly field investigations.
- Innovation uptake is uneven, with better-resourced owners (e.g., federal agencies, large utilities, phosphate companies) more able to adopt modern technologies, leaving smaller owners at risk of falling behind.

Recommendations to Raise the Dams Grade

To address the aging dam infrastructure across Florida, the following actions are recommended:

- Establish a state dam safety grant or loan program to help private, local, and state dam owners fund repairs and rehabilitation.
- Require EAPs for all HHP and SHP dams and provide technical assistance to ensure quality and compliance.
- Increase inspection staffing and frequency, with an initial focus on non-rated and pre-regulation dams.
- Support a comprehensive, state-led effort to evaluate dam condition and assess risk.
- Incorporate climate resilience into dam design and permitting, including updated hydrologic models and sea level projections.
- Encourage innovation, such as drone inspections and remote sensing, through pilot programs and state-led technical guidance.
- Develop a risk screening program at the state level to understand the condition or each dam in the state to assist with prioritization of assistance and funding.

Sources

- Association of State Dam Safety Officials (ASDSO), "The Cost of Rehabilitating Our Nation's Dams: 2025 Update," 2025.
- ClickOrlando, "Port Orange Dam Breaches; Voluntary Evacuations Underway," 2022.
- Federal Emergency Management Agency (FEMA), "Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams," 2004.
- FEMA, "Living with Dams: Know Your Risks (FEMA P-956)," n.d.
- Florida Department of Environmental Protection (FDEP), "Piney Point Closure Update," 2022.
- FDEP, "Emergency Action Plan Template and Instruction Manual," 2023.
- Florida Trident, "Residents Uninformed of Lake Manatee Dam Risk Before Storm," 2024.
- Mosaic Florida Phosphate, "New Wales Phase III Gypstack Extension FAQs," n.d.
- South Florida Water Management District (SFWMD), "Sea Level Rise and Flood Resiliency Plan," n.d.
- U.S. Army Corps of Engineers (USACE), "National Inventory of Dams (NID)," n.d.
- Verdantas, "Integrating Drone Technology for Enhanced Dam Safety Inspections," 2023.
- WUSF Public Media, "Tear Reported at Polk County New Wales Phosphate Mine," 2024.
- WUSF Public Media, "Piney Point Phosphate Plant Should Soon Be Closed for Good," 2025.

B-

Florida's Infrastructure

DRINKING WATER

EXECUTIVE SUMMARY

Florida's drinking water system spans a complex network of aging infrastructure serving a fast-growing and geographically diverse population. While urban utilities draw from the deep and dependable Floridan Aquifer, many rural communities rely on shallow, contamination-prone sources and small-scale systems. As the state's population climbs, water demand is projected to surge by 13%, placing added pressure on aging pipes, outdated treatment plants, and vulnerable groundwater supplies. Though utilities have largely maintained reliable service, the increasing strain from growth, climate risks, and deferred maintenance threatens long-term system stability.

Statewide investments in reclaimed water, alternative sources, and system upgrades have driven meaningful progress, yet Florida still faces more than a $30 billion funding gap to modernize drinking water infrastructure. With new regulations on emerging contaminants like PFAS and growing expectations for leak prevention, asset management, and resilience, the state must continue to adapt. Advancing innovation, strengthening the workforce, and bolstering rural systems will be essential to safeguarding water quality and reliability.

Condition & Capacity

Florida's drinking water infrastructure forms a vast and intricately managed network that serves a rapidly growing population across a diverse landscape. The state's 67 counties—ranging from densely urban to fully rural—each have distinct water service setups. Large municipalities like Jacksonville, Miami Dade, Palm Beach, and Tampa operate expansive, centralized treatment and delivery systems. In contrast, many rural residents depend on private systems or individual wells that often draw from shallow, rain-recharged aquifers, which are more vulnerable to contamination and seasonal fluctuations than the deeper, more resilient Floridan Aquifer that supplies most urban areas. Statewide, groundwater remains the primary source of drinking water, and demand is expected to rise by approximately 866 million gallons per day (MGD) by 2040, an increase of about 13% driven by population growth.

Rates paid by customers through utility billing are the primary revenue source for public water systems, while state and federal funding plays only a supplemental role. Utilities are required by Florida Statute 403.852–403.864 to maintain financial, managerial, and technical capacity, which is primarily achieved through rate structures that ensure adequate revenue recovery. Many utilities have increased or are in the process of increasing water and wastewater rates to address aging infrastructure and inflation-adjusted maintenance needs. For example, the City of Tampa implemented phased water and wastewater rate increases through 2027 to support its Progressive Infrastructure Plan to Ensure Sustainability or "PIPES" infrastructure renewal program. Approximately 88% of Florida's population is served by centralized public water systems, while about 12% rely on private wells or small, limited-use systems. The Florida Department of Health estimates that nearly 2.5 million Floridians depend on private wells for their primary drinking-water source.

Looking ahead, most infrastructure systems are expected to remain functional for another 5 to 45 years, depending on utility-specific conditions. Many utilities are optimistic about maintaining dependable service for at least the next two decades—provided that planned investments proceed on schedule. However, aging assets present a growing challenge. According to statewide infrastructure assessments, more than

Half of Florida's water distribution systems are over 40 years old, and many treatment facilities approach or surpass 50 years in age. One of the most pressing concerns is water loss from leaks and system inaccuracies. Florida's regulatory guidance identifies "unaccounted for water" exceeding 10–12% of total finished water as inefficient, and several large utilities report losses near that range. For instance, Miami-Dade Water and Sewer Department reported a system-wide non-revenue water percentage of approximately 11% in its most recent system audit.

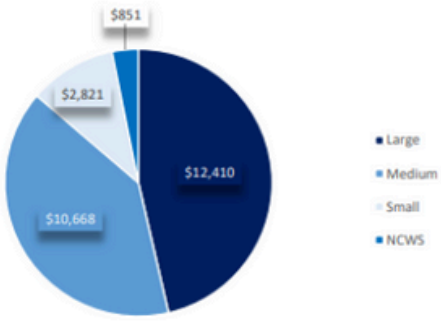
To combat these challenges, utilities are investing in leak detection, meter replacements, aquifer storage and recovery, desalination, and reclaimed water expansion. Long-term planning by the South Florida Water Management District and other state agencies support conservation, alternative water development, and major infrastructure projects. Ultimately, Florida's water security depends on sustained investment, innovative supply solutions, coordinated planning among utilities and state partners, and ongoing adjustments to rate structures to ensure infrastructure is financially sustainable.

EVERGLADES NATIONAL PARK
FLORIDA

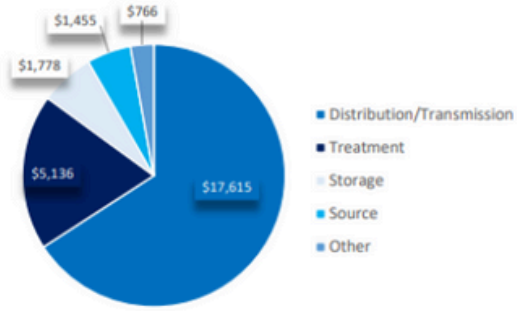
Drinking Water Infrastructure Needs Survey and Assessment 2023[1]

Florida

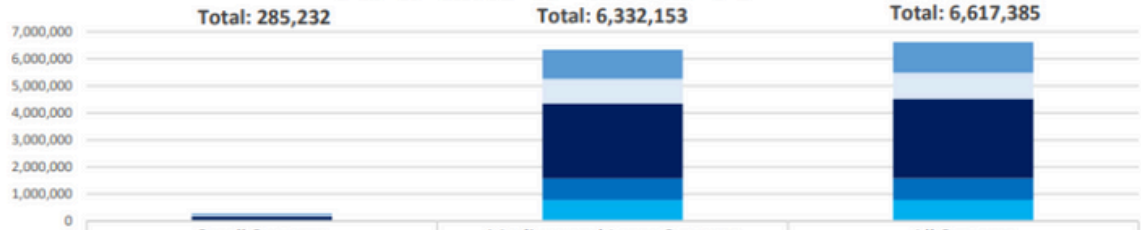
Florida Total Need by System Size (in millions; January 2021 dollars)



Florida Total Need by Project Category (in millions; January 2021 dollars)



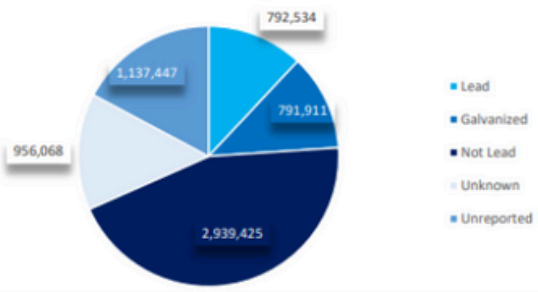
Florida Estimated Service Lines by System Size



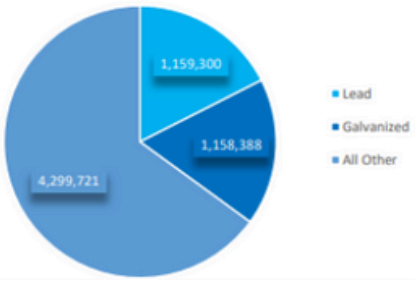
	Small Systems	Medium and Large Systems	All Systems
Unreported	58,050	1,079,397	1,137,447
Unknown	47,329	908,739	956,068
Not Lead	174,905	2,764,520	2,939,425
Galvanized	2,458	789,453	791,911
Lead	2,490	790,044	792,534

Lead Galvanized Not Lead Unknown Unreported

Florida Service Lines - Estimated from Survey Responses



Florida Projected Service Lines



1. *U.S. EPA*

Funding and Future Need

Florida faces a significant funding shortfall in its efforts to modernize drinking water infrastructure. At the state level, funding for public drinking water infrastructure is supported primarily through customer-paid utility rates (via enterprise funds), supplemented by the Drinking Water State Revolving Fund (DWSRF) low-interest loan program and state grant programs. Federal assessments show the state needs approximately $30.37 billion over the next two decades to upgrade essential systems for water collection, treatment, storage, and distribution. This figure thus significantly exceeds the earlier $22 billion estimate and illustrates a funding gap of billions beyond what current revenue and loan programs can cover. Moreover, according to Florida's revenue/expenditure profile for water supply, projected annual revenues of roughly $106 million versus projected expenditures of about $132 million imply a recurring annual shortfall of $22 million and cumulative multi-year gap. In response, Florida has directed substantial investments toward expanding and securing its water supply. State grant programs have supported initiatives such as reclaimed water reuse, aquifer recharge, and brackish water desalination to reduce pressure on freshwater sources and improve long-term resiliency. More than $5 billion has been committed statewide to water resource development.

At the federal level, Florida has received at least $361 million under the Infrastructure Investment and Jobs Act (IIJA) for water infrastructure upgrades via the DWSRF and CWSRF (Clean Water State Revolving Fund) for FY2024. Despite these investments, the rate-based system and federal/state loan programs are not sufficient to fully meet the projected infrastructure needs. Utility rates cover many operations and capital replacement, but the size of the 20-year need and the annual revenue-expenditure gap (tens of millions per year) indicate a structural funding shortfall. Average user rates and monthly bills show meaningful investment, though vary widely by locality. For example, the South Florida Water Management District 2023 Utility Rate Survey shows average combined monthly water and wastewater bills in their region at ~$68 for 4,000 gallons consumption. In the City of Hollywood, Florida, the average water-and-wastewater bill for a single-family residence (approx. 4,500 gallons/month) is $91.64 per month under the new rate schedule.

Regarding system design and operation, municipalities face issues of both aging infrastructure and potential over-design. While specific statewide data is limited, local grants, such as the $25 million awarded through the Local Government Water Supply Pilot Grant Program to upgrade older undersized mains and reduce water-loss in Northwest Florida, highlight operational cost concerns from legacy design and excess capacity. Capital spending on drinking water infrastructure in Florida has fluctuated in recent years but still lags the full long-term need. For example, expenditures by local governments for water supply by municipalities were $1,450 million in FY 2018-19 and forecasted at $1,302.65 million in FY 2024-25, reflecting modest activity but not sufficient to close the substantial infrastructure gap. This underscores the need for increased investment, asset management, and utilization of federal and state funding programs to ensure system reliability and public health protection.

Operation and Maintenance

Responsibility for preventative maintenance lies primarily with the water utility (municipal or regional public water system), though counties or municipalities may provide oversight or shared services support. Preventative maintenance for drinking water systems includes timely repair of treatment plants, pump stations, storage tanks and pressurized pipeline networks, as well as activities like valve exercising, hydrant checks, leak detection surveys and equipment servicing. When maintenance is reactionary rather than precautionary (i.e., performed only after failure or emergency), cost and risk escalate, and many utilities currently lack adequate personnel and equipment resources to schedule fully proactive maintenance across all assets.

As of 2025, regulatory updates and state data reveal that many Florida water utilities are inspecting less than 20% of their pipeline networks each year, with some inspecting fewer than 5%. Workforce challenges play a significant role in exacerbating these inspection shortfalls: the drinkingwater sector is facing difficulties recruiting, training and retaining qualified personnel, which reduces inspection capacity and maintenance oversight. Preventive maintenance also lags behind, as over a third of utilities report that more than 30% of scheduled maintenance work orders remain open for over a month. These challenges are compounded by financial inefficiencies, where unplanned, emergency maintenance spending often greatly exceeds planned upkeep, creating a reactive and unsustainable cycle that increases the risk of infrastructure failure. Much of this imbalance stems from aging infrastructure. Water mains are difficult to assess because they are under pressure. As a result, utilities typically rely on valve assessment programs and replacement decisions based on age, material, and breakhistory rather than full liveflow inspection of mains. In Florida, between 201617 and 202021, only approximately 1.6% of reported main length was replaced.

Florida's utilities should modernize their asset management strategies, prioritize planned maintenance, and invest in workforce training. Staff must be equipped to implement advanced inspection methods, manage digital infrastructure data, and apply predictive maintenance practices. Transitioning from reactive responses to proactive, data-driven maintenance will help Florida utilities strengthen system reliability, reduce service disruptions, and ensure long-term public health protection.

Public Safety

Florida continues to maintain a high standard of drinking water safety, consistently meeting both federal Safe Drinking Water Act (SDWA) requirements and state regulations. Most water utilities across the state report full compliance with established water quality standards, highlighting system-wide reliability and strong public health protections.

Lead service lines are a significant challenge in Florida. The latest federal infrastructure survey identifies Florida among the states with the highest estimated number of lead service lines (LSLs), meaning many homes may still be connected via lead or leadcontaining piping. According to the 7th Drinking Water Infrastructure Needs Survey & Assessment update, the U.S. estimates indicate Florida's leadserviceline burden is among the highest nationally. To address this, Florida's Florida Department of Environmental Protection (FDEP) now requires public water systems to submit detailed LSL inventories under the Lead and Copper Rule Revisions (LCRR) framework.

One of the most pressing emerging challenges is the presence of per- and polyfluoroalkyl substance (PFAS), which are synthetic chemicals known for their persistence in the environment and potential health impacts. In April 2024, the U.S. Environmental Protection Agency (EPA) finalized enforceable Maximum

Contaminant Levels (MCLs) for six PFAS compounds, requiring public water systems nationwide to begin monitoring by 2027 and take corrective actions within five years of identifying exceedances. Florida statute (Chapter 376.91, F.S.) had required the Florida Department of Environmental Protection (FDEP) to adopt statewide cleanup target levels for PFAS if the EPA had not finalized federal standards by January 2025. Because the federal MCLs were established, FDEP's obligation to adopt alternate state cleanup levels under the statute was not triggered. FDEP is proceeding with rulemaking to align state regulations with the federal PFAS MCLs and retains the authority to adopt more stringent standards if necessary.

Florida utilities are currently sampling for 29 PFAS compounds as part of the EPA's Unregulated Contaminant Monitoring Rule 5 (UCMR 5), which will inform future regulatory actions. In Florida, PFAS detections have been documented in both shallow groundwater systems and spring waters, raising concern for more vulnerable shallowaquifer systems, though the deeper Floridan Aquifer remains a key publicsupply source and is subject to investigation. Studies of Florida springs found PFAS in over 60% of samples. As such, FDEP and the Florida Department of Health coordinate responses to PFAS contamination of publicwell systems.

To support compliance, Florida is receiving over $87 million in federal funding through the IIJA, which provides supplemental appropriations via the Drinking Water State Revolving Fund (DWSRF) for leadserviceline replacement and emergingcontaminant programs, targeted to help small or disadvantaged systems upgrade treatment and distribution infrastructure. These funds also support testing and the installation of advanced treatment technologies such as granular activated carbon, ion exchange, and reverse osmosis.
State and county health departments continue to oversee drinking water safety in accordance with the SDWA, ensuring compliance, enforcement, and consumer notification processes. Florida's coordinated approach, including regulation, monitoring, infrastructure upgrades, and public engagement, positions the state to remain responsive to evolving water safety concerns and to safeguard the health of its growing population.

Resilience & Innovation

Florida continues to build a resilient water supply system by expanding the use of reclaimed water to reduce pressure on traditional freshwater sources. FDEP reports that nearly 900 million gallons per day (MGD) of reclaimed water are used for beneficial purposes such as residential and agricultural irrigation, golf course maintenance, and landscaping of public spaces. This significant reuse effort conserves potable water, aids in groundwater recharge, reduces discharges to surface waters, and increases the system's resilience during drought conditions.

Permitted capacity for reclaimed water in Florida has grown significantly, enhancing the reliability of the state's drinking water supply by providing additional redundancy during population growth, water quality challenges, or extended dry periods. Regional entities, such as the South Florida Water Management District, recognize reclaimed water as a key strategy to supplement potable water sources, help meet future demand, and defer the need for costly new infrastructure. By integrating reclaimed water into planning for potable supply augmentation, Florida utilities can strengthen system resilience and reduce pressure on traditional freshwater sources. Florida also enforces comprehensive regulatory measures to ensure the safe operation of reclaimed water systems. Chapter 62-610 of the Florida Administrative Code requires utilities to implement safeguards such as physical separation between potable and reclaimed lines, color-coded (purple) piping, and clearly posted signage. These cross-connection controls, administered by DEP, are designed to maintain public health protections while supporting the state's broader water reuse goals.

The state has also prioritized assessing and enhancing utility resilience to extreme weather, flooding and sea level rise: through the "Resilient Florida Program," Florida has targeted vulnerability assessments of critical infrastructure, including drinking water systems, and prioritized adaptation projects. Many local governments and utilities have completed vulnerability assessments as part of the grant funded Resilient Florida Program; flood and sea level rise impact studies have been carried out, and eligible entities may access adaptation funding to implement projects in drinking water supply and distribution systems. The state's drinking water revolving fund program aligns with disaster resilience: the Florida DWSRF Intended Use Plan includes funding priorities for backup power, redundant distribution components and SCADA improvements to bolster water system resilience in hurricane prone regions. Florida's strategic planning framework for drinking water includes asset management guidance: the 2023 triennial report notes that the state will encourage public water systems to develop asset management plans and train operators in implementing them.

Florida is recognized as a national leader in advancing reclaimed water technologies and strategically integrating them into long-term water planning. To support sustainable development and better manage limited water supplies, the state designates Water Resource Caution Areas (WRCAs): regions where existing or projected water demand may exceed available supplies over a 20-year planning horizon. These designations are established under Chapter 62-40 of the Florida Administrative Code and require utilities within WRCAs to evaluate the feasibility of reclaimed water as part of their infrastructure and supply strategies. Water management districts, such as the St. Johns River, Southwest Florida, and South Florida Water Management Districts, have identified extensive WRCAs throughout the state. For example, a significant portion of South Florida is classified as a WRCA due to expected long-term water constraints.

By prioritizing reclaimed water use in these regions, Florida effectively addresses water scarcity while encouraging innovation in system design, long-term planning, and collaborative efforts between public agencies and private utilities. The state's leadership in this area, supported through clear regulatory frameworks and state funding programs, reflects a forward-looking commitment to ensuring future water availability and resilience. In terms of water rights and utility contingency planning, Florida's potable water supply utilities generally operate under state and regional permits rather than a traditional upstream/downstream rights paradigm, utilities participate in long term planning through water management districts, and some cross jurisdictional contingency arrangements exist to share or transfer potable supply during emergencies.

Recommendations to Raise the Drinking Water Grade

To improve the condition, safety, and long-term sustainability of Florida's drinking water systems, a coordinated approach involving state agencies, utilities, and policymakers is essential. Based on current assessments and future projections, the following steps are recommended:

1. Prioritize Infrastructure Renewal and Asset Management

Aging pipes and treatment facilities—many exceeding 40 to 50 years in service—pose increasing risks to system reliability and public safety. Utilities should adopt proactive asset management programs supported by real-time monitoring, condition assessment technologies (e.g., acoustic sensors, AI-driven leak detection), and predictive maintenance models. Mandated condition inspections under FDEP rules should be expanded and funded statewide, and utilities should be incentivized to shift from reactive to preventive maintenance. Utilities should ensure rates are set to cover the full cost of service, including operating, maintenance, and capital needs, to sustain infrastructure improvements.

2. Expand Investment in Capital Improvements and Alternative Water Supplies

While significant progress has been made, Florida still faces $30.37 billion in drinking water infrastructure investment needs over the next two decades. The state should expand the use of revolving loan funds, increase bonding capacity for utilities, and maximize federal funding opportunities. Continued development of alternative sources, such as aquifer recharge, brackish desalination, and indirect potable reuse, will help diversify supplies and reduce dependency on stressed aquifers.

3. Modernize Small and Rural Systems

Rural communities often rely on small, decentralized systems that tap shallow, contamination-prone aquifers. The state should increase technical and financial support to modernize these systems, including well rehabilitation, consolidation with regional providers, or transition to deeper aquifer sources. Small system operators may also benefit from state-supported training programs focused on asset management, compliance, and emergency response.

4. Reduce Water Loss through System Auditing and Leak Detection

Unaccounted-for water from leaks and inaccurate metering remains a widespread issue. Utilities should be required to conduct annual water audits, using American Water Works Association (AWWA) methodologies, and implement system-wide leak detection programs. Funding should be made available through the Drinking Water State Revolving Fund to support these efforts, especially in high-loss or high-risk systems.

5. Enhance Resilience through Reuse and Redundancy

Florida's leadership in reclaimed water reuse should be expanded further through additional investment, regional interconnection of systems, and streamlined permitting in Water Resource Caution Areas. Reclaimed water increases system resilience by reducing demand on potable supplies, enhancing drought protection, and supporting groundwater recharge. The state should continue to strengthen WRCA enforcement and feasibility study requirements while aligning reuse infrastructure planning with population growth projections.

Recommendations to Raise the Drinking Water Grade

6. Address Emerging Contaminants Proactively

The regulation of PFAS and other contaminants of emerging concern requires continued investment in monitoring, testing, and treatment. Utilities must prepare for compliance with the EPA's 2024 PFAS drinking water standards by identifying impacted systems and upgrading treatment processes with technologies like granular activated carbon, ion exchange, or reverse osmosis. State agencies should offer planning grants, pilot project funding, and technical assistance, especially for small or disadvantaged systems.

7. Strengthen Workforce Capacity and Technical Training

Florida's water sector workforce faces increasing demands due to regulatory changes, system upgrades, and technology adoption. Expanding training programs in digital asset management, treatment operations, leak detection, and PFAS remediation will improve system performance and reduce long-term costs. Partnerships with technical colleges, workforce boards, and industry associations should be supported through state grants and utility collaboration.

8. Promote Integrated Water Supply Planning and Data Transparency

Utilities and water management districts should continue to align their long-range planning efforts under Florida's regional water supply frameworks. The development of integrated models that account for land use, climate risk, groundwater drawdown, and population growth will support better investment decisions. Making infrastructure condition, funding, and water loss data publicly available will also improve transparency and accountability. Broader federal funding programs, including drinking water and water infrastructure grants, should be leveraged to support these planning, monitoring, and improvement efforts.

Sources

- Florida Department of Environmental Protection, "Division of Water Resource Management," Florida Department of Environmental Protection, 2025.
- South Florida Water Management District, "Water Supply Planning," 2025.
- Miami-Dade Water and Sewer Department, "Capital Improvement Program," 2025.
- U.S. Environmental Protection Agency, "Drinking Water Infrastructure Needs Survey and Assessment," 2023.
- U.S. Environmental Protection Agency, "Bipartisan Infrastructure Law Funding," 2022.
- Florida Department of Environmental Protection, "Office of Water Policy and Ecosystems Restoration," 2025.
- Florida Department of Environmental Protection, "Water Resource Funding," 2025.
- Florida Department of Environmental Protection, "State Water Use Projections," 2025.
- Florida Department of Environmental Protection, "Rule 62-600.705: Collection System Action Plans," 2023.
- Florida Department of Environmental Protection, "Wastewater Facility Regulation," 2023.
- Florida Department of Environmental Protection, "Asset Management Guidance for Utilities," 2024.
- U.S. Environmental Protection Agency, "National Primary Drinking Water Regulation: PFAS," 2024.
- U.S. Environmental Protection Agency, "Unregulated Contaminant Monitoring Rule 5 (UCMR 5)," 2023.
- Florida Department of Environmental Protection, "Per- and Polyfluoroalkyl Substances (PFAS)," 2024.
- Florida Department of Health, "Public Drinking Water Systems," 2024.
- U.S. Environmental Protection Agency, "Bipartisan Infrastructure Law - PFAS Funding for Drinking Water," 2022.
- Florida Department of Environmental Protection, "Water Reuse Program," 2024.
- South Florida Water Management District, "Water Supply Planning," 2025.
- Florida Administrative Code, "Chapter 62-610: Reuse of Reclaimed Water and Land Application," 2025.
- Florida Department of Environmental Protection, "Water Resource Caution Areas," 2024.
- South Florida Water Management District, "Water Supply Planning," 2025.
- Florida Administrative Code, "Chapter 62-40: Water Resource Implementation Rule," 2025.

Sources

- Florida Department of Environmental Protection, "Alternative Water Supply," 2025.
- Florida Department of Environmental Protection, "Florida's Strategy to Improve Public Water Supply," 2020.
- City of Tampa, "Pipes Program: Progressive Infrastructure Plan to Ensure Sustainability," 2023.
- Florida Department of Health, "Private Well Testing," 2025.
- Office of Economic & Demographic Research / Florida Department of Environmental Protection, "Annual Assessment of Florida's Water Resources – Infrastructure Investments," 2024.
- Florida Department of Environmental Protection, "Water Conservation," 2025.
- Miami-Dade Water and Sewer Department, "Comprehensive Annual Financial Report," 2024.
- South Florida Water Management District, "Water Supply Plan Update," 2024.
- Florida Department of Environmental Protection, "State Revolving Fund | Florida Department of Environmental Protection," 2025.
- Office of Economic & Demographic Research, "Annual Assessment of Florida's Water Resources – Infrastructure Investments," 2024.
- Econ & Demographic Research, "Florida's Expenditures and Revenues Related to Water Supply and Water Quality," 2023.
- Florida Department of Environmental Protection, "Action on Water Quality," 2024.
- U.S. Environmental Protection Agency, "Biden-Harris Administration announces over $361 million in funding for Florida drinking water, wastewater and stormwater infrastructure upgrades," 2024.
- South Florida Water Management District, "2023 Annual Utility Rate Survey," 2023.
- City of Hollywood, "Rates | Hollywood, FL – Official Website," 2025.
- Econ & Demographic Research, "Expenditures and Revenues Related to Water Supply…," 2023.
- U.S. Environmental Protection Agency, "Water Infrastructure Sector Workforce," 2025.
- Florida Office of Economic & Demographic Research, "Annual Assessment of Florida's Water Resources," Chapter 5, 2024.
- U.S. Environmental Protection Agency, "Drinking Water Infrastructure Needs: Background and Issues," 2023
- Florida Department of Environmental Protection, "DEP Awards $25 Million to Strengthen Water Supply Infrastructure in Northwest Florida," 2025.
- U.S. Environmental Protection Agency, "Drinking Water Infrastructure Needs Survey and Assessment," 2023.
- Florida Department of Environmental Protection, "Lead Service Line Inventory," 2024.
- EPA, "Unregulated Contaminant Monitoring Rule 5 (UCMR 5)," 2023.
- Holden et al., "PFAS in Florida Springs," 2024.
- Florida Department of Environmental Protection, "PFAS Dynamic Plan," 2022.
- Congressional Research Service, "Infrastructure Investment and Jobs Act: Drinking Water and Wastewater Infrastructure Provisions," 2022.
- EPA, "Water Infrastructure Investments: Infrastructure Investment and Jobs Act Resources," 2025.
- U.S. Environmental Protection Agency, "Per and Polyfluoroalkyl Substances (PFAS)," 2024.
- Florida Senate, "2024 Florida Statutes: Chapter 376 Section 91," 2024.
- Florida Department of Environmental Protection, "Resilient Florida Annual Plan FY 202526," 2025.
- Florida Department of Environmental Protection, "Resilient Florida Grants," 2025.
- Florida Department of Environmental Protection, "Drinking Water State Revolving Fund Intended Use Plan 2025," 2025.
- Florida Department of Environmental Protection, "Florida's Strategy to Improve Public Water Supply," 2023.
- Florida Department of Environmental Protection, "Water Resource Funding in Florida," 2022.

B-

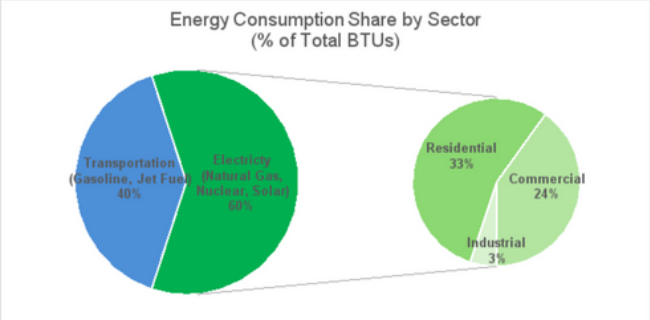
Florida's Infrastructure

ENERGY

EXECUTIVE SUMMARY

Florida ranks third nationally in total energy consumption, behind Texas and California, and is the second-largest producer of electricity after Texas. Florida is the third largest national consumer of gasoline and jet fuel. Given Florida's subtropical climate, 55% of electrical energy sales are attributed to residential air conditioning – the largest share of any state. Florida has the sixth lowest total energy consumption per capita and the fourth lowest electric energy consumption per capita in the nation. Florida generates electrical energy more efficiently than the rate of its annual residential and tourism population growth while becoming less reliant on electric energy imports. Nearly three-fourths of in-state electric power generation is supplied by natural gas-fueled turbine generators. By 2033, natural gas consumption for electrical power generation is projected to decrease to 54%, nuclear is projected to remain steady at 10%, and renewables, primarily led by solar, are projected to fuel nearly 31% of electrical power generation.

Florida Energy Consumption by Sector and Fuel Source (2022)



Florida Electrical Energy Generation Fuel Sources Historical and Forecast (2014-2023)

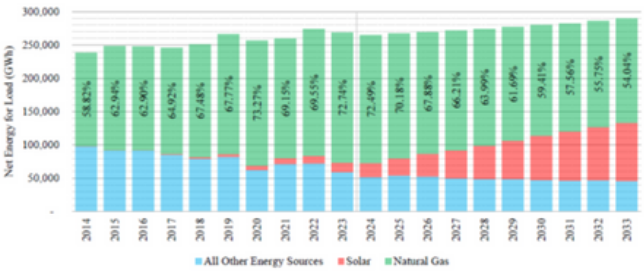


Figure 2 illustrates the historical, current and forecast fuel source diversifications for electrical energy generation in Florida. At present, nearly three-fourths of in-state electric power generation is supplied by turbine generators fueled by natural gas, which is imported and supplied from four interstate pipelines. The remaining 12% electricity generation is fueled by uranium fission (nuclear), 10% from solar, and 3% from coal.

By 2033, natural gas consumption for electrical power generation is projected to decrease to 54% and nuclear is projected to remain steady at 10% to 11% for the same timeframe. Renewables, primarily led by solar, is projected to fuel nearly 31% of electrical power generation in 2033.

Renewable energy facilities provide approximately 11,470 megawatts (MW) of electric power generation capacity, of which 10,000 MW (84%) is solar. Of the 11,470 MW of renewable generation, 3,937 MW are considered to be firm renewable generation, guaranteed to meet demand, that can be relied on to serve customers and contribute to the deferral of new fossil fuel power. Utility-owned solar capacity is approximately 7,254 MW, of which 3,628 MW is considered firm. Florida requires investor-owned utilities to offer net metering to allow customers with renewable generation capacity to offset their energy usage. In 2008, at the inception of Florida's net metering requirement, customer-owned renewable generation accounted for only 3 MW of capacity. In 2023, approximately 2,351 MW, or 21% of existing renewable capacity, is from customer-owned demand-side renewable systems.

Condition & Capacity

Electrical Energy Generation and Supply

Ranked 45th nationally, Florida has among the lowest, and most efficient, electric energy consumption per capita rate. Although Florida's residential and tourism populations are growing at a higher rate than its electrical energy generation, Florida has become less reliant on electric energy imports and is, therefore, growing more efficient with electrical energy consumption per capita:

- Florida's in-state generation has consistently increased since 1990. In 2023, Florida imported less than 3% of its electricity, whereas, in 1990, over 18% of total electricity energy supply was imported from other states.
- From 2013 to 2024, Florida's residential population increased from 19,300,000 people to 23,372,200 people, which represents an annual growth rate of 1.6%. Visitors to Florida increased from 95 million in 2013 to 142.9 million in 2024. The combined residential population and visitors increased at an average annualized rate of 3.4% whereas total electric generation increased at an average annual rate of 0.95% over the same time frame.

Transportation Sector

Florida's population, automobile registrations and travel, and gasoline availability continue to increase year over year. Light-duty vehicle ownership was 17,135,700 registered vehicles in 2023, which has increased at a rate of 1.79% since 2016. Annual average daily traffic (AADT) across all public roads in Florida has increased 2.37% per year from 1990 to 2023. Florida is home to a reported 10,553 retail gasoline stations in 2024, or 5.4% of the national total, which is up from 9,037 stations in 2012.

Florida ranks second out of all states, behind California, with the most electric light-duty vehicles at 294,500 registered electric vehicles (EVs), of which 57,300 are plug-in hybrid electric vehicles (PHEVs).8 Florida's EV share of all light-duty vehicles is 1.7%, which is equal to the overall national average. EV registrations have grown at an average annual rate of 46% from 2016 to 2023. In addition to registrations, Florida has 414,500 hybrid electric vehicles, which combine both gasoline combustion engines with supplemental battery electric power.

As of 2025, Florida has over 4,200 EV charging stations with a total of over 14,000 EV charging ports. Of these, approximately 1,100 EV charging ports are for private use for employees or commercial fleets while the remaining ports are for public use. Of the total EV charging stations, 82% are Level 2, and 18% are Direct Current Fast Chargers (DCFC). Generally, Level 2 chargers yield a full charge after two hours and are suited for short range commuting and inter-regional travel. DCFC chargers can yield about 30-minute charging speeds and are more conducive to long-range inter-regional or evacuation travel.

Operation & Maintenance

Electric power is generated and supplied by 57 electric utilities throughout the state, including four investor-owned electric utilities, 35 municipal electric utilities, and 18 rural electric cooperatives. Since 1974, the Florida Public Service Commission (PSC) has regulated investor-owned electric utilities and overseen rate structures for municipal and rural cooperatives. State law requires major utilities to submit Ten-Year Site Plans to the PSC every two years for non-binding review. In 2024, 10 utilities—representing 78.2% of statewide retail energy sales—filed such plans. The PSC also collects and analyzes electricity and natural gas forecasts, providing a framework for adaptive, cost-effective resource planning.

From the power plants, electricity is transmitted to substations and then distributed to residential and commercial customers. Combined, the two largest electric utilities, Duke Energy and Florida Power & Light (FPL) Duke Energy operates 11,700 miles of transmission lines, 61,000 miles of overhead distribution lines, 2.2M distribution poles, and 38,000 miles of underground distribution cable.

Florida Statutes Section 366.96 requires investor-owned electric utilities to file a Storm Protection Plan (SPP) every three years outlining a 10-year forecast. The SPP details strategies to reduce outage times and restoration costs from extreme weather events. The Florida Public Service Commission holds annual hearings to review projected and actual costs and set storm protection recovery rates (PPCRC) for customers. In 2023, the investor-owned utilities' collective actual storm protection plan (SPP)costs were $2,276.5M (compared to $2,201.8M estimated). The collective annual estimated SPP costs for 2024 are $2,539.7M. Examples of SPP projects are transmission and distribution inspections, vegetation management, substation storm surge and flood mitigation, and hardening of transmission and distribution laterals and feeder structures.

Petroleum and Natural Gas

No pipelines transport gasoline, diesel, or jet fuels into Florida, which is unlike many states. Florida's ports are critical to the import and distribution of gasoline, diesel, and jet fuel for transportation sector energy. Approximately half of Florida's gasoline supply enters through Port Tampa Bay via waterborne vessels from the US Gulf Coast. The rest of the gasoline is imported through Port Everglades, JaxPort, and Port Canaveral. From the storage terminals at these ports, gasoline is distributed to local markets via tanker trucks.

Despite drilling for a minimal amount of oil and natural gas, Florida has no crude oil refineries, interstate crude oil pipelines, or petroleum product pipelines. Florida receives virtually all natural gas via four interstate pipelines from Alabama and Georgia. With a combined pipeline capacity of 2,423 billion cubic feet per year, Florida consumes 1,635 billion cubic feet of natural gas annually. The electric power sector uses about 87% of the natural gas imports, while the industrial sector uses 8%, the commercial uses 4%, and the residential sector uses 1% of natural gas imports. A very small amount of natural gas is used as vehicle fuel.

There are 1,474 permitted oil and gas wells in Florida. While most of the wells are plugged and abandoned or have never been drilled, 165 oil and gas wells were active in 2024. Permitted wells are located throughout the state with 64 of 67 Florida counties containing at least one permitted oil and gas well, but the majority are in Santa Rosa and Collier Counties. Statewide production in 2024 was 877,885 barrels (Bbls) oil and 10,524,271 million cubic feet (MCF) natural gas. Most natural gas production is in Northwest Florida and is reinjected into the oil zones to maintain reservoir pressures. Annual crude oil production peaked at 48M Bbls in 1978 but has declined since then, and annual production has been less than 3M Bbls since 2004. Florida currently has a state ban on drilling in the Atlantic and Gulf state waters. In 2025, Governor DeSantis signed HB1143 that prohibits drilling within 10 miles of the Apalachicola National Estuarine Research Reserve.

Funding & Future Need

Electricity Costs and Peak Generation Shifts

Florida is the 3rd most populous state in the nation with an estimated residential population of 23.4M, expected to grow to 27.2M by 2045. In addition, Florida's tourism industry adds 142.9M visitors with 200M projected by 2030. The cost of residential electricity in Florida is 14.98 cents/kWh, which is about 9% lower than the national average of 16.44 cents/kWh. An important factor in providing both reliable and affordable electric energy for a growing population is by using diverse, cost efficient, and readily available fuel sources.

Florida is projected to generate more electricity from solar and less from natural gas. Because solar output depends on daylight and weather, its variability poses challenges for grid resilience. Solar generation peaks around 1 PM, while system demand peaks at 5 PM—when solar output drops to 69% of its maximum, and to 52% by 6 PM. To balance this mismatch, energy storage (i.e. battery) and demand-side management will be essential.

Data Center Energy Demand

Florida hosts 120 data centers with expectations to grow at an annual rate of 17.1%. Florida is ranked fifth nationally in the number of data centers, after Virginia, Texas, California, and New York. At present, Florida has substantially available "offtake capacity," which is the authorized amount of power that can be drawn from an electrical grid for use in data centers and other large industrial projects. Leading Florida data center markets include Miami-Dade County, Hillsborough County, Orange County, Duval County, and Broward County. With the forecast growth in data centers, it will be important that Florida can generate and supply the necessary electrical energy to sustain the data center expansion and the other sectors of Florida's economy.

Petroleum Import and Storage Expansion

Florida's Ports are investing in improvements to increasingly supply the growing gasoline demands beyond the current daily import rate of 700,000 barrels per day. Among Port Tampa Bay's Vision 2030 strategies are to provide deep draft access and enhanced petroleum distribution infrastructure to regional energy providers. Port Everglades expansions allow larger petroleum vessels and improved petroleum offloading and transfer facilities.

EV Infrastructure Accessibility

Florida Statute 339.287 required the Florida Department of Transportation to coordinate, develop and recommend a Master Plan for the development of EV charging station infrastructure along the State Highway System (SHS). The Federal Highway Administration (FHWA) also approved Florida's Electric Vehicle Infrastructure Deployment Plan, a requirement of the National Electric Vehicle Infrastructure (NEVI) Formula Program. These plans will facilitate further development of EV charging infrastructure and facilitate annual allocation of NEVI formula funds. The FDOT's EV Infrastructure Master Plan aims to add 29,000 charging stations to support 700,000 EVs by 2030, which will facilitate EV transportation beyond local and inter-regional travel patterns.

Although most EV drivers charge their vehicles overnight at home, public and workplace charging stations can increase the daily useful range of all-electric vehicles and reduce the amount of gasoline consumed by PHEVs. EV charging is relatively efficient for single-family home residents. However, multifamily housing owners face unique considerations when installing charging stations, ranging from parking and electrical service access to billing and legal concerns.

Resilience & Public Safety

Electrical Energy Reliability

Based on a review of power reliability indices, from 2013 to 2023, the average duration of power interruptions rose by 29% per year, while restoration times increased by about 26% annually. Although there is a high degree of variance in the reliability indices from year to year due to the variance in the occurrence of major storm events, the data suggests that Florida is experiencing increasing storm-related outage durations and longer restoration durations on average, in addition to the ever-present potential for significant outages in any given year.

Not including major tropical storm events, Florida has fewer interruptions per customer and shorter outage durations per customer than the national average, as measured by SAIFI and SAIDI:

- The System Average Interruption Frequency Index (SAIFI) denotes the number of sustained interruptions experienced by a customer over time period (e.g., one year). In 2013, Florida's SAIFI was 1.017 interruptions per customer; in 2023, the SAIFI was 0.823, which represents a 1.59% average annual reduction. On a national basis, SAIFI has increased – or worsened - at an annual rate of 0.070% from 2013 to 2023.
- The System Average Interruption Duration Index (SAIDI) was 69.2 minutes of energy disruption per customer; since 2013, Florida's SAIDI has improved with an average annual SAIDI reduction of 1.09 percent. On a national basis, SAIDI has worsened, or increased at an average annual rate of 1.71% between 2013 and 2023.

While Floridians are experiencing fewer non-storm interruptions and for shorter outage durations since 2013, it is also taking slightly longer to have electrical energy restored:

- The Customer Average Interruption Duration Index (CAIDI) denotes the average time needed to restore interruptions. In 2023, the Florida CAIDI was 84.1 minutes require to restore a service interruption. Since 2013, CAIDI has increased at a rate of 0.51% annually from a value of 76.4 minutes per interruption in 2013.

Accounting for major events, such as tropical storms, all three reliability indices have increased on an average annual basis between 2013 and 2023, with certain years having significant spikes due to major storm events. Florida is experiencing increasing storm-related outage durations and longer restoration durations on average, in addition to the ever-present potential for significant outages in any given year.

Resilience: From Vegetation Management to Smart Grids

Florida's largest electric utilities, Duke Energy and FPL, have both deployed self-healing and smart grid technologies. For instance, 74% percent of Duke Energy customers are on automated meters, enabling real-time monitoring, faster outage response, and more efficient grid management, and 49% are on self-healing grids, which are a distribution automation system that uses technology to quickly detect, isolate, and restore power after a fault or outage. Duke Energy expects to have all customers on automated meters and 80% on self-healing grids by 2026.

Both major utilities engage in vegetation management and pole/tower inspections. Combined, they review and trim approximately 20,000 miles of distribution lines annually, and distribution poles are inspected on an 8-year cycle while steel/concrete and lattice tower transmission structures are inspected on 6-year cycles.

Petroleum Supply Chain Resilience

Tropical storms can impact the gasoline and petroleum supply chain into Florida. Vessel traffic, port operations, and over-the-road tanker distribution can all be disrupted during major storm events. The ability to quickly restore fuel supply depends on a partnership of the port authorities, maritime industry, US Coast Guard, US Army Corps of Engineers, National Oceanic and Atmospheric Administration (NOAA), and Florida law

enforcement. For instance, as Hurricane Milton made landfall in 2024, tanker vessels and articulated tug barges were in prepositioned formations to be ready to deliver once ports reopened or to navigate to alternate ports if needed. Florida organized local law enforcement to facilitate safe and efficient delivery of fuel from ports to fueling stations. US Army Corps of Engineers Hydrographic Survey crews surveyed the waterways to allow the US Coast to restore navigation channels.

Pipeline Safety

According to the US Pipeline and Hazardous Materials Safety Administration (PHMSA), Florida has 54,908 miles of gas pipelines. Of this system, the interstate and intrastate natural gas transmission pipelines that supply electrical power generation comprise 5,653 miles (10%) of the total system. Most of the pipelines are used for distribution to natural gas utilities that serve residential, commercial and industrial customers. In 2023, the FPSC recorded 26 reportable incidents with none involving injury or fatality. Of these incidents, 24 (92%) were the result of excavation dig-ins.

Innovation

Electrical Energy Storage

Florida's major electric utilities are developing battery storage systems to store energy from intermittent renewables like solar and then release it when electricity demand is high. Until 2018, Florida had no reported battery storage. As of 2023, Florida ranked fourth nationally with 5,400 MW of battery storage capacity.

The Solar Energy Generation and Battery Storage Concept

Notable projects include Duke Energy's 5-MW sodium-sulfur battery in Suwannee County, three lithium-ion sites in Highlands, Gilchrist, and Gulf Counties, and a 3.5-MW solar-plus-storage microgrid at John Hopkins Middle School. Florida Power & Light (FPL) operates the world's largest integrated solar-powered battery system in Parrish—a 409-MW, 900-MWh facility spanning 30 football fields, capable of powering Disney World for seven hours. FPL also operates a 3-MW battery at Florida International University, a microgrid at Tyndall Air Force Base combining solar and storage, and a Wynwood battery site in Miami that can supply 7,000 homes for four hours.

Advanced Nuclear Power

Chapter 2024-186, Section 21, Laws of Florida, requires the Florida Public Service Commission (FPSC or Commission) to prepare a report on the potential use of nuclear power technologies in the State of Florida. On March 31, 2025, the Florida Public Service Commission approved and published the Advanced Nuclear Power Feasibility Report containing findings and recommendations for potential legislative or administrative actions to enhance the use of advanced nuclear technologies, such as small modular reactors (SMRs) in order to continue to meet the power needs of the state. The PSC recommended that Florida commission a broader study on advanced nuclear energy's impacts on electricity needs, economic development, and workforce growth; allow cost recovery for early project evaluation expenses; expand public education on nuclear safety to build confidence; and pursue additional initiatives once costs and benefits become clearer.

The Florida Legislature has acted in the past to encourage the construction of new nuclear generation in the state. In 2006, the Legislature enacted Section 366.93, Florida Statutes (F.S.), creating an alternative cost recovery mechanism for new nuclear construction. The Legislature also amended Section 403.519, F.S., to exempt new nuclear power plants from the requirement to conduct a bidding process for alternative means to meet the need for additional generation, prior to requesting a determination of need from the Commission.


BABCOCK RANCH, FLORIDA

B-

Recommendations to Raise the Energy Grade

- Continued implementation of current state statutes, the FDOT's EV Infrastructure Master Plan, and local ordinances that incentive and expand the use of EVs. The transportation sector is heavily reliant on gasoline as an energy source. While the ports have responded to increasing petroleum import demands, the diversification to more EVs, including access to charging infrastructure, could help to lessen gasoline demands and distribution issues from a statewide perspective during major storm events.
- Florida is forecast to be more reliant on solar; peak solar power generation times differ from peak electric power consumption times. Therefore, to sustain reliable electric power generation, the Florida Public Services Commission should closely monitor and forecast peaking times for electricity demand versus generation.
- Further development of large-scale electricity storage and microgrids as an alternative to supplementing solar power generation during peak consumption times.
- Follow the recommendations of the Advanced Nuclear Power Feasibility Report by the Florida Public Service Commission (March 31, 2025), which addresses the potential use of advanced nuclear power technologies in Florida, such as Small Modular Reactors (SMRs) to assure continued, reliable energy supply.
- While Florida's electrical energy consumption per capita is among the most efficient in the nation, Florida's energy consumption is used primarily for air conditioning. Florida's building codes should consider best practices and advancements in residential and commercial building construction materials and designs.
- With the forecast growth of large data centers, it will be important to monitor electrical energy demand so as to maintain efficient generation and distribution, and not to the detriment of other consumers.

Sources

- US Energy Information Administration , "Florida State Energy Profile," May 15, 2025.
- US Energy Information Administration, Department of Energy, "Electricity Data Browser," 2024.
- US Energy Information Administration, "Electric Light-Duty Vehicles Overview, 2016-2022," June 28, 2024.
- US Energy Information Administration , Table F39: Electric light-duty vehicles overview, 2023," 2023.
- Florida Department of Transportation, "Summary-since-1991.xls Reports of Highway Mileage and Travel (DVMT) Summary Since 1991,"
- Florida Department of Transportation, "Public_2023,xlsx, Annual Reports, Report of Highway Mileage and Travel (DVMT)."
- xMap, "Florida Gas Station Data: Geospatial Insights for Business," March 26, 2024.
- US Department of Energy Alternative Fuels Data Center, "Public Retail Gasoline Stations by State and Year, July 8, 2014.
- Alternative Fuels Data Center, US Department of Energy, "Vehicles Registered in 2023, Florida Transportation Data for Alternative Fuels and Vehicles," 2024,.
- Alternative Fuels Data Center, US Department of Energy, "Alternative Fueling Station Locator,".
- US Energy Information Administration, Department of Energy, "Table 10 Supply and disposition of electricity, 1990 through 2022, Full data tables 1-17, Florida Electricity Profile 2023," November 6, 2024.
- US Energy Information Administration, Department of Energy, "Electricity Data Browser," 2024.
- Florida Public Service Commission, "Duke Energy Presentation at Hurricane Preparation Workshop," 2024.
- Florida Power & Light, "Underground Conversions Frequently Asked Questions," 2025
- Florida Power & Light, "Improving Our Systems, Ensuring Reliable Service,"2025.
- Florida Public Service Commission, "Review of the 2024 Ten-Year Site Plans of Florida's Electric Utilities," December 2024.
- Florida Public Service Commission, "Statistics of the Florida Electric Utility Industry," October 2024.
- Florida Public Services Commission, "Annual Status Report of Storm Protection Plan Activities of Florida Investor-Owned Utilities," November 2024.
- Argus, "Florida ports, fuel supplies, begin recovery: Update 2," October 10., 2024.
- Oil and Gas Program, Florida Department of Environmental Protection, "Oil and Gas Permit Database," March 12, 2025.
- Oil and Gas Program, Florida Department of Environmental Protection, "State Production Data 2000 to Current," April 18, 2025.
- WUSF, "How does fuel get to Florida? It's a challenge, shipping CEO says," October 14, 2024.
- Port Tampa Bay, "Port Tampa Bay Vision 2030 Executive Summary," December 2016.
- Port Everglades, "Navigating the Future: Port Everglades 20-Year Master/Vision Plan," 2018.
- Port Everglades, "Slip 1 Expansion Project," 2025

Sources

- Florida Department of Transportation, "EV Infrastructure Master Plan," July 2021.
- Florida Department of Transportation, "Electric Vehicle Infrastructure Deployment Plan (EVIDP)," January 16, 2025.
- QMERIT, "Learn About Florida Electric Vehicle Laws for EV Charging and More," March 27, 2024.
- Alternative Fuels Data Center, US Department of Energy, "Charging Electric Vehicles at Home," 2025.
- Alternative Fuels Data Center, US Department of Energy, "Electric Vehicle Charging for Multifamily Housing," 2025.
- Florida Department of Agriculture and Consumer Services, "2023 Office of Energy Annual Report," 2023.
- Florida Products, Office of Economic & Demographic Research, "Projections of Florida Population by County, 2025-2050 with 2023 Estimates," December 19, 2024.
- FloridaCommerce (Florida Department of Commerce), "ICYMI: Record Broken Again: Florida Announces the Highest Tourism Numbers in State History in 2024," February 12, 2025.
- The Florida Legislature Office of Economic and Demographic Research, "Florida: An Economic Overview," August 19, 2024.
- LandGate Corp, "Florida Data Center Analysis," December 19, 2024.
- US Energy Information Administration, Department of Energy, "Table 17 Reliability from 2013 to 2023, Full Data Tables 1-17, Florida Electricity Profile 2023," November 6, 2024.
- American Maritime Voices, "How the Jones Act Fleet Powered Florida's Fuel Recovery After Hurricane Milton,"
- US Army Corps of Engineers, "USACE helps restore navigation channels after Hurricane Milton," October 12, 2024.
- Pipeline and Hazardous Materials Safety Administration, "Pipeline Miles and Facilities 2010+," 2024.
- Florida Public Service Commission, "Natural Gas Pipeline Annual Safety Report," 2023.
- Qmerit, "A Comprehensive Guide to Florida EV Incentives, Tax Credits & Rebates," May 16, 2025.
- City of Orlando, "EV Readiness Code Requirements Overview," January 31, 2023.
- Miami-Dade County, "Miami-Dade Legislative Item File Number 190029 Electric Vehicle Infrastructure Requirements," January 7, 2019.
- The Invading Sea, "5 surprising facts about renewable energy growth in Florida," October 28, 2024.
- Duke Energy, "Duke Energy tests next-gen energy storage at historic Suwannee site," May 20, 2025.
- Duke Energy, "Duke Energy Florida's innovative battery storage projects provide customer, grid benefits," March 10, 2022.
- Next Era Energy, "FPL begins construction of world's largest integrated solar-powered battery system," January 29, 2021.
- Florida Power & Light, "Battery Storage," 2025.
- Florida Public Service Commission, "Advanced Nuclear Power Feasibility Report," March 31, 2025.
- Florida Public Service Commission, "PSC Delivers Advanced Nuclear Power Feasibility Report to the Florida Governor and Legislature," March 31, 2025.

D+

Florida's Infrastructure

LEVEES

EXECUTIVE SUMMARY

Florida's levee infrastructure, measuring over 1,050 miles in length, is crucial for safeguarding millions of residents, billions of dollars in property, and vital agricultural and environmental resources. The majority are earthen embankments overseen by regional water management agencies, but many levees are overseen by private owners, and some may exist outside of current data. Levees in the state average 51 years old, and many were not built to meet modern standards for storm surge and sea-level rise. As flood risks increase due to climate change, patchwork oversight, uneven maintenance practices, and absence of a dedicated state funding source continue to expose communities to long-term risk. Critical steps are needed to raise Florida's levees grade and protect its growing communities.

Background

Florida's extensive network of levees provides vital flood protection for millions of residents, major economic assets, and large areas of agricultural and environmentally sensitive land. According to the U.S. Army Corps of Engineers' (USACE) National Levee Database (NLD), there are over 90 levee systems in Florida spanning nearly 1,050 miles. The actual inventory is much larger due to the presence of non-federal levees that are not fully cataloged in the NLD.

Levees in Florida include a combination of earthen embankments, concrete floodwalls, and water control and conveyance structures. Most systems were originally constructed by the USACE and later transferred to local agencies for operations and maintenance. Nearly 80% of Florida's known levees were federally constructed and are now operated and maintained by the state's five regional water management districts. Among them, the South Florida Water Management District (SFWMD) manages the largest share, overseeing more than 720 miles of levees across the state, according to the current NLD.

Florida's levee infrastructure plays a critical role in reducing the impacts of hurricanes, storm surges, and seasonal flooding (typically coinciding with hurricane season from June through November), protecting lives and billions of dollars in property value across the state. As population growth and land development continue in flood-prone areas, the performance and reliability of the state's levees will become increasingly important.

Condition and Capacity

Levees in Florida are primarily constructed as earthen embankments, while some systems also incorporate floodwalls and closure systems. These levees serve to reduce flood risks from rivers, canals, and storm surge, especially in the state's low-lying, densely populated regions. The average age of Florida's known levees is 51 years, based on available NLD construction dates. Many of these systems were not designed to meet today's standards for sea-level rise, storm surge protection, or increasing downstream development.

Many of Florida's known levee systems have undergone various levels of inspection and assessment, but publicly available information remains sparse. The 2021 ASCE Florida Report Card noted that 70% of levee inspections conducted at that time yielded an "unacceptable" rating, meaning the levee had one or more serious deficiencies that could prevent it from performing as intended during a flood event. However, more recent condition data for this 2025 Report Card is not comprehensively available at the state level through the NLD, making it difficult to determine whether these past condition assessments continue to remain accurate.

The 2021 ASCE Report Card estimated that 40% of Florida's levees had formal risk assessments, but new NLD data lacks a comprehensive state summary to update this figure. Publicly available segment-level records show that approximately 92% of the levees in Florida have received Levee Safety Action Classification (LSAC) ratings, with many rated as low risk, but a comprehensive understanding of the assessed systems remains unclear due to the absence of aggregated, up-to-date statewide data.

According to the USACE Levee Safety Program, risk classification is divided into five categories:

- Very High Risk: Levee systems with high likelihood of failure and high consequences to life safety, property, or the environment.
- High Risk: Levee systems with moderate to high likelihood of failure and significant consequences.
- Moderate Risk: Levee systems with moderate failure likelihood and/or moderate consequences.
- Low Risk: Levee systems with low likelihood of failure and low consequences. This classification does not imply the levee meets any particular design standard.
- Unknown/Undetermined Risk: Levee systems for which sufficient data does not exist to assign a risk classification.

These categories capture the full range of risk, from systems with known performance issues and high populations at risk to those with smaller populations and fewer known concerns. High and very high risk levees are typically prioritized for further action, while low risk levees generally protect less populated areas and have fewer documented vulnerabilities.

D+

LEVEES

Components of Risk Evaluated for Levees[1]

Operation & Maintenance

Florida's levee infrastructure is operated by a mix of public and private entities. Approximately 80% of Florida's known levees were originally built by the USACE and are maintained today by the regional water management districts. Of Florida's five water management districts, the SFWMD is responsible for the vast majority, managing significant flood control projects which include hundreds of miles of levees, berms, culverts, pump stations, and water control structures.

SFWMD oversees flood control operations within 16 counties in central and south Florida. While specific operation and maintenance details for levees are not separately quantified, its overall budget reflects substantial investment in regional flood infrastructure. In fiscal year (FY) 2022, SFWMD allocated over $234 million for the maintenance and upgrades of its regional flood control infrastructure, including levees, canals, control structures, culverts, and pump stations, with $56 million specifically set aside for refurbishment work. For FY2024, SFWMD's adopted budget significantly increased to approximately $1.23 billion, supporting flood protection, ecosystem restoration, and water supply efforts. Over 92% of the FY2025 budget is allocated toward ecosystem restoration and water quality projects, in addition to operations, maintenance, and upgrades to critical flood control infrastructure.

The St. Johns River Water Management District (SJRWMD), which operates the second largest levee network in Florida, manages approximately 115 miles of levees, along with 12 major and 76 minor water control structures in the Upper St. Johns and Ocklawaha River basins. SJRWMD's FY2025 adopted budget is approximately $591.1 million, which supports operations, maintenance, flood protection, and other water resource priorities. While this budget reflects the agency's broad mission, only a portion is directly related to levee infrastructure.

Approximately 20% of Florida's known levees are non-federal and managed by local authorities or private entities. These systems generally receive less consistent operational funding and lack publicly available maintenance records. Routine operation and maintenance are essential to extending the service life of levee systems and ensuring they perform as intended during flood events. Levees that go years without vegetation removal, erosion repairs, or visual inspections are more likely to require major rehabilitation in the future. The absence of an inventory or maintenance records for privately owned levees further complicates efforts to assess statewide needs and prioritize investments.

1. *USACE EC 1165-2-218*

Funding & Future Need

Florida's water management districts rely on a combination of local property taxes and state appropriations to fund levee operations. However, the full cost to rehabilitate, modernize, and adapt Florida's levee systems—particularly non-federal levees—remains unknown. Publicly available data does not provide funding needs by levee ownership type, creating a significant information gap that hinders statewide planning and investment. Although a comprehensive estimate has not been developed, the state has made targeted investments in flood protection and sea-level rise adaptation through initiatives such as the Resilient Florida Grant Program.

The SFWMD has the largest share of levee infrastructure in the state and benefits from a relatively robust financial base. However, its substantial investments must also span water quality and ecosystem restoration, leaving only a portion available for levee improvements. In contrast, smaller water management districts and local levee sponsors have far fewer financial resources, and private owners have limited or no access to state or federal support.

The Infrastructure Investment and Jobs Act (IIJA) included funding that could support levee rehabilitation, such as FEMA's Building Resilient Infrastructure and Communities (BRIC) program and the U.S. Army Corps of Engineers' levee rehabilitation and flood risk management authorities. Yet these competitive programs are often inaccessible to smaller or under-resourced levee sponsors who may lack grant-writing capacity or matching funds. Moreover, Florida does not have a dedicated state funding program or revolving loan fund for levee rehabilitation, which leaves local and private levee sponsors without consistent capital support for long-term upgrades.

Without predictable, accessible, and adequately scaled funding mechanisms, Florida's levee infrastructure is at risk of deterioration and underperformance. A statewide funding strategy or grant assistance program could help address these systemic gaps and ensure more equitable protection across the state.

Public Safety

Levees in Florida are estimated to provide flood protection to over one million residents, hundreds of thousands of structures, and over $100 billion in property value, most of which is concentrated in densely populated regions of south and central Florida. These systems serve as critical flood protection infrastructure during hurricanes, storm surge, and extreme rainfall. However, comprehensive, statewide data on flood exposure in Florida is not publicly available in the NLD and many residents and business owners living behind levees are unaware that they are within inundation zones or that the levees protecting them may not meet modern standards.

Florida's flat terrain magnifies the public safety consequences of levee failure. Unlike mountainous areas where floodwaters can be channeled, water from a breached levee in Florida spreads laterally and can impact wide areas with little warning. This increases the importance of early warning systems, floodplain mapping, and emergency preparedness planning.

As of 2024, only a small percentage of Florida's levees were FEMA-accredited, and most levees have not been assessed for risk of failure. The lack of accreditation and standardized risk ratings increases uncertainty for downstream communities and complicates emergency planning. Additionally, while some

water management districts have robust inspection and emergency response protocols, there is no consistent statewide requirement for levee Emergency Action Plans (EAPs).

Improving public safety around Florida's levees will require better risk communication, expanded use of inundation mapping, and integration of levee performance data into local emergency planning. Residents living near levees should be informed about the infrastructure that protects them, the risks associated with failure, and appropriate actions to take in the event of a breach or extreme flood event.

Resilience and Innovation

Florida's levee infrastructure is increasingly exposed to the impacts of climate change, including more frequent hurricanes and rising sea levels, particularly in the coastal regions. Many levees in the state were not originally designed for these evolving conditions, leaving them less capable of withstanding future flood risks.

Although some federally constructed levees undergo periodic upgrades and reevaluations, most non-federal levees lack climate-adaptive design standards or long-term resilience planning. In many cases, there is no clear understanding of how existing levees will perform under projected conditions.

Most levees were designed decades ago based on historic rainfall data and a limited understanding of future development pressures. Only 7% of Florida's levees are FEMA-accredited, indicating they meet the 1% annual-chance flood protection standard. However, there is uncertainty within the remaining 93%, as it is unknown how many of these levees may meet FEMA's requirement but have not pursued accreditation, or have pursued it and been denied. The absence of this data limits the state's ability to fully evaluate the adequacy of flood protection across the entire levee inventory.

The SFWMD has adopted a number of forward-looking strategies that demonstrate a commitment to systemwide resilience. Its Flood Protection Level of Service (FPLOS) Program provides a structured approach to evaluating flood protection performance under both existing and future conditions. This includes hydrologic and hydraulic modeling, infrastructure assessments, and the development of adaptive investment strategies across vulnerable basins.

Complementing this, SFWMD's Sea Level Rise and Flood Resiliency Plan outlines a basin-by-basin approach to prioritizing resiliency investments (but not limited to levees), incorporating stakeholder input, climate projections, and engineering analysis to guide regional adaptation planning. These programs reflect leading practices in proactive levee and flood system adaptation that can be replicated across the state.

Broader implementation of resilience strategies remains limited by funding, inconsistent standards, and the absence of centralized state guidance. Without systematic integration of resilience planning and innovation into Florida's levee management practices, the state risks continued vulnerability to more intense and less predictable flood hazards.

ST. JOHNS RIVER LEVEE SYSTEM
FLORIDA

EVERGLADES CONSERVATION LEVEE
FLORIDA

D+

Recommendations to Raise the Levees Grade

To address the aging levee infrastructure across Florida, the following actions are recommended:

- Create a dedicated grant or low-interest loan program to support rehabilitation, accreditation, and adaptation of levees, especially for non-federal and privately owned systems.
- Support a comprehensive, state-led effort to assess levee condition and risk for the non-federal and privately owned systems.
- Mandate EAPs for all levees providing flood protection to communities and critical infrastructure, and provide technical and financial assistance to levee owners and local emergency managers for plan development and training.
- Incorporate sea-level rise, updated hydrologic modeling, and land use changes into levee design and management.
- Expand education campaigns and improve access to levee performance data to increase public understanding of flood risk for communities living behind levees.

Sources

- American Society of Civil Engineers (ASCE), Florida Section, "2021 Infrastructure Report Card: Levees Chapter," 2021.
- ASCE, "2025 Infrastructure Report Card: Levees Chapter," 2025.
- Federal Emergency Management Agency (FEMA), "Accreditation Requirements for Levees on FIRMs (44 CFR 65.10)," n.d.
- Florida Department of Environmental Protection (FDEP), "Resilient Florida Annual Plan FY 2025–2026," 2025.
- National Association of Counties (NACo), "Breakdown of Federal Infrastructure Funding Available to Counties," 2022.
- NACo, "Analysis of the Infrastructure Investment and Jobs Act (IIJA)," 2022.
- South Florida Water Management District (SFWMD), "Budget Fact Sheet FY 2021–2022," 2021.
- SFWMD, "Budget Fact Sheet FY 2023–2024," 2023.
- SFWMD, "Fiscal Year 2025-2026 Preliminary Budget Submission," 2024.
- SFWMD, "Flood Protection Level of Service (FPLOS) Program," n.d.
- SFWMD, "Sea Level Rise and Flood Resiliency Plan," n.d.
- St. Johns River Water Management District (SJRWMD), "Budget Portal," n.d.
- U.S. Army Corps of Engineers (USACE), "Levee Safety Program (EC 1165-2-218)," 2024.
- USACE, "Levee Safety Program, Levee Safety Action Classifications (LSAC)," n.d.
- USACE, "National Levee Database (NLD)," n.d.

B+

Florida's Infrastructure

PORTS

EXECUTIVE SUMMARY

Florida's 16 public seaports serve as critical gateways for domestic and international trade and support the world's largest cruise operations. Together, they generate nearly 1.2 million jobs and contribute about $195 billion to the state's economy—roughly 12% of Florida's GDP. Strategic investments through the "Seas the Opportunities" initiative have expanded deep-water infrastructure, strengthened resilience through hardening projects, and enhanced intermodal connectivity across road, rail, and air, positioning Florida as a global maritime leader. Despite these advancements, funding shortfalls persist at both state and federal levels. Florida's ports face ongoing challenges that require coordinated solutions, including adapting to shifting global supply chains, managing inland logistics, mitigating environmental impacts, and advancing digitalization and automation. Additionally, evolving governance structures and competitive pressures underscore the need for innovation and integration across all scales of port operations to maintain Florida's leadership in maritime trade and sustainability.

Introduction

Collectively, Florida's 16 seaports support nearly 1.2 million jobs, generate about $196 billion in economic value, and contribute $7.4 billion in state and local taxes—accounting for roughly 12.2% of Florida's $1.6 trillion GDP. The cruise sector alone creates nearly 82,000 jobs and contributes $19.8 billion to the state economy, with PortMiami serving as the world's busiest cruise port.

Florida's seaports are a major economic engine and a cornerstone of the state's supply chain. They handle critical commodities, including $32.6 billion in petroleum and aviation fuel, $9.9 billion in food and perishables, and substantial imports of medical equipment, furnishings, cement, and aggregate that support disaster recovery and infrastructure growth. Port Tampa Bay leads the state in cargo tonnage. Port operations occur within a complex federal governance structure involving 18 agencies, with primary authority held by the U.S. Coast Guard and U.S. Army Corps of Engineers, and additional international oversight from the International Maritime Organization.

Florida's ports handle a diverse range of cargo that connects the state to global markets, supporting industries such as agriculture, food and fuel, energy, consumer goods, and automotive. Total cargo volumes reached 114.25 million tons in 2023, a 1.5% increase from 2022, while cruise passenger volumes grew to 19.4 million—reflecting a 3.1% compound annual growth rate since 2010—and more than 631,000 vehicles moved through the system.

Key Ports include:

JAXPORT: Florida's largest container port and a leading U.S. vehicle-handling facility. Recent investments have focused on expanding berth capacity for larger vessels, modernizing container yards, upgrading vehicle berths, and developing a new auto processing facility with enhanced rail and truck access to improve overall efficiency and connectivity.

Port Canaveral: The second-busiest cruise port in the world, handling over seven million multi-day cruise passengers in Fiscal Year 2023-24. As the homeport for several of the world's newest and largest LNG-powered cruise vessels, Port Canaveral is also undergoing a $560 million five-year capital improvement plan to expand terminal facilities and modernize infrastructure.

Port Everglades: Located in a prime consumer region with over 140 million visitors and six million residents nearby, Port Everglades is the leading U.S. gateway for trade with Latin America. It has identified more than 50 infrastructure projects worth $3 billion, with over half planned for completion within five years.

PortMiami: Known as the "Cruise Capital of the World" and the Cargo Gateway of the Americas," PortMiami has opened three new cruise terminals and opened the world's largest cruise terminal in February 2025. The port intends to become the largest net-zero container port in Florida while continuing to expand international trade and cargo operations.

Port Tampa Bay: Florida's most diversified seaport and the economic engine of West Central Florida, this port's container volume has grown by an average of 28% annually over the past five years, driven by an aggressive infrastructure and terminal build-out strategy.

PORT TAMPA BAY
TAMPA, FLORIDA

B+

Condition & Capacity

The State of Florida is home to 16 public seaports, strategically distributed along its coastline:

Florida Public Seaports

According to 2023 data from the U.S. Army Corps of Engineers, five of Florida's seaports rank among the top 30 U.S. containerized cargo ports by volume:

Top Ranking Florida Seaports[1]

Ranking	Port	Volume by Tonnage (2023)
10	PortMiami	8,437,423
14	Port Everglades	22,943,522
16	Jacksonville Port Authority (JAXPORT)	17,629,515
22	Port Tampa Bay	32,018,524
30	Port of Palm Beach	2,166,125

1. *Top 30 U.S. Ports: U.S. Seaports Persevere - Logistics Management (2024)*

Florida's seaports play a vital role in the movement of goods and passengers, both domestically and internationally. According to the Florida Department of Transportation (FDOT)'s 2023 Economic Impact Analysis , between July 1st, 2023 and June 30, 2024, the state's ports handled

113.4 million tons of cargo (a 20.4% increase since 2015)
4.3 million twenty-foot equivalent units (TEUs)
22.4 million cruise passengers (a threefold increase since 2015)

This growth is largely driven by strategic investments in infrastructure that have expanded port capacity and enhanced operational efficiency. Florida's ports have demonstrated strong adaptability in the face of changing global shipping patterns, supply chain disruptions, and shifting consumer demands.

The Port of Tampa Bay is undergoing a significant deepening project to enhance its shipping channels from 43 to 47 feet. This project, approved by the U.S. Army Corps of Engineers, aims to accommodate larger vessels, reduced shipping costs, and increase cargo volumes. the dredging process will also reclaim dredged material for beach nourishment and habitat creation. The project is expected to be cost-shared with the Tampa Port Authority and will be funded through a combination

of federal, state, and local dollars. The first phase of construction is set to begin by 2028, with the total cost estimated at approximately $1.1 billion.

The authorized plan for the Port Everglades, Florida, project consists of deepening and widening various components within Port Everglades Harbor to increase navigational safety and efficiency, and includes a reconfiguration of the U.S. Coast Guard Station Fort Lauderdale. The Port will be widened at its Outer Entrance Channel (OEC) - extended, widened, and deepened from 45 to 55 feet (57 feet maximum dredging depth) and deepened at its Inner Entrance Channel (IEC) - deepened from 42 to 48 feet.

JAXPORT has also made recent investments in expansion and modernization, including $100 million in berth enhancements for post-Panamax ships, a $72 million investment in container yard expansions, a $63 million investment in vehicle berth upgrades, and a $120 million investment for a 250,000 square foot auto processing facility with new rail and truck access.

Florida is also a global leader in the cruise industry. Home to the top three cruise ports in the world—PortMiami, Port Canaveral, and Port Everglades—the state accounts for approximately 60% of all U.S. cruise passenger traffic. In FY 2023 alone, a record 22.4 million passengers passed through Florida's cruise terminals. These ports continue to invest in cruise infrastructure, leveraging their proximity to tropical destinations and ability to accommodate the largest and most advanced cruise ships in operation today. Combined with modern terminals and technology-forward passenger experiences, Florida seaports are solidifying their leadership in the global cruise market.

Florida Waterborne Import, Export, and Domestic Tonnage Distribution (FY 2023)[2]

2.Florida Seaport Transportation and Economic Development Council

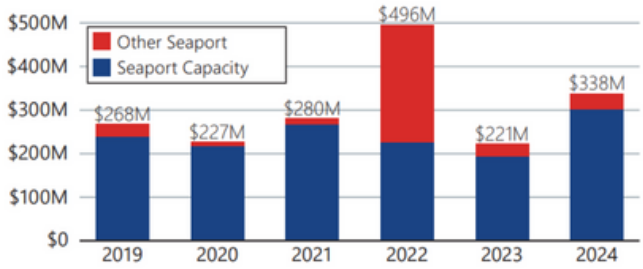
Funding & Future Need

Florida's seaports are critical enablers of trade, job creation, and economic growth. These ports play a vital role in the state's supply chain, ensuring access to essential commodities like food, fuel, and healthcare supplies. They rely on a diversified funding strategy that includes working capital, construction bonds, state and federal grants (which may require a local match), bank loans, leases, fees, local taxes, commercial mortgages, and private investment. Revenues are reinvested in asset management and capital development projects to support future needs and maintain competitiveness in a global marketplace.

Florida maintains a variety of programs meant to support port infrastructure. Florida is home to 8 major ports and 1,540 miles of inland waterways. The state has benefitted from the $17 billion in ports provided by the Infrastructure Investment and Jobs Act (IIJA) between FY21-FY26. The IIJA increases funding opportunities for Florida's seaports and waterways. Existing and new funding programs support modernization and resiliency of seaports, as well as the waterways, highways, and rail systems that connect to them. The IIJA emphasizes integration of seaports and waterways into the rest of the multimodal systems, in addition to continuing existing programs specific to seaports and waterways such as the U.S. Army Corps of Engineers' coastal and inland navigation programs and U.S. Department of Transportation's America's Marine Highways Program. As of January 2025, over $314 million in federal funding had been announced for Florida's ports through the IIJA.

FDOT invested an average of $305 million annually between FY 2019 and FY 2024. The spike in FY 2022 to $496 million was due to $250 million in pandemic recovery grants administered by US DOT Maritime Administration (MARAD) to mitigate revenue losses from cruise shutdowns and global supply chain disruptions.

FDOT Seaport Investments by Fiscal Year



Florida's strong state-level support for port infrastructure has enabled sustained growth through programs including:

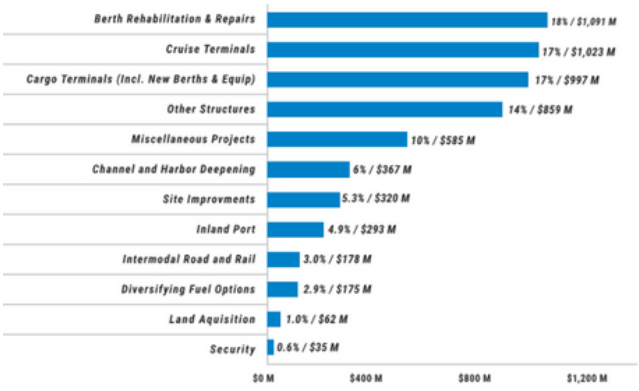
- FDOT's Construction Aggregate Program: Provides up to $20 million for projects annually enhancing the movement and storage of construction aggregate.
- State Infrastructure Bank (SIB): Offers loans and credit enhancements for transportation-related facilities and fuel distribution.
- Supply Chain Innovation Grant Program: Funds strategic freight infrastructure at ports, railroads, and airports. A 1:1 non-state match is required. For FY 2025/26, $25 million has been requested.

- Florida Seaport Transportation and Economic Development (FSTED) Program: Provides $25 million annually in grants for port transportation projects on a 50/50 state-local match basis. FSTED enables seaports to accelerate competitive infrastructure development.
- Intermodal Logistics Center (ILC) Infrastructure Support Program: Beginning FY 2024/25, $15 million/year through FY 2029/30 is allocated for supporting intermodal connectivity (road, rail, port).
- Seaport Security Grant Program: Covers up to 75% of project costs for security upgrades, including infrastructure, cybersecurity, and equipment. Subject to legislative appropriation.
- Strategic Intermodal System (SIS): The highest-priority transportation network in Florida, focusing on statewide intermodal travel and freight mobility.
- Strategic Port Investment Initiative: Administered by FDOT, this program provides a minimum of $35 million annually, matched locally at 50/50 or 75/25 levels. Funded through SIS.
- Small County Dredging Grant Program: Available to counties with populations under 300,000 for eligible dredging projects.
- Triumph Gulf Coast Grants: Funded by the 2010 Gulf Oil Spill settlement, Florida will receive $2 billion through 2033 to address economic and environmental recovery.

Last year, the Florida Ports Council outlined a five-year capital improvement plan for the state's 15 ports that exceeded $5 billion. The planned projects are for cargo and cruise operations. In FY 2023, Florida's seaports secured over $390 million in funding, 54% from state sources and 46% from federal sources. However, these amounts fall short of the $6 billion needed to implement all projects identified in the current Capital Improvement Plan (CIP).

Continued and increased investments are essential to support Florida's long-term trade growth, supply chain resilience, and economic development objectives.

Florida Port Investments[3]



- Florida's seaports are executing an ambitious five-year Capital Improvement Plan (CIP) with nearly $5 billion in planned investments, averaging $1 billion per year. These infrastructure projects are critical to maintaining Florida's leadership in the global cruise and cargo markets.

3.Florida Seaport Transportation and Economic Development Council

Some examples of these projects include:

- Port Canaveral: Proposed $175 million new cruise terminal
- Port Miami & Port Everglades: Recent terminal upgrades
- JAXPORT: $72.7 million terminal modernization, supported by BUILD grant
- Port Tampa Bay: $57.7 million Hookers Point improvements
- SeaPort Manatee: $34.8 million for berth rehabilitation and reconstruction

These investments ensure Florida's ports continue to attract the largest and most advanced vessels, support population growth, and maintain competitiveness.

While these state and federal funding sources highlight the national significance of Florida's ports, they fall short of the $6 billion needed to fully realize the five-year CIP.

To remain globally competitive, it is imperative that state and federal agencies undertake a comparative and statistical analysis to assess the adequacy of infrastructure investment across the U.S. Without sustained and increased funding, the nation risks falling behind in its ability to support trade, economic growth, and national security through its maritime infrastructure.

Public Safety & Resilience

Florida ports prioritize public safety through a variety of measures, including security checkpoints, collaboration with various law enforcement agencies, and the implementation of security plans. These efforts ensure a secure environment for maritime activities, commerce, and tourism, while also safeguarding the safety of port employees and visitors while maintaining efficient operations.

Florida faces significant challenges due to sea level rise, including:

- Flooding: Coastal areas are at risk of flooding due to rising sea levels, which can inundate low-lying regions and homes.
- Saltwater Intrusion: Rising sea levels can lead to saltwater intrusion into drinking water supplies, compromising sewage systems and other infrastructure.
- Infrastructure Damage: Traditional methods to combat flooding, such as raising roads and building seawalls, may not be effective due to the porous limestone beneath Florida's bedrock.
- Tourism Impact: The tourism industry, which is a major economic driver in Florida, is threatened by the rising seas, which can affect both residents and visitors.
- Economic and Quality of Life: The state's economic and quality of life benefits from its coastal regions are at risk as the effects of climate change continue to unfold.

Florida seaports are already making significant efforts to minimize the extent and duration of impacts from natural disasters. As a peninsular state, Florida seaports and their surrounding communities face logistical challenges beyond the direct impact of natural disasters. Coastal transportation infrastructure in Florida is especially vulnerable to disruption, and seaports should carefully consider steps to become more resilient. The financial and social impacts associated with temporary seaport closures, reduced cargo capacity, and infrastructure damage can be devastating, and adequate planning and preparation are paramount. Seaport resilience refers to the ability of ports to maintain or quickly resume

operations following disruptions caused by natural disasters, infrastructure failures, or other crises. Florida's seaports are taking substantial steps to strengthen their ability to withstand and recover from such events:

- Sea Level Rise & Storm Surge Readiness
- Florida ports utilize advanced technologies—such as LiDAR, tidal gauges, and NOAA's Physical Oceanographic Real-Time System (PORTS)—to evaluate and model the impacts of sea level rise and storm surges. These assessments inform both master planning updates and structural design of port infrastructure, such as new bulkheads.
- Tidal Fluctuation Accommodation
- Cargo-handling systems at Florida ports are designed to operate effectively with approximately 2.5 feet of tidal variation, ensuring adaptability in dynamic marine conditions.
- Electrical Infrastructure Hardening
- In collaboration with utility providers and local governments, seaports have undertaken efforts to replace traditional wooden power poles with Category 5 hurricane-rated concrete poles, enhancing electrical resilience and reducing recovery time post disaster.
- Emergency Fuel Supply Coordination
- Florida ports are actively working with the petroleum industry, the U.S. Coast Guard, state emergency management agencies, and fuel distributors to assess and invest in the infrastructure necessary to secure fuel availability in the aftermath of natural disasters.

These initiatives are especially critical given Florida's peninsular geography and exposure to severe weather events. By investing in robust security and resilience strategies, Florida's ports help ensure the continuity of essential services during emergencies and reinforce their role as vital nodes in the state and national logistics network.
New federal funding programs through the IIJA also emphasize resiliency and modernization. For example, the Promoting Resiliency Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) provides funding to support planning, resilience improvements, community resilience, evacuation routes, and at-risk coastal infrastructure.

Florida is prepared to evaluate and plan for sea level rise through its master planning process, ongoing commitment to protecting the environment, and predictive modeling. Through the use of tidal gauges, LiDAR and Physical Oceanographic Real-time Systems (PORTS), Florida ports such as Port Everglades and JAXPORT are evaluating the optimization and historical storm surges surrounding the ports. This is taken into account for master planning updates, and while designing new bulkheads. Currently, Florida seaports must have cargo handling equipment that can accommodate approximately 2.5 feet of tidal fluctuations. This is within the range of anticipated sea level increases in 2050, so there is no compelling urgency to update equipment or infrastructure prior to the normal replacement cycle. Wharfs and berths have an approximate lifespan of 20-50 years and a height of 7.5-12.5 feet above water. All port cargo handling equipment is designed based on current ship size, which changes with each new generation of vessel.

Innovation

Florida's seaports continue to lead the nation in maritime innovation, particularly in the areas of alternative fuels, sustainability, and intermodal connectivity. These forward-looking strategies ensure that Florida remains at the forefront of global port operations and maritime logistics.

Port Everglades received a major federal grant through USDOT's Port Infrastructure Development Program to advance its Regional Port Operations with Emissions Reductions Project. The funding will support development of a Port and Maritime Electrification Plan, electrical system upgrades, low- and zero-emission equipment purchases, and workforce training. Similarly, Miami-Dade County secured federal funding through USDOT's INFRA program for the PortMiami Electrification Project, which complements the port's multi-billion-dollar Capital Improvement Program focused on achieving Net Zero operations. The project includes new electric and hybrid cargo-handling equipment, charging infrastructure, and replacement of diesel-powered systems with fully electric alternatives. Additional electrification efforts are supported by the Reduction of Truck Emissions at Port Facilities program, which promotes emerging technologies to curb idling and port-related emissions.

Florida ports are spearheading the adoption of liquefied natural gas (LNG) as a clean, alternative fuel source for both cargo and cruise vessels:

Port of Jacksonville (JAXPORT)

- JAXPORT hosts the largest LNG bunkering operation at any U.S. port and is the only port on the East Coast with both on-dock and near-dock LNG fueling capabilities.
- Other ports, including PortMiami, Port Tampa Bay, and Port Canaveral, are equipped or positioned to receive LNG deliveries by truck or rail for refueling or export.

According to the Cruise Ship Orderbook, 26 LNG-powered cruise ships are scheduled for delivery by 2026 throughout Florida. One notable example is Carnival Cruise Line's Mardi Gras, the first fully LNG-powered cruise ship in North America, homeported at Port Canaveral and fueled by a specialized LNG bunkering barge.

Innovative waste solutions are also being implemented to improve sustainability and operational efficiency:

- Norwegian Cruise Line, in partnership with Waste Management, launched the first "Live Load" service model at PortMiami. This approach replaces multiple roll-off containers with a semi-trailer equipped with a side curtain, streamlining waste collection from ships.
- This model allows for immediate waste removal, enhances security protocols, and reduces congestion at the port—marking a first in the cruise line industry.

Florida's seaports are key nodes in the state's multimodal transportation network. By integrating operations with trucking, rail, and air freight systems, ports are:

- Reducing shipping costs
- Increasing cargo velocity
- Improving the final cost of goods for consumers
- Enhancing statewide freight mobility

These strategic investments in infrastructure, sustainable fuel technologies, and innovative logistics practices strengthen Florida's position as a global trade leader while aligning with long-term environmental and economic goals.

Recommendations to Raise the Ports Grade

The future performance of Florida's seaports depends on a combination of global economic factors and targeted local investment. However, to remain competitive, Florida's seaports must take decisive action to expand capacity and improve infrastructure across cargo and cruise sectors.

To elevate the grade and competitiveness of Florida's seaports, the following strategic priorities are recommended:

- Continue investing in port infrastructure, including harbor deepening, channel upgrades, and cargo-handling equipment, to position Florida as the first inbound and last outbound U.S. port-of-call for global trade.
- Improve intermodal transfer capabilities to efficiently link seaports with rail, road, and air transportation, thereby strengthening the overall freight logistics network.
- Expand fueling capabilities to accommodate LNG-powered and other next-generation vessels, especially within the cruise and container sectors.
- Preserve Florida's position as the world leader in cruise operations by continuing to invest in best-in-class terminals, passenger services, and sustainability measures.
- Identify and address unnecessary regulatory burdens that hinder the movement of goods and increase operational costs, while maintaining safety and environmental standards.
- Collaborate with federal agencies to accelerate permitting and project delivery timelines, reducing multi-year delays in essential infrastructure upgrades.
- Continue utilizing and seek to increase the statutory funding allocations through the Florida Seaport Transportation and Economic Development (FSTED) Program, ensuring consistent and flexible financial support for seaport projects.
- Ensure that ports are fully incorporated into local and regional resiliency and climate adaptation strategies, reinforcing the long-term durability of Florida's freight system.
- A comparative national funding study is recommended to assess how U.S. ports are resourced relative to their economic impact—especially considering Florida seaports account for 12% of the state's GDP. Without adequate and sustained funding, the U.S. may lose its competitive edge in global logistics and trade.

Sources

- Florida Seaport Transportation and Economic Development Council, Seaport Mission Plan, 2025-2029
- Florida Department of Transportation – Economic Impacts of Florida's Seaports, February 2024
- Florida Ports Council – Seaports Resiliency Report, 2019
- Florida Department of Transportation – Seaport Statewide Report, January 2025
- WFlorida Ports Council: Economic Impacts of Florida's Seaports, February 2024
- FDOT – Florida Seaports Economic Impact, February 2024
- Florida Ports Council - Success Stories - 2025
- https://www.epa.gov/ports-initiative/ports-primer-33-federal-and-international-governance

B-

Florida's Infrastructure

PUBLIC PARKS

EXECUTIVE SUMMARY

Florida is home to one of the largest and most acclaimed park systems in the nation, spanning more than 815,000 acres across 175 state parks, nine state trails, and numerous historic sites. The system features 2,600 miles of trails, over 100 miles of coastline, diverse ecosystems, and unique underwater archaeological sites. Florida also stands out as the only state with extensive shallow coral reefs, safeguarded by 43 aquatic preserves and a federally designated marine sanctuary. Managed by the Florida Department of Environmental Protection's Division of Recreation and Parks, the system is supported by the Florida Park Service, the Office of Greenways and Trails, and the nonprofit Florida State Parks Foundation. Together they advance recreation, conservation, and education through statewide planning and community engagement. Florida's park system is receiving increased financial support annually, yet rising visitation, environmental pressures, natural disasters, and a backlog of deferred maintenance underscore the need for greater funding and enhanced management efforts to sustain the system's long-term benefits.

Capacity

In Fiscal Year (FY) 2023-2024, Florida state parks achieved about a 5% increase across all major performance measures compared to the prior year, attracting over 30 million visitors, generating more than $3.8 billion in direct economic impact, nearly $250 million in state sales tax revenue, and supporting over 52,000 jobs statewide. The National Park Service (NPS) is responsible for 11 parks and historical sites in Florida and reports that in 2023 those parks received almost 13.5 million visitors who spent over $870 million in the State.

The 2024 State Park Directors' Survey shows that use has risen sharply from pre-pandemic levels, placing high demand on both day-use and overnight facilities. Visitors frequently encounter congestion, long wait times, and overused trails, while parks face reduced staffing and lower skill levels among applicants. Peak-season capacity is often reached early, resulting in early closures, crowded amenities, and stressed ecosystems. Despite infrastructure upgrades, demand continues to outpace capacity in high-traffic areas, straining restrooms, campsites, trails, and boat ramps. Parks have implemented measures such as timed entry and day-use reservations, but smaller or remote parks often lack adequate shade, ADA-accessible features, parking, and sufficient ranger coverage.

Florida's population is projected to exceed 26 million by 2030, and rising interest in outdoor recreation suggests visitation will continue to grow. Urban expansion around Orlando, Tampa, and South Florida further increases pressure on nearby parklands. Overall, park infrastructure is operating at or near capacity, which limits access, impacts visitor experiences, and stresses ecological resources. While Florida's park service operates under a strong philosophy and planning framework, the existing backlog of deferred maintenance may hinder its ability to expand and modernize facilities, potentially limiting equitable access and undermining ecological integrity under rising visitation pressures.

Condition

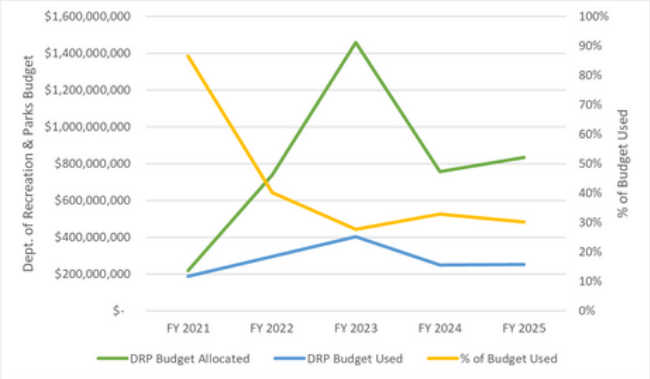
The physical condition of Florida's park infrastructure is mixed to fair, with notable disparities across different park systems and geographic regions. Florida's parks encompass extensive infrastructure including roads, trails, visitor centers, campgrounds, restrooms, boat ramps, and boardwalks. While many facilities are well maintained, years of deferred maintenance have left a legacy of deteriorated restrooms, eroded trails, outdated water systems, and damaged signage. Limited staffing and inconsistent funding have delayed both routine upkeep and urgent repairs, compounding long-term challenges.

Recent state and federal funding has helped address some of these concerns. The 2025 legislative session approved targeted maintenance projects, including accessibility upgrades, trail rehabilitation, and hurricane recovery, while the Great American Outdoors Act has supported improvements in national parks such as boardwalk upgrades in Biscayne and facility repairs in Gulf Islands. Still, the pace of investment lags behind the scale of need, particularly for climate-resilient infrastructure like elevated trails, permeable surfaces, and storm-resistant buildings. Without sustained investment and long-term resilience planning, Florida's park system risks falling short of providing safe, inclusive, and ecologically sound recreation.

Funding

Florida State Parks receive funding from the FDEP, which is funded through a combination of state, federal, and trust fund sources. The FY 2025 Department of Recreation and Parks (DRP) budget allocated $833.9 million to two programs: Coastal and Aquatic Managed Areas (CAMA) and State Park Operations (SPO). The SPO received $251.3 million, reflecting a 9% decrease from FY 2024. Although the State Park System and FDEP have received "record" funding in recent years, the system is not realizing the benefits of the increased budgeting. Budget utilization for SPO has decreased from 87% to 63% since 2020, while CAMA and the FDEP reported utilization rates in FY 2025 of 16% and 20%, respectively. Annual expenditure often falls short as grant funds are redirected to other priorities. With water resources management and natural disaster mitigation prioritized within the FDEP, DRP services are likely to continue facing challenges in meeting the needs of a growing population and addressing maintenance backlogs.

Five Year Comparison of DRP Budget Allocation vs. Percentage Used



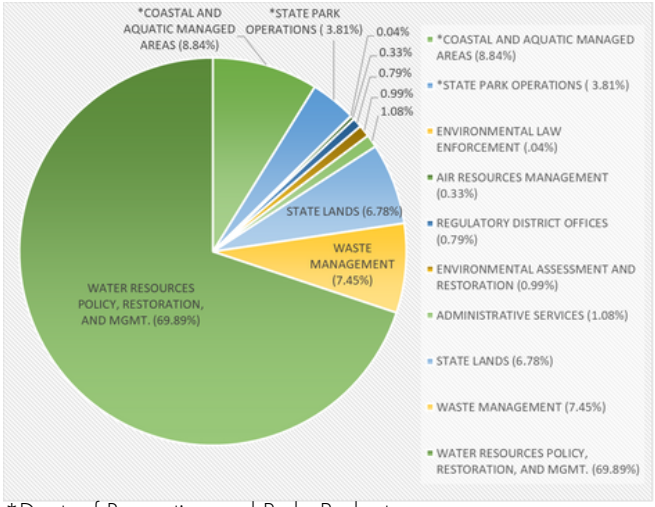
Underutilized Categories in the FY 2025 DRP Budget Reports

Appropriation Category	Operating Budget	Amount Spent
State Park Facility Improvements	$15,000,000	$2,095,697
Federal Land and Water Conservation Fund Grants	$14,323,172	$0
Florida Recreation Development Assistance Grants	$14,285,629	$100,000
Local Parks	$11,412,461	$0
Local Trail Management Grant Program	$4,000,000	$1,681,682
National Recreational Trail Grants	$2,600,000	$0
Coral Reef Restoration	$9,500,000	$0
Maintenance, Repairs and Construction - Statewide	$5,999,163	$222,534
Beach Projects - Statewide	$50,000,000	$2,126,523
Clean Marina	$500,000	$0
Flooding and Sea Level Rise Resilience Plan - Statewide	$375,000,000	$179,516
Florida Coastal Zone Management Program	$1,285,161	$453,131
Grants and Aid - Water Quality Improvements - Biscayne Bay	$20,000,000	$0
Resilient Florida Planning Grants	$20,000,000	$29,365
South Ponte Vedra Beach Renourishment	$4,750,000	$0

In FY 2025, the "Focus on Florida's Future" budget dedicated $15 million to infrastructure improvements and resource management with the goal of maintaining Florida State Parks National Gold Medal standard. However, only $2.1 million of the $15 million was spent. $55 million was included for restoration of Florida's world-renowned springs and $40 million to improve water quality. $396 million was committed to federal Community Development Block Grant (CDBG) funds for local hurricane recovery and hardening efforts throughout the State, including the CDBG Disaster Recovery Program and the CDBG Mitigation Program. Senate Bill 1638 also allocated $32 million for land management activities within the State Park System and $4 million for implementation of the Local Trail Management Grant Program. Additionally, $100 million was committed to the Florida Forever Program to support land conservation and recreation. The above displays the level of commitment, from various sources, to funding the needs of the park system and Florida's natural lands.

The recently approved State Land Management bill (House Bill 209) will require state parks to submit an individual land management plan to assist in determining each park's unique needs. Revenue generating ideas are included in this planning, like the idea of developing lodges for overnight visitors. This idea has proven successful in National Parks, and the state has shown understanding to the public concern of large-scale construction disrupting Florida's natural environments and wildlife.

FY 2025 FDEP Budget Allocation By Division - $6.5 Billion Total



*Dept. of Recreation and Parks Budget

Future Need

Florida's parks generate enormous economic and community value, and recent data underscores why continued investment is essential.

The previously referred to House Bill 209, aims to strengthen the protection and management of Florida lands and parks. The bill will require the FDEP to submit a comprehensive report by December 1, 2025, detailing park amenities or areas that have limited use or are closed due to needed repairs, renovation or lack the infrastructure necessary to support park purposes. This report will include estimated budget allocation expenditures for FY 2024-2025, broken down by salaries and benefits, equipment costs, contracting costs for operations, maintenance and repair, park improvement, and administrative overhead. Additionally, it will outline a plan for addressing identified needs, including estimated costs for opening all such amenities or areas no later than July 1, 2035, to ensure access to and the safe enjoyment of the parks for Florida residents and visitors.

Increasing attendance and aging infrastructure within the Florida State Park System are driving higher costs for operations, maintenance, and capital improvements. Municipalities and counties across Florida face similar challenges. While several have implemented successful bond programs to finance park expansions and capital improvements, these funds do not address ongoing operational and maintenance needs. While a precise funding need has not been identified, it is clear that the current annual budget of $251.3 million is insufficient to address the more than $400 million in deferred maintenance. The forthcoming report required under the Land Management bill aims to clarify the scale of need and potential solutions.

Operation & Maintenance

According to the most recent data from the Florida State Park Director Survey, the State is burdened by over $400 million in deferred maintenance, a staggering figure that reflects years of underinvestment in basic infrastructure upkeep. Park directors emphasize that a high-quality visitor experience is closely tied to meaningful interaction with Florida's natural and cultural resources. However, preserving and restoring these resources remains an ongoing challenge. Activities such as maintaining prescribed fire regimes, removing invasive species, conducting hydrological management, protecting imperiled species, and safeguarding cultural assets are all essential to providing visitors with an authentic "Real Florida" experience. Many parks depend heavily on volunteers to support these critical functions, highlighting the need for sustained investment in both staffing and resource management.

Florida's state and local parks face widespread challenges from aging infrastructure that is increasingly vulnerable to weather extremes and heavy use. Although the Florida Park Service employs Unit Management Plans (UMPs) to guide long-term planning, conservation, and facility improvements, implementation is often constrained by budgets, leaving key projects unfunded. Facilities across the system ranging from restrooms and trails to campgrounds and shelters show wear and tear, with no single type faring better than another, suggesting that the challenges are widespread and systemic. Limited staffing and funding compound the issue, while hurricanes, flooding, saltwater corrosion, and invasive species intensify the strain. Without proportional growth in resources, maintenance efforts remain largely reactive, and deferred backlogs continue to expand.

At the same time, Florida's park system demonstrates important strengths. Its emphasis on environmental stewardship, climate-appropriate design, and use of durable, low-maintenance materials helps reduce long-term costs and support ecological health. Collaboration with local governments further bolsters infrastructure effectiveness, particularly through shared responsibilities like trail connectivity, transportation access, and statewide coordination via the FGTS. Yet transparency in maintenance reporting remains limited, with little publicly available data on budgets, staffing, or backlogs. Sustaining Florida's park system will require more consistent investment, proactive resilience planning, and stronger accountability measures to balance operational efficiency with ecological and visitor needs.

Public Safety

In a geographically diverse and climate-vulnerable state like Florida, public safety in parks requires a multifaceted approach that blends law enforcement, community partnerships, proactive design, and environmental resilience. Florida State Parks coordinate with local law enforcement and the Florida Fish and Wildlife Conservation Commission to address incidents ranging from crime prevention to wildlife and water safety, as the state does not maintain a dedicated park police force. Non-law enforcement operations such as lifeguards, pest management, and hazard mitigation further support visitor safety, while infrastructure design emphasizes visibility, lighting, natural surveillance, and accessible connections that encourage greater use and deter crime. These design features contribute to safer environments by discouraging criminal behavior and supporting staff monitoring efforts. Additionally, infrastructure that improves access, such as sidewalks, public transit stops, and multi-use trail connections, not only encourages greater public use but also enhances natural surveillance, which is a proven deterrent to crime. The FGTS actively supports trail connections that link directly to park entrances, promoting both accessibility and a safer user experience.

Despite these strengths, safety management faces challenges. Law enforcement visibility and response times vary by location, especially in rural parks, and there is limited transparency around safety budgets, reactive versus preventive maintenance, and incident statistics. The lack of standardized surveys on public perceptions of safety makes systemwide evaluation difficult. Overall, proactive design and consistent upkeep remain the most effective tools for enhancing safety, building public trust, and ensuring that Florida's parks remain welcoming, inclusive spaces. By investing in safe, inclusive, and well-connected parks, Florida not only protects its natural assets but also enhances public health and community well-being.

Resilience

Florida's state park infrastructure faces increasing threats from hurricanes, sea-level rise, wildfires, and flooding. To address these challenges, the Florida Park Service has implemented a multifaceted approach that includes risk assessment, preventative design, and emergency response strategies. In coastal parks, elevated boardwalks and hurricane-rated facilities have become standard to mitigate storm damage. Inland parks are adopting fire-adapted facility layouts and vegetation management to reduce wildfire risks.

To ensure continuity of operations during disruptions, Florida has invested in decentralized utilities and modular construction. Solar power systems and on-site water treatment facilities support essential operations during grid outages. Many ranger stations and maintenance buildings are now built to withstand Category 4 hurricane conditions, with backup power and communication systems in place. Emergency response protocols are coordinated with state and county emergency management offices to allow for rapid deployment of staff and resources following storms or other incidents.

Recovery times have improved due to streamlined damage assessment protocols and emergency repair contracting. For example, after Hurricane Ian in 2022, several southwest Florida parks reopened within weeks due to pre-staged materials, cross-trained personnel, and hardened infrastructure. However, capacity gaps remain, as many older facilities lack modern protections and require retrofitting or replacement to meet current hazard standards.

Overall, the Florida State Park System demonstrates a growing capacity to withstand and rebound from multi-hazard threats. While the State is making meaningful progress in addressing resilience challenges, these threats are projected to intensify rather than diminish, requiring sustained and increasingly adaptive responses.

Innovation

Florida is implementing innovative approaches to improve infrastructure performance, sustainability, and the visitor experience. Recent projects use low-impact development (LID) techniques such as permeable paving, bioswales, and rain gardens, often paired with native landscape restoration to deliver both ecological and functional benefits. Advancements in construction such as recycled composite decking, fire-resistant siding, and modular prefabricated components extend facility lifespans and reduce maintenance costs. They also allow for faster, less disruptive project delivery, particularly in coastal, remote, or ecologically sensitive areas.

Technology is also transforming park operations. Solar-powered kiosks, automated trail counters, and environmental monitoring systems provide real-time data while reducing labor demands, and some parks are piloting augmented reality apps to enrich interpretation without expanding physical infrastructure. Other parks have introduced live-stream cam fees, such as Blue Spring State Park with its manatee cam (see Figure 4). Innovative delivery methods, including public-private partnerships for renovations and design-build contracts for new facilities, further streamline costs and timelines. By blending ecological stewardship with technological advancement, Florida is positioning its park system as a national leader in adapting to rising visitation, climate pressures, and evolving user expectations.

BLUE SPRINGS STATE PARK - A DESIGNATED MANATEE REFUGE WITH ITS OWN MANATEE CAM

Recommendations to Raise the Public Parks Grade

The following summarizes recommendations that park systems within Florida can incorporate to raise the grade.

- **Plan for Future Demand** – Strategic investments in infrastructure expansion, modernization, and workforce development will be essential to ensure equitable access and protect Florida's natural assets.
- **Systemwide Balance and Flexibility** – To address capacity issues in certain high-use regions, adopt a regional rebalancing strategy that includes the following components:
  - Expand infrastructure in high-demand parks by targeting investments at parks consistently operating at or over capacity to alleviate pressure on both infrastructure and the visitor experience.
  - Enhance access to underutilized parks by promoting less-visited parks through strategic marketing, improved signage, and transportation access. Incentivize visitation by highlighting unique features.
  - Use mobile visitor centers, seasonal staff, and modular facilities in high-demand parks to scale services during peak periods without permanent overbuild.
  - Expand use of "demand management tools" like reservation systems, timed entry, and dynamic pricing to shift visitation patterns more evenly across time and geography.
  - Use data from trail counters, reservation systems, and demographic projections to align capital planning and staffing with actual and anticipated regional demand.
- **Renewed Commitment from State Leaders** – State leadership support and public-private partnerships will be essential to protect Florida's natural assets for future generations. Continued long-term planning and sustained investment are key.
- **Enhance Budget Efficiency** – Support critical park system investments, ensuring the system's significant direct economic impact is safeguarded to maintain long-term community and financial sustainability.
- **Pursue Targeted Grant Opportunities** – Address the gap between budgeted grant funding and current utilization by improving grant tracking, streamlining application processes, and dedicating staff or resources to proactively secure and manage funds.
- **Prioritize Deferred Maintenance** – Provide clearer reporting on maintenance budgets and priorities. Increase investment in preventative maintenance staffing and infrastructure. Track and publish performance metrics and public feedback on maintenance standards.
- **Improve Public Safety** – Collect and report more transparent safety data, conduct public perception surveys, and explore the feasibility of dedicated park law enforcement resources.
- **Continued Climate Adaptation Planning** – Enhancing coordination, improving system-wide redundancy, and increasing capital funding for resilient infrastructure upgrades are key areas for further development.

Sources

- Florida Department of Environmental Protection, "Division of Recreation and Parks", 2025.
- Florida House of Representatives, "House Bill 209", 2025.
- Tallahassee Democrat, "Gov. DeSantis OKs New Law to Safeguard Florida Parks from Development." 2025.
- Florida House of Representatives, "House Bill 8009", 2025.
- National Park Service, "National Park Tourism in Florida Contributes $1.4 Billion to State Economy", 2024.
- National Association of State Park Directors, "2024 Survey of State Park Directors", 2024.
- Bureau of Economic and Business Research, "Florida Population Projections 2025–2045", 2023.
- Transparency Florida, "Operating Budget and Spending Reports", 2020-2025.
- Florida Policy Institute, "Florida FY 2024-25 Budget Summary: Natural Resources, Environment, Growth Management, and Transportation", 2024.
- National Park Service, "Deferred Maintenance Reports", 2025.
- Florida Department of Environmental Protection, "Florida Greenways and Trails System Plan", 2025.
- The Wall Street Journal, "In Florida, Coastal Counties Fuel Population Rise—and Climate Concerns", 2021.
- Executive Office of the Governor, "Florida Provides Updates on Hurricane Ian Recovery Efforts One Year After Landfall", 2023.
- Executive Office of the Governor. "Governor Ron DeSantis Signs Fiscal Year 2024-2025 'Focus on Florida's Future' Budget", 2025.
- Visit Florida, "Florida State Parks, Preserves, Rec Areas, and Trails", 2025.
- Executive Office of the Governor of Florida, "2024 Veto List", 2024.

C

Florida's Infrastructure

RAIL

EXECUTIVE SUMMARY

Florida's 2,900-mile rail network is vital to the state's economy, serving as a major freight corridor and providing intercity passenger service through Class I carriers, short lines, and two operators. While Florida benefits from modern, high-performing infrastructure in select corridors—most notably Brightline's high-speed passenger line and major Class I freight routes—its overall effectiveness is undermined by significant and widespread challenges. Persistent capacity bottlenecks, the deteriorating condition of essential short line infrastructure, and pervasive safety risks at grade crossings present substantial obstacles to optimal performance and future growth.

The state confronts a daunting $12.2 billion in unfunded rail infrastructure needs through 2045. To ensure Florida's rail network supports a growing population, dynamic freight market, and evolving climate, strategic action to boost funding, modernize infrastructure, enhance safety and resilience, and scale innovation is imperative. Sustained coordination will help build a resilient, efficient system ready for future demands.

Condition & Capacity

Florida's freight and passenger rail system is a foundational component of the state's transportation infrastructure. The network's 2,900 miles of active track facilitate operations for Class I freight carriers CSX Corp. and Norfolk Southern Corp., a diverse group of short line and regional railroads (including the Seminole Gulf Railway, the Florida Central Railroad Company, the Florida East Coast Railway, and the South Central Florida Express, Inc.), and intercity passenger services provided by Brightline and Amtrak. Brightline utilizes the Florida East Coast (FEC) corridor for its Miami-to-Orlando service.

Florida's rail corridors play an important role in the state's economy by connecting ports, markets, and intermodal hubs that facilitate both domestic and international trade. The rail system is experiencing escalating pressure from increasing freight volumes, rapid urbanization, and heightened competition for right-of-way, particularly within high-growth corridors. Each year, Florida's railroads transport approximately 98 million tons of freight, with the greatest concentrations moving along the Interstate 4 corridor, through the South Florida urban core, and across Jacksonville's critical rail hub. These corridors are essential to maintaining the efficient movement of goods and supporting the state's long-term economic competitiveness.

Shared-use corridors, such as the South Florida Rail Corridor (SFRC) and the Florida East Coast (FEC) Railway corridor, are vital components of Florida's rail network that accommodate both passenger and freight operations. The SFRC, owned by the Florida Department of Transportation (FDOT) and operated by the South Florida Regional Transportation Authority (Tri-Rail), supports commuter service alongside CSX freight trains across a 72-mile stretch linking Miami, Fort Lauderdale, and West Palm Beach. Similarly, the FEC corridor along Florida's eastern coast carries both intercity passenger trains operated by Brightline and freight trains serving the region's ports and distribution centers. These shared-use arrangements maximize corridor efficiency but also create operational challenges, including scheduling conflicts, maintenance coordination, and safety management at numerous grade crossings. Ongoing investments in signal upgrades, additional sidings, and dispatch coordination technology are helping to balance the competing demands of passenger reliability and freight capacity on these critical multi-use rail corridors.

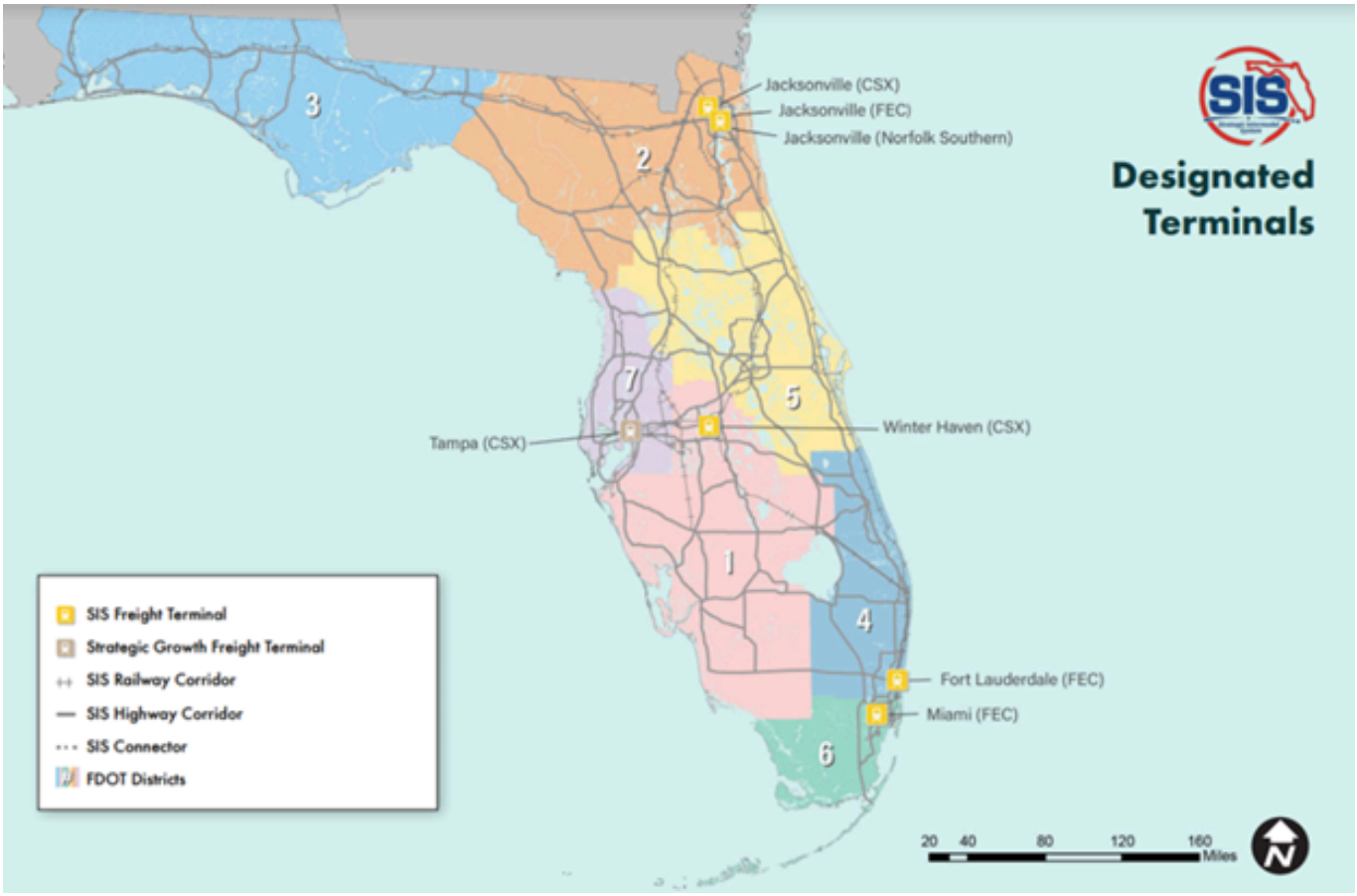
Capacity constraints are particularly acute in several areas:

- Urbanized Corridors: Shared-use corridors, such as the South Florida Rail Corridor (Tri-Rail and CSX) and the FEC corridor (Brightline and freight), face significant congestion.
- Terminals and Yards: Many facilities lack adequate track length and modern intermodal transfer capabilities, impeding efficient operations.
- Rural Short Lines: Aging infrastructure on these lines restricts train weight and length, creating bottlenecks that limit throughput.

Florida's rail capacity presents a mixed profile, characterized by high-performance corridors juxtaposed with localized, severe bottlenecks. Brightline's service, with up to 32 daily intercity trains between Miami and Orlando, is expanding to meet projected annual ridership of over eight million by 2030. As of April 2025, Brightline reported approximately 243,285 riders for the month. Conversely, Amtrak's Silver Service, operating predominantly on shared freight tracks along Florida's East Coast, experiences limited frequency and chronic delays. While Florida's Class I railroads manage growing freight volumes through key corridors such as the I-4 freight spine and Jacksonville's intermodal hubs, some segments are nearing operational capacity limits. FDOT's Strategic Intermodal System (SIS) data reveals congestion hotspots and rising volume-to-capacity ratios in urban corridors, alongside constraints at major terminals such as the Miami Intermodal Center and the Jacksonville Port Authority (JAXPORT). Although most Class I lines accommodate 286,000-pound railcars and double-stack container clearance, numerous short lines are hampered by low-clearance bridges and insufficient siding length, compromising their ability to meet modern logistics standards.

In terms of physical condition, Florida's Class I rail infrastructure is generally in a state of good repair, benefiting from consistent investment in continuous welded rail, automated signaling, and positive train control (PTC) on principal lines. Brightline's Miami-Orlando corridor, upgraded for high-speed service, represents one of the most modern rail segments in the Southeastern U.S. However, short line railroads exhibit significant deficiencies. Many operate on class 1 or 2 track, limiting speeds to 10–25 miles per hour and elevating the risk of service disruptions. Bridge infrastructure is a critical vulnerability, particularly for operators such as Seminole Gulf Railway and South Central Florida Express, where aging timber or steel structures often cannot support 286,000-pound railcars and necessitate urgent

Florida's Rail Lines and Designated Terminals[1]



replacement or reinforcement. Highway-rail grade crossing conditions remain a persistent concern across Florida's urban areas, especially along the FEC Railway corridor, which has experienced increased train frequency due to Brightline service. The associated public safety issues and vehicular delays have spurred investments in quiet zones and active warning devices, yet many rural crossings retain only minimal protection.

Florida's Rail Designated Terminals are key facilities identified within the FDOT SIS that serve as critical hubs for the movement of freight and passengers across the state. These terminals include major intermodal logistics centers, ports, and rail yards that connect rail lines with highways, seaports, and airports—facilitating efficient transfers of goods between transportation modes. Examples include JAXPORT in Jacksonville, PortMiami, the Winter Haven Intermodal Logistics Center, and Intermodal Container Transfer Facilities in South Florida. Collectively, these designated terminals form the backbone of Florida's multimodal freight network, supporting economic growth and ensuring the smooth flow of commerce throughout the state and beyond.

Funding

Railroad funding in Florida comes from a combination of federal, state, and private sources, with freight rail primarily financed through private investment, while passenger and shared-use corridors depend more heavily on public funding.

1. *FDOT SIS Policy Plan*

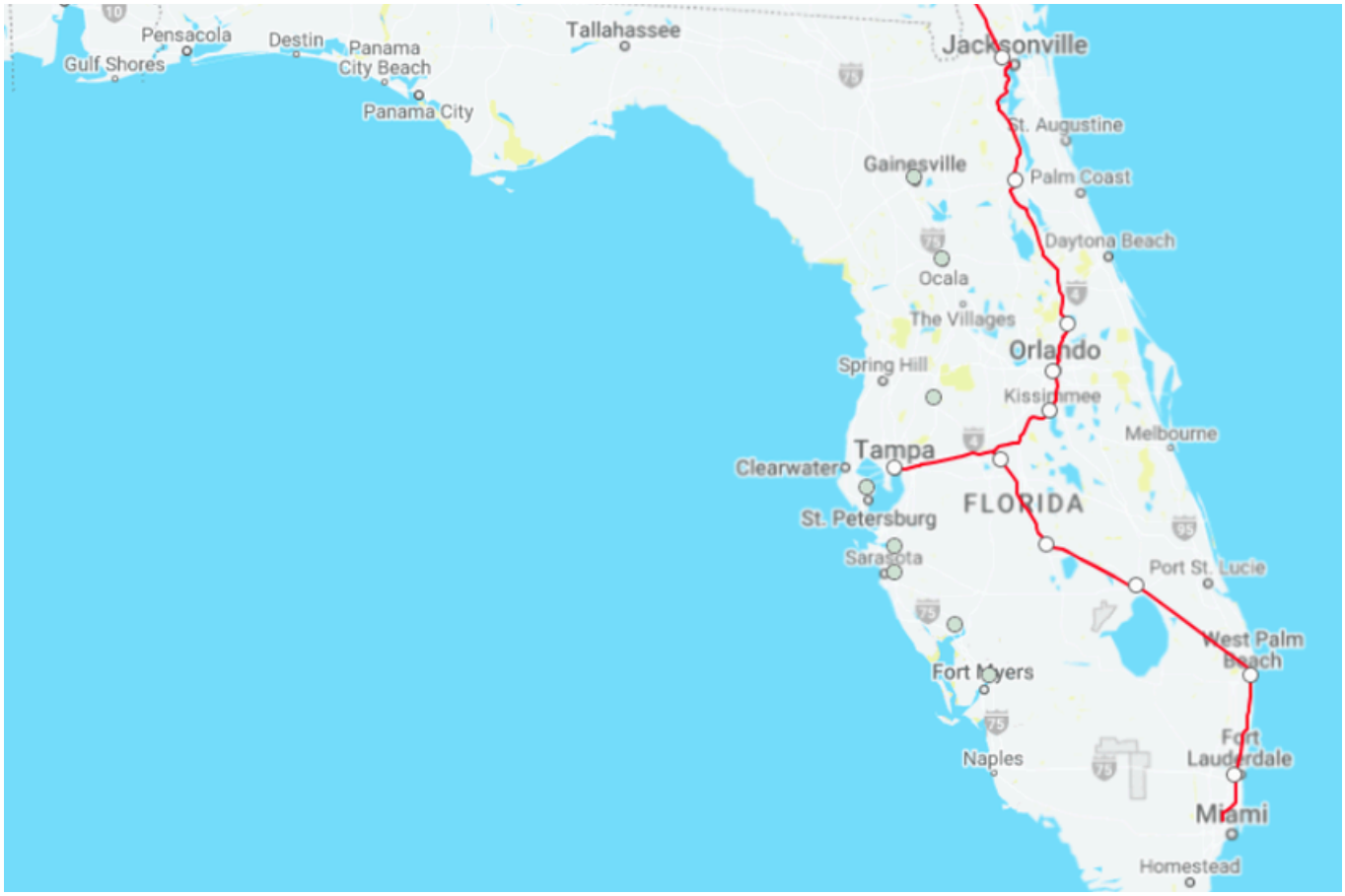
Class I Freight Railroads

Florida has two Class I Freight Railroads: CSX and Norfolk Southern. These private companies undertake substantial, albeit proprietary, annual investments in network maintenance and upgrades. Recent CSX initiatives include major track and bridge enhancements across Central and North Florida, particularly on corridors linking Jacksonville, Tampa, and Orlando, which are vital for connecting Florida's deepwater ports with inland markets. The Central Florida Intermodal Logistics Center in Winter Haven, a privately developed rail-served freight hub on CSX's S-line, exemplifies strategic investment aimed at expanding capacity and enhancing intermodal efficiency. Both CSX and the FEC Railway have implemented PTC on passenger-shared corridors, with FEC's modernized signal and interlocking system facilitating Brightline's high-speed operations. The FDOT's 2023 Florida State Rail Plan identifies ongoing needs, including additional siding, double-tracking projects (especially in growth corridors such as I-4), and grade separation improvements along heavily traveled urban freight lines.

Short Line and Regional Railroads

Agricultural and rural industrial markets are served by Florida's Short Line and Regional Railroads. These facilities require sustained public and private investment to ensure their viability. Many operate with outdated infrastructure, rendering them incapable of handling 286,000-pound railcars—the national freight standard—due to limitations in track structure, bridge

Amtrak's Passenger Rail Service Map in Florida[2]



ratings, and curve geometry. The Florida Rail System Plan identifies approximately $2 billion in statewide freight rail capital investments needed over the short term to address capacity, safety, and infrastructure upgrades across Florida's network. Within that total, upgrading short line and regional railroads—many of which still operate at Class I speeds below 10 mph—to Class II standards (25 mph freight operations) would account for hundreds of millions of dollars in required improvements statewide. These upgrades would focus on key corridors operated by Seminole Gulf Railway, Florida Central Railroad, and South Central Florida Express, where outdated track, bridges, and crossings continue to limit load capacity and service reliability. While recent federal funding through the Infrastructure Investment and Jobs Act (IIJA) have supported targeted upgrades to bridge capacity and track alignment, a significant backlog of unfunded projects persists, especially those related to grade crossing safety and track surfacing in rural and economically disadvantaged areas. FDOT has cautioned that without augmented public support, many short lines face the risk of deferred maintenance, potentially leading to service curtailment or abandonment.

Intercity Passenger Rail

Amtrak and Brightline are the two main operators of Intercity Passenger Rail in Florida. Florida's growing population has presented both opportunities and challenges for these facilities, mainly in achieving and maintaining a state of good repair. Amtrak services operate primarily on host freight tracks (CSX and FEC), limiting Amtrak's control over infrastructure conditions. While Brightline has invested over $5 billion privately between Miami and Orlando—covering station construction, high-speed rail track, PTC deployment, and maintenance-of-way facilities—Amtrak's supporting infrastructure lags. Stations in Jacksonville, Tampa, and Palatka require significant accessibility and modernization improvements. The backlog of intercity passenger rail projects includes station rehabilitations, platform upgrades to meet Americans with Disabilities Act standards, and the expansion of intermodal connections in cities such as Lakeland and Winter Haven. Furthermore, there are large population areas within the state which are not served by passenger rail, such as the Panhandle and Southwest Florida.

Florida has successfully secured federal IIJA funding through the Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program and is actively pursuing new grants via the Federal-State Partnership for Intercity Passenger Rail Program to support future expansions, such as the proposed Tampa-to-Orlando high-speed corridor and the restoration of Gulf Coast Amtrak service through the Panhandle. Continuous coordination among public and private stakeholders is paramount to align operations, asset management, and funding streams for the modernization of Florida's intercity passenger rail system.

Brightline is actively advancing its rail expansion plans toward Tampa, Florida. The company has filed to issue up to $400 million in tax-exempt bonds through the Florida Development Finance Corporation (FDFC) to help fund the design, construction, and equipment for the extension of its high-speed passenger service, which would eventually link Miami and

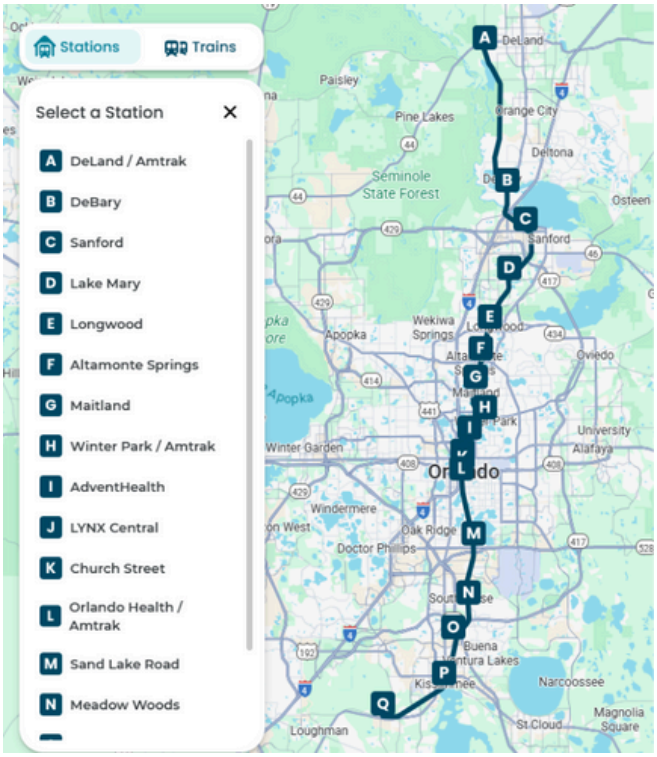
2.Amtrak.com

Tampa over roughly 320 miles. As noted on Brightline's August 2025 Revenue Ridership Report, it reported revenues of $54.6 million, up 12% year-over-year, driven by a 26% increase in long-distance ridership. Through August 2025, the company reported total revenue up 13% year-to-date, but still recorded an operating loss of $70.6 million in the first six months of the year 2025 and long-term debt of about $2.2 billion.

Commuter and Local Rail

Florida's commuter and local rail systems play an increasingly important role in regional connectivity and multimodal mobility. For example, Tri-Rail which is operated by the South Florida Regional Transportation Authority (SFRTA), provides over 3 million annual passenger trips across a 72-mile corridor shared with CSX freight operations. The system continues to expand, with the long-anticipated Tri-Rail Downtown Miami Link nearing operational readiness, enhancing access to Brightline and Metrorail. SunRail, managed by FDOT and local partners, operates along a 61-mile corridor from DeLand to Poinciana and faces ongoing challenges in achieving financial sustainability as FDOT transitions full operational control to local governments. Both systems are maintained through routine track and equipment inspections, though capital reinvestment for fleet modernization and signal improvements remains a priority. Funding for commuter rail is derived from a mix of federal formula grants, FDOT contributions, and local sources, yet long-term stability remains uncertain. Future needs across Florida's commuter and urban rail systems include dedicated state operational funding, expanded intermodal connectivity, and capital renewal to support fleet replacement, accessibility upgrades, and seamless integration with intercity and local transit networks.

SunRail System Map[3]

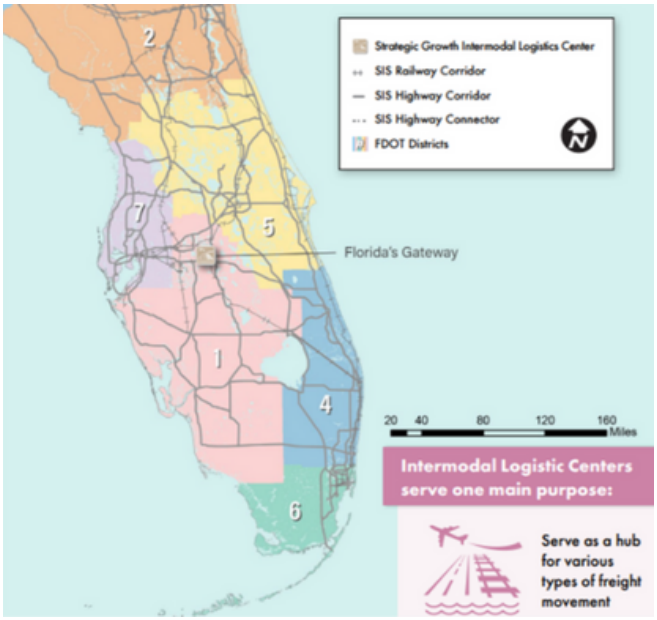


3.FDOT SIS Plan

Operation & Maintenance

Florida's operations and maintenance performance reflects a disparity: strong practices by Class I and private passenger rail operators contrast with ongoing challenges in comprehensive oversight and coordination. Brightline's high on-time performance (exceeding 90%) and robust private maintenance program stand in stark contrast to Amtrak's lower reliability, which is largely attributable to track-sharing conflicts with freight railroads where Amtrak lacks dispatching priority. Class I railroads such as CSX and FEC employ advanced, data-driven maintenance programs. Conversely, short line operators, constrained by limited resources, often resort to reactive maintenance. The state's role in maintenance oversight is primarily through FDOT's coordination with Federal Railroad Administration (FRA) inspections, lacking direct regulatory authority. Mitigation strategies, such as added sidings and interlockings, are increasingly deployed to reduce passenger-freight interference. However, routine maintenance and infrastructure renewal across the broader network, particularly on underfunded short lines, remain inconsistent. While major corridors are generally well-maintained, variability in condition and oversight contributes to uneven service outcomes statewide.

Florida's Gateway[3]

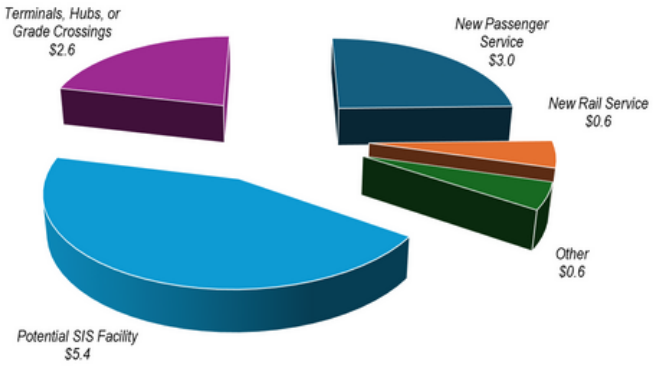



INTERMODAL FACILITY
WINTER HAVEN, FLORIDA

Future Need

Florida's SIS identifies a staggering $12.2 billion in unfunded rail infrastructure needs through 2045. This highlights a critical gap between planned investments and the projects essential for sustaining freight and intercity passenger mobility. The most significant funding shortfall is concentrated in District 6 (South Florida) for approximately $4.4 billion, accounting for nearly 28% of the total need. This is driven by complex shared-use corridors, Brightline's expansion initiatives, and pressing port-to-rail connectivity demands. Districts 1 and 4 (Central and Southeast Florida) also face substantial needs, collectively representing 35% of the total unfunded rail investment. These projects—encompassing capacity upgrades, signal modernization, grade separation, and new sidings—were identified in the FDOT 2045 Long Range Transportation Plan (LRTP) and are deemed vital for ensuring safety, reducing congestion, and facilitating reliable goods. Florida currently lacks a consistent, dedicated statewide rail grant program sufficient to support critical infrastructure upgrades, particularly for financially constrained short line and regional freight railroads. Figure 5 provides a breakdown for the unfunded needs for the different types of rail improvements and facilities. Many of these improvements, particularly in high-growth regions, are well-positioned for public-private partnerships (P3s) with Class I freight railroads and passenger rail providers such as Brightline.

2045 Florida Rail Unfunded Needs ($ Billions)[4]



Despite these long-term funding deficits, several short-term funded projects are progressing through federal, state, and regional sources. The federal CRISI and Nationally Significant Multimodal Freight and Highway Projects (INFRA) grant programs have enabled Florida to secure competitive awards for key infrastructure upgrades, including grade crossing improvements in Broward County, signal system modernization for CSX corridors, and bridge rehabilitation along the Panhandle's Florida Gulf & Atlantic Railroad. FDOT's SIS funding and the regional metropolitan planning organization's (MPO) priorities have also contributed to intermodal freight enhancements near ports, such as projects at Port Everglades and JAXPORT, as well as station and corridor improvements supporting Brightline's Orlando extension. Furthermore, many MPOs have incorporated rail-supportive priorities—such as sidings, intermodal connectors, and safety enhancements—into their cost-feasible plans, even when larger-scale rail projects remain unfunded. While these initiatives signify encouraging progress, they address only a fraction of the state's extensive long-term rail investment requirements, underscoring the critical importance of sustained, multi-source funding strategies.

4.FDOT 2045 LRTP

Public Safety, Resilience & Innovation

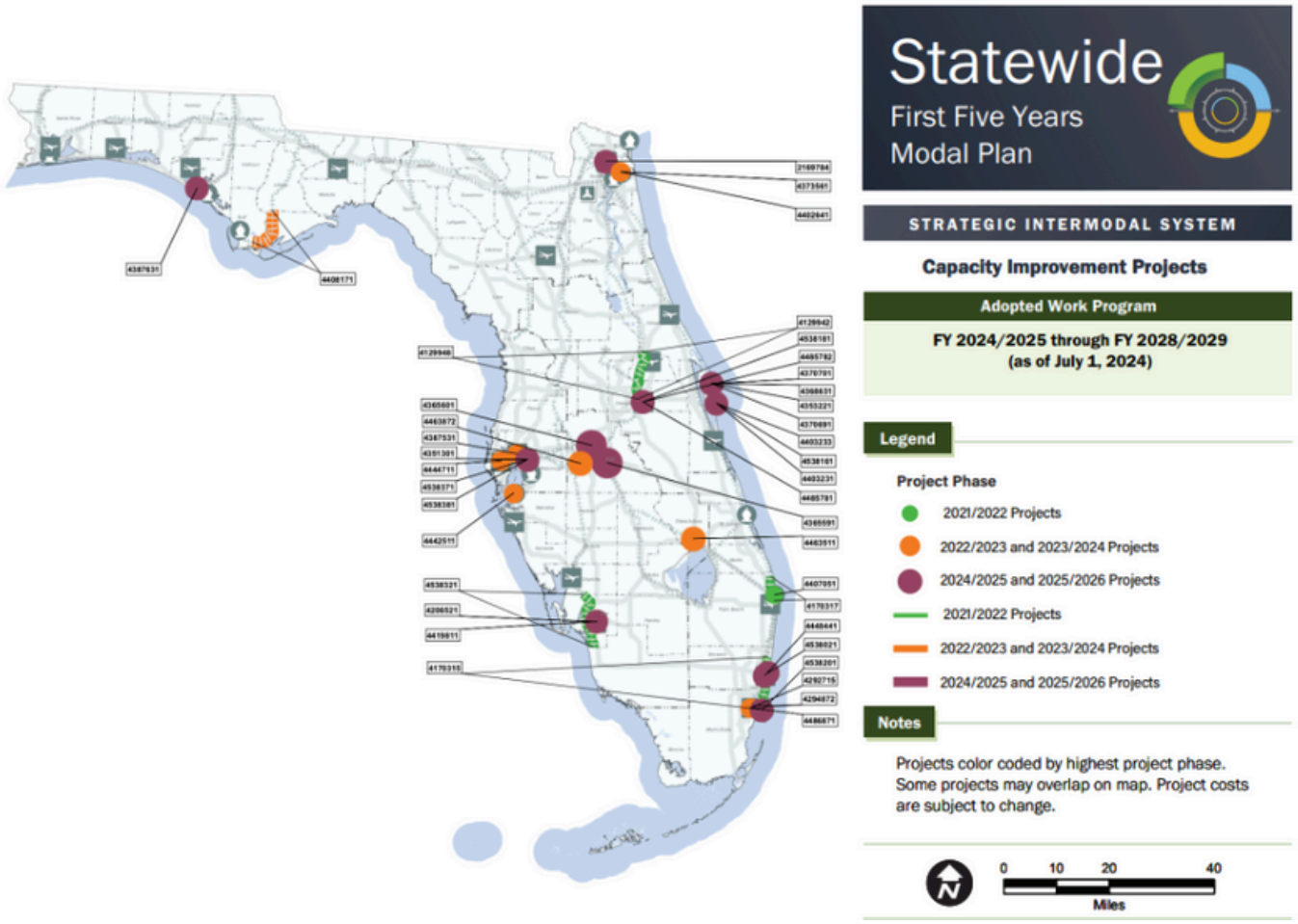
Rail safety in Florida remains a paramount concern, exacerbated by increasing train traffic across shared freight and passenger corridors. The FRA reported 85 rail-related incidents in Florida during 2024, including 12 derailments and 125 highway-rail grade crossing accidents. Florida's rail infrastructure is highly vulnerable to hurricanes and flooding, especially along coastal and low-lying corridors, impacting short lines and terminals. In response, FDOT and the Florida Transportation Commission now require resilience and climate adaptation in project design. Meanwhile, private railroads like CSX, FEC, and Brightline use drone inspections, LiDAR mapping, and predictive analytics to monitor infrastructure in real time, improving safety and long-term maintenance.

A prevalent public safety risk stems from the interaction between high-speed passenger trains, frequent freight operations, and dense urban traffic environments. Brightline, while a pioneer in Southeastern high-speed rail, experienced the state's highest fatality rate in 2024, largely due to pedestrian trespassing and unsafe conditions at grade crossings. In 2024, Florida recorded 125 grade crossing incidents, resulting in 26 fatalities and 62 injuries. Figure 8 provides a summary of the number of incidents, injuries and fatalities experienced by the different rail line operators in Florida for the year 2024. The state has initiated countermeasures, including implementing quiet zones, enhancing active warning systems, and funding grade separation projects, particularly along the FEC Railway corridor. Local jurisdictions are also undertaking initiatives to improve at-grade crossing safety. Hillsborough County, for example, has conducted a county-wide analysis of all at-grade crossings, identifying those within its jurisdiction and on private properties. To address safety at private crossings, Hillsborough County now requires new development applications to include coordination with railway operators and incorporate grade crossing safety improvements.

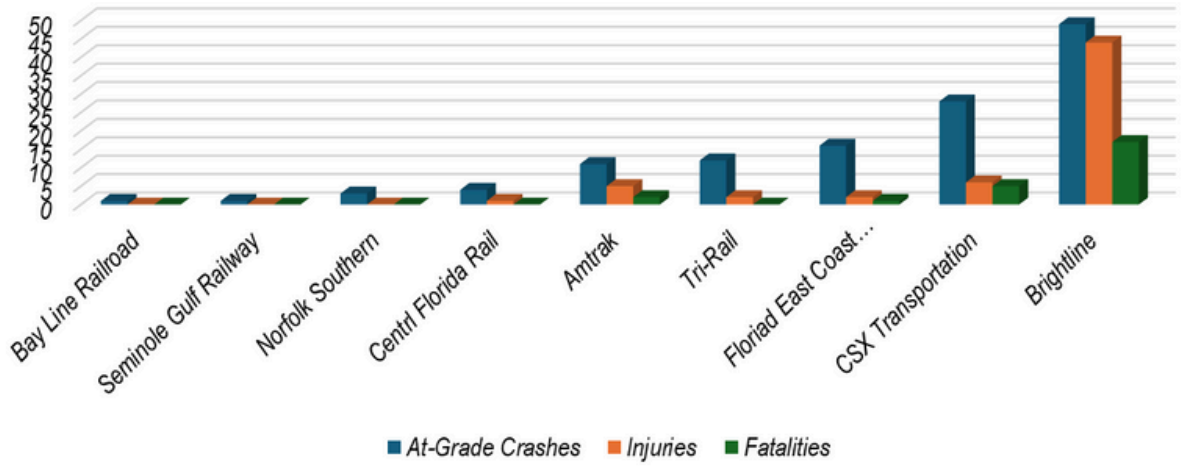
Emergency preparedness has advanced through improved coordination among railroads, first responders, and local agencies, especially concerning hazardous material transport corridors. The rail transport of hazardous materials through Florida's urban centers is stringently regulated, and freight railroads have reinforced tank car safety, routing protocols, and crew training to mitigate potential risks. Furthermore, Brightline, Amtrak, and freight operators continue to invest in PTC and other onboard safety technologies to prevent derailments and unauthorized train movements.

Florida faces unique resilience challenges from hurricanes, flooding, and sea-level rise, with the highest vulnerability areas concentrated in coastal districts and the Panhandle. Hurricane Ian in 2022 severely disrupted rail service in Southwest Florida, causing track washouts and damaging bridges utilized by short line railroads. Consequently, FDOT and regional partners have prioritized investments in storm-resilient bridges, elevated track beds, and flood-hardened drainage systems. Resilience planning is increasingly integrated into SIS projects, emphasizing not only rapid recovery but also infrastructure redundancy to prevent total service outages. Coordination with Florida's deepwater ports, such as PortMiami and JAXPORT, is crucial for maintaining freight flow continuity during emergencies. Some freight corridors now feature pre-positioned

Statewide Intermodal System Projects – Short Term[5]



2024 At-Grade Rail Crossing Crashes[6]



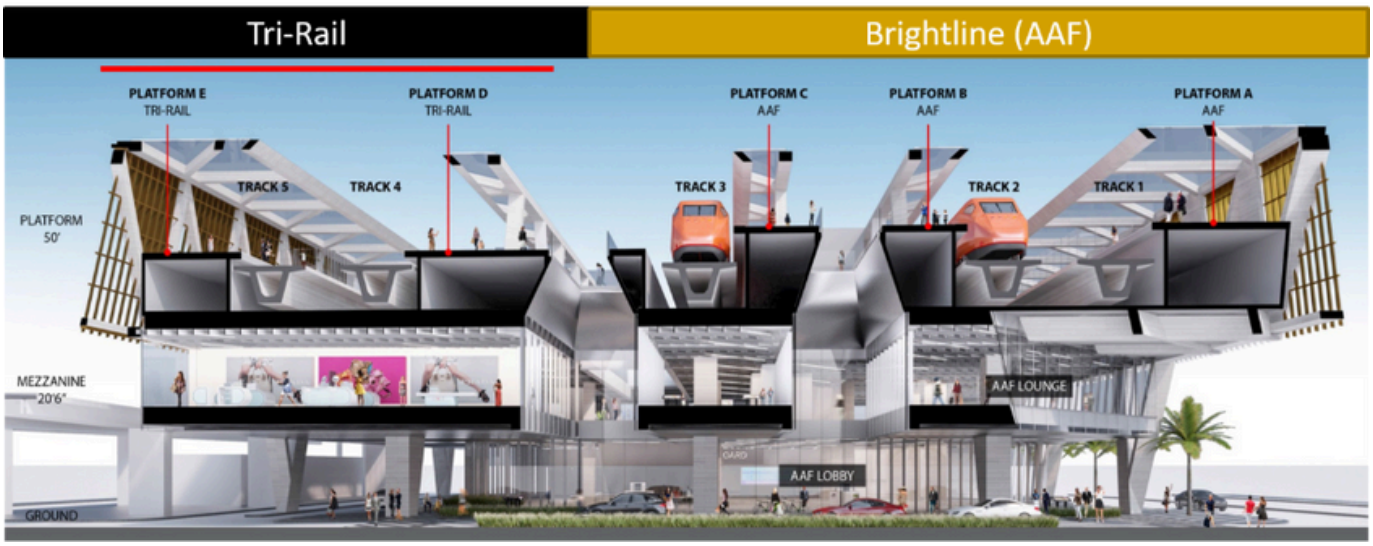
5.FDOT SIS Multimodal Plan
6. FRA Safety Data, 2024

Project Detail for Northwood/Iris Rail Connection[7]

Northwood/Iris Rail Connection

NEAREST METRO AREA: Miami-Dade and Palm Beach
COUNTY: Miami and Palm Beach
TOTAL PROJECT COST: $47.3 million

Tri-Rail Downtown Miami Link Service[8]



7. FDOT Rail System Plan 2023
8. Tri-Rail

maintenance equipment and mobile command assets to expedite recovery times. FDOT's SIS policy framework mandates climate adaptation and multimodal resilience, ensuring rail operations can recover swiftly and maintain vital connections with road, port, and intermodal networks during and after extreme weather events.

An example of creating a more resilient transportation network can be found in the Northwood / Iris Rail Connection project. This project links the Florida East Coast Railway and CSX networks, providing an alternate freight route during disruptions. The project boosts supply chain resilience, reduces highway congestion, and improves efficiency for key hubs including PortMiami, Port Everglades, and the I-95 logistics corridor.

Florida is emerging as a national leader in rail innovation, exemplified by Brightline—the first privately funded U.S. high-speed intercity rail in decades. Its use of real-time diagnostics, automated dispatching, and contactless ticketing showcases smart infrastructure integration. The system also features ambitious transit-oriented development (TOD) projects at its MiamiCentral and Orlando stations, effectively linking rail travel with walkable urban cores and future transit expansions. An example of Florida's ongoing push toward transit-oriented development (TOD) can be seen in the growth of mixed-use districts and new passenger rail connections that link major urban centers. In Miami, the 9-acre MiamiCentral complex integrates Brightline's downtown terminal with over 3 million square feet of residential, office, and retail space, creating one of the state's most comprehensive examples of rail-centered urban redevelopment. Complementing this, the Tri-Rail Downtown Miami Link (TRDML), which began service in January 2024, extends Tri-Rail service directly into the city's core for the first time—connecting to MiamiCentral and surrounding development zones. Together, these initiatives illustrate Florida's coordinated approach to integrating rail infrastructure and land use, advancing compact, multimodal growth while enhancing regional mobility and economic resilience.

In the freight sector, CSX and FEC leverage artificial intelligence-based defect detection, digital inspection portals, and predictive maintenance algorithms to manage rolling stock and track assets efficiently. Energy efficiency is increasingly embedded into rail modernization projects. For example, Brightline trains utilize Tier 4 clean diesel locomotives with reduced emissions and FDOT is exploring hybrid-electric rolling stock and green infrastructure requirements for future intercity projects.

BRIGHTLINE WEST ROUTE OVER I-95

Recommendations to Raise the Rail Grade

To address identified deficiencies and enhance the overall performance, safety, and resilience of Florida's rail network, the following strategic actions are essential:

- **Reducing the Needs Backlog**: Establishing a robust state rail fund, comparable to those in other leading states, would provide essential matching dollars for federal grants, facilitate vital bridge and track modernization projects, and mitigate the risk of service degradation or abandonment in rural areas.
- **Accelerate Grade Crossing Safety and Separation Projects**: A significant and sustained investment in grade separation, advanced warning systems, and comprehensive trespass mitigation measures are critically needed. FDOT and MPOs must prioritize both urban and rural crossings by developing and implementing a statewide strategy for proactive, systemic crossing upgrades, rather than relying on reactive measures following incidents.
- **Address Modernization Backlogs on Short Line Railroads**: A focused, adequately funded program to assist these short lines in achieving 286,000-pound load ratings, improving track speeds to acceptable standards, and deploying remote condition monitoring technologies would yield significant improvements in system-wide capacity, efficiency, and safety.
- **Advance Resilience and Redundancy in Rail Corridors**: Florida must mandate stringent resilient design standards in all new SIS rail projects, strategically fund the elevation or storm-hardening of critical infrastructure in susceptible corridors, and proactively work towards establishing redundant routing options for essential freight and passenger services.

The state should actively incentivize and support the expansion of TOD in smaller and mid-sized markets (e.g., Lakeland, Gainesville, Sebring) and encourage Class I and regional railroads to adopt proven innovations such as automation, energy-efficient locomotives, and real-time asset monitoring tools, thereby fostering a more uniformly modern and efficient statewide rail system.

Sources

- Amtrak, "State Fact Sheets and Service Information," 2023.
- Brightline, "System Overview and Expansion Updates," 2024.
- Brightline Florida, "Monthly Revenue and Ridership Report," 2025.
- CSX Transportation, "Network Map and Capital Investment Reports," 2023.
- Federal Railroad Administration (FRA), "Rail Safety Data Reports," 2023.
- FRA, "FRA Safety Data," n.d.
- Florida Department of Transportation (FDOT), "2023 Florida Rail System Plan," 2023.
- FDOT, "2022–2045 Florida Transportation Plan (FTP)," 2022.
- FDOT, "Florida Rail System Plan," 2023.
- FDOT, "Florida's Strategic Intermodal System 2045 Multi-Modal Unfunded Needs Plan Update," 2017.
- FDOT, "Press Release: Keeping Supply Chain Moving & Construction On Time," 2025.
- FDOT, "Strategic Intermodal System (SIS) Policy Plan," 2022.
- FDOT, "Vision 2020 Multimodal Plan," 2020.
- Hillsborough Metropolitan Planning Organization (MPO), "2050 Long Range Transportation Plan: Cost Feasible Investment Scenarios," 2024.
- Miami-Dade Transportation Planning Organization (TPO), "CSX Southwest Railroad Corridor Assessment," 2023.
- Miami-Dade Transportation Planning Organization (TPO), "The SMART Plan," 2024.
- Palm Beach Transportation Planning Agency (TPA), "VISION 2050 Long Range Transportation Plan," 2024.
- U.S. Department of Transportation (U.S. DOT), "Consolidated Rail Infrastructure and Safety Improvements (CRISI) Grant Program," 2024.

C+

Florida's Infrastructure

ROADS

EXECUTIVE SUMMARY

Florida's State Highway System (SHS) comprises 12,273 miles of public roads, including 1,475 miles of interstate highways. Approximately 56% of these roads are urban and 44% are rural, with 83% rated in good condition. Roadway safety has improved, with traffic fatalities declining 5% from 2022 to 2023, totaling 3,375 deaths statewide. As the third most populous state, Florida's population reached 23 million in 2024 and is projected to exceed 24 million by 2027, driving significant pressure on the state's transportation infrastructure. To meet growing mobility demands, the Florida Department of Transportation (FDOT) and local partners are advancing a coordinated approach through the Florida Transportation Plan (FTP), which sets a long-term vision for a safe, efficient, and interconnected multimodal system. Continued investment, innovation, and collaboration will be essential to maintaining Florida's strong transportation performance as growth and tourism continue to accelerate.

Capacity

Florida's roads connect its population of over 23 million residents with its diverse transportation facilities, including public transit systems, airports, seaports, and rail lines. The State Highway System is composed of 44,976 lane miles and 7,044 bridges, including 89 movable bridges. The Florida road system is comprised of 1495 miles of interstate highways and 12,273 state rural and urban roads.

Congestion is a challenge in major metropolitan areas in the state.

According to a report by INRIX, Miami's traffic congestion has worsened, ranking it as 8th most congested city globally. The city experienced a 30% increase in traffic from 2021 to 2022, resulting in drivers losing an average of 105 hours per year due to traffic delays. This congestion not only frustrates commuters but also has economic implications, costing the typical driver around $1,700 annually in lost time and fuel. Orlando's I-4 westbound corridor emerged as the most congested, with drivers losing an average of 31 minutes during peak hours. This represents a significant rise from its 10th position in 2022.

Table 1 presents the 12 most congested cities in Florida ranked from the shortest average travel time to work to the longest. These city's commuters grapple with the consequences of rapid urbanization and inadequate infrastructure.

Travel Time in Major Metropolitan Areas in Florida[1]

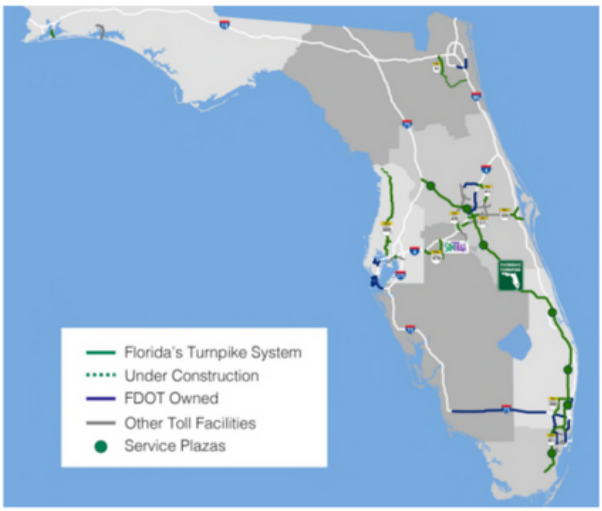
City	Average Time to Commute to Work (Minutes)
Homestead	38.7
The Hammocks	38.9
South Miami Heights	38.9
West Perrine	39
Palmetto Estates	39.1
Kendall West	39.8
Mascotte	40.7
Middleburg	40.8
Princeton	41
Richmond West	41.9
Cutler Bay	42.9
Poinciana	43.6

1. *Insider Monkey, March 2024*

C+

ROADS

Florida's Turnpike System Map[2]



Condition

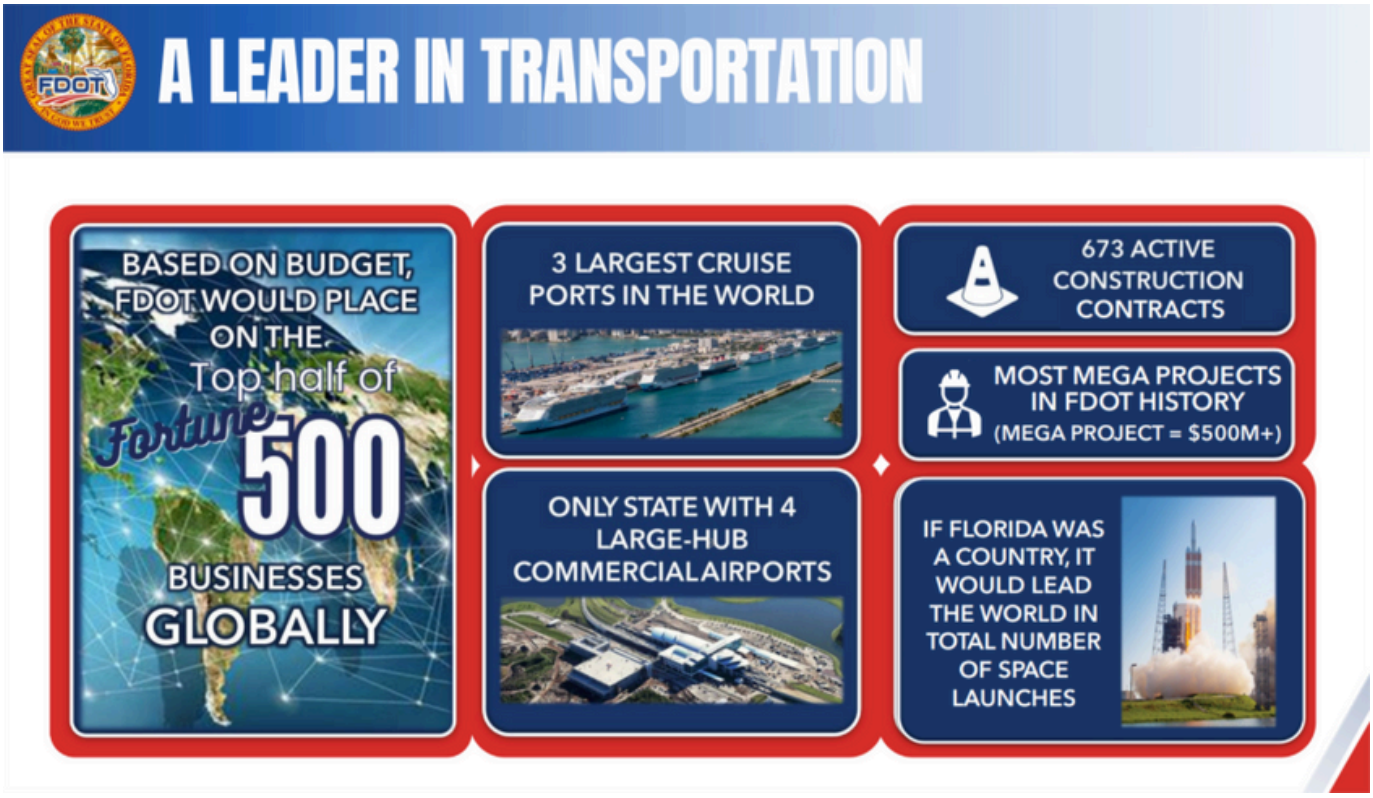
In Florida, unaddressed repairs cost road users approximately $9 billion annually, or about $547 per driver. This figure includes costs associated with vehicle repairs, accelerated depreciation, and increased fuel consumption due to deteriorating road conditions. 83% of the roads on the SHS are in good condition, exceeding FDOT's performance measure of pavement condition target of 80% of pavement in good condition.

Of the 682 million daily vehicle miles traveled in Florida in 2024, 362 million, or about 54% are on the SHS roads. In 2024, 5.4% of SHS roads were heavily congested at peak hours. Despite vehicle miles traveled increasing by 6.7% since 2017, the percent of facilities on Florida's transportation system that are heavily congested have only increased by 0.7%, thanks to extensive strategic investments to continually reduce congestion on Florida's roadways.

Reason Foundation's 28th Annual Highway Report measures the condition and cost-effectiveness of state-controlled highways in 13 categories, including pavement and bridge conditions, traffic fatalities, and spending. In the performance categories, ranking first implies the state has the lowest fatality rate and its road pavement is in the best condition. In simplified terms, in the cost-effectiveness categories, a first-place ranking means the state spends less money than other states in that category.

In 2025, Florida's highway system ranked 14th nationally for

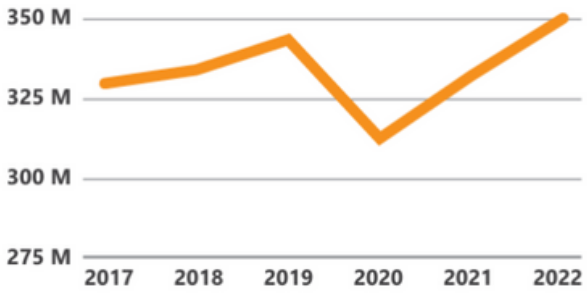
FDOT, Transportation Statistics[3]



2. FDOT Florida's Turnpike
3. Secretary Jared W. Perdue, PE, "2025 Construction Symposium," 2025.

C+

Florida Vehicle Miles Travelled 2017-2022[4]



overall cost-effectiveness and condition, down from 8th in the previous evaluation. Safety remains a concern: the state ranks 38th in rural fatality rate and 48th in urban fatality rate, though total roadway fatalities fell 5% from 2022 to 3,375 in 2023. Florida performs better in infrastructure condition, ranking 10th in structurally deficient bridges, 9th in urban Interstate pavement condition, and 4th in rural Interstate pavement condition.

Cost measures are mixed, with Florida ranking 40th in capital and bridge disbursements per mile and 23rd in maintenance spending per mile. The state's biggest improvements were in rural fatality rate (up from 45th) and administrative disbursements (now 23rd). Its largest decline was in urban congestion, falling from 18th to 39th, with drivers losing 45 hours per year to traffic. Florida operates the 12th-largest state-controlled highway system in the country.

According to the report, Florida can improve its road condition and performance by reducing capital-bridge spending and addressing traffic congestion—the only two areas where it ranks in the bottom 25 states. The state should also work to lower its urban fatality rate, where it currently ranks 48th nationally, indicating one of the poorest safety outcomes in the country.

FDOT's performance measure requires that at least 80% of all lane miles on the State Highway System achieve a Pavement Condition Rating (PCR) of "excellent" or "good." Pavement meeting this standard receives a minimum score of 6.5 out of 10 based on ride quality, crack severity, and rutting. In 2025, 83% of lane miles met this standard, exceeding the Department's target and demonstrating continued progress in maintaining pavement quality across the state.

Funding

Funding for Florida's roads comes from a variety of sources. The largest funding source for FDOT's asset management activities is State-generated revenues from fuel taxes, motor vehicle fees, and other local option taxes and fees. The State fuel tax is indexed to the Consumer Price Index (CPI), so it grows with inflation. Florida's gas tax is a significant revenue source for the state's transportation initiatives, supporting the construction and upkeep of roads, bridges, and other critical infrastructure projects. The tax is collected by the Florida Department of Revenue and contributes to funding transportation projects, road maintenance, and other related infrastructure. The current gas tax rate in Florida is 39.4 cents per gallon, which is on top of the federal gas tax of 18.4 cents per gallon. In addition, counties in the state may also leverage an additional tax of up to 12 cents per gallon. The tax is structured to fund transportation projects, with a substantial portion directed to the State Transportation Trust Fund for highway construction, maintenance, and public transit. Proceeds from the federal tax partly support the Highway Trust Fund. The federal tax was last raised on October 1, 1993, and is not indexed to inflation, which increased 111% from October 1993 until December 2023.

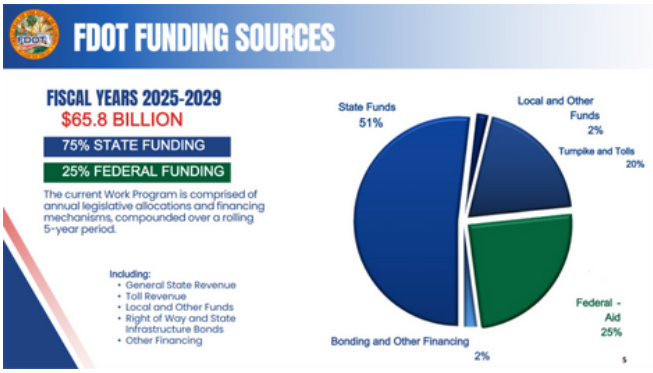
The current FDOT programmed capital improvement budget is comprised of annual legislative allocations and financing mechanisms, compounded over a rolling 5-year period. Each year, FDOT develops the Five-Year Work Program (WP) which is an ongoing process that is used to allocate funds for priority transportation projects for the next five years. The Work Program is based on the best available forecasts of project costs and funding, ensuring that the Department has the financial capacity to implement planned projects, and includes funding from general state revenue, toll revenue, local funds, right-of-way and state infrastructure bonds, other financing, and FDOT's budget.

The FDOT budget for Fiscal Year 2025-2026 is a significant investment in Florida's transportation infrastructure. Snapshots from the approved budget with a focus on addressing congestion include:

- $15.1 billion for FDOT projects, focusing on congestion relief, safety, and supply chain resilience.
- $13.7 billion for the state transportation work program, which includes 20 projects to relieve traffic congestion.
- $66.1billion over the next 5 years for the Moving Florida Forward Initiative, expediting 20 projects to relieve traffic congestion.

The budget aims to support the resiliency of Florida's existing and future transportation infrastructure, ensuring a safe and efficient transportation system that meets the needs of the state's residents and businesses.

FDOT Funding Sources[4]



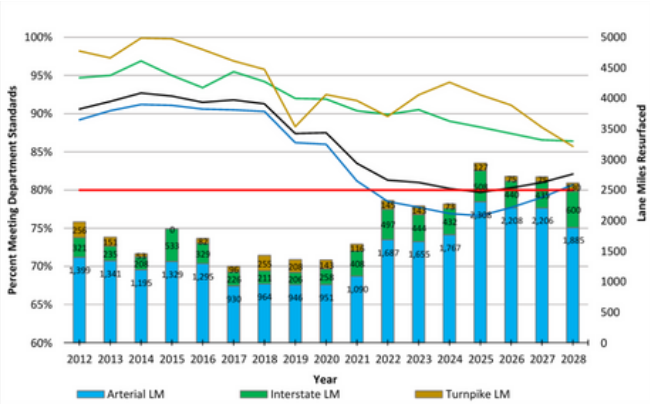
Future Need

Despite significant investments, roads in Florida still face significant investment needs to accommodate a growing population and maintain a state of good repair.
Figure 5 shows that the resurfacing budget was decreased starting in 2012 and recently increased to slow and reverse the decreasing SHS pavement condition before it dips below 80%. Projections show that the overall pavement condition will be at its lowest in 2025 and slowly improve in later years based on

4. FDOT

the projected required budget to reverse the overall downward trend. The resurfacing lane miles shown in this figure reflect changes in FDOT's priorities. Capacity projects were prioritized in the past while overall pavement conditions were well above the FDOT sufficiency requirement of 80%.

Historical and Projected SHS Pavement Conditions and Department Standards[4]



FDOT is responding to Florida's rapid growth through the Moving Florida Forward initiative, a $4 billion effort to accelerate congestion-relief and safety projects statewide. The program prioritizes upgrades to major interstates and arterial roads to maintain freight movement and meet rising travel demand.

A key project is the construction of 17 miles of new express lanes on I-4 in Hillsborough County, extending from I-75 to County Line Road. Advanced by ten years, this project will begin construction in 2028 and aims to separate long-distance and local traffic, improving reliability and reducing delays.

To address major freight needs along the I-4 corridor, FDOT will also build a new 100-space truck parking facility in Polk County at the Polk Parkway/I-4 interchange.

FDOT is the only state agency that operates on a cash flow basis, meaning, for most transportation projects, the department begins design and construction before the total amount of cash is available to fund the project. The department anticipates that future revenues will be available to finance current projects in much the same way that a family anticipates future earnings to pay for a mortgage. The method used by FDOT requires an effective and timely forecasting process to calculate future revenues.

Comprehensive, statewide data on funding gaps and investment backlogs for Florida's roadway infrastructure are not available, making it difficult to identify if planned investments are sufficient to meet needs.

Operation & Maintenance

In Florida, the responsibility for maintaining roads is primarily shared between state and local governments. FDOT oversees the construction and maintenance of roads and highways, ensuring safe and efficient transportation across the state. Additionally, local municipalities are responsible for routine maintenance of roads within their jurisdiction, which can include sidewalks and medians. This shared responsibility means that both state and local entities play a crucial role in road maintenance, with specific duties depending on the type of road and its location.

FDOT has a budgeted amount of $14.8 billion for operations and maintenance, which includes significant investments in major highways, rural roadways, and the state's aerospace and maritime sectors. This budget supports the maintenance and construction of the state's transportation infrastructure, ensuring that Florida remains a leader in state-led infrastructure.

As Florida's population continues to increase, the FDOT's mandate to provide an effective and efficient transportation system grows proportionally.

Florida Demographic Forecast[5]

Florida's Population Growth Fiscal Year	Population	Growth Rate
2023-2024	23,104,597	1.65%
2024-2025	23,440,479	1.45%
2025-2026	23,759,816	1.36%
2026-27	24,065,193	1.29%
2027-2028	24,358,003	1.22%
2028-2029	24,636,610	1.14%
2029-2030	24,900,684	1.07%
2030-2031	25,151,463	1.01%

FDOT holds Transportation Asset Management workshops each spring to review performance in maintenance, pavements, and bridges. Maintenance needs are evaluated using levels of service to determine conditions and budget requirements. Pavement conditions are assessed annually with specialized equipment, projecting future performance to set resurfacing targets and ensure at least 80% of pavement meets state standards. FDOT has performed strongly in recent years.

The Florida Transportation Commission (FTC), a nine-member governor-appointed oversight board, evaluates FDOT using 15 performance measures that assess key functions, outcomes, and areas within the Department's control. When FDOT does not meet expectations, the FTC recommends corrective actions to improve performance.

The Commission's core responsibilities include reviewing major transportation policy proposals, advising the Governor and Legislature on policy priorities, overseeing FDOT's performance, work program, safety, finances, and budget requests, and monitoring the efficiency and management of transportation authorities established under state law.

The Maintenance Rating Program (MRP) is FDOT's standardized

4. FDOT
5. Florida Office of Economic and Demographic Research

system for visually and mechanically evaluating routine maintenance conditions on the State Highway System. FDOT, along with local governments and toll authorities, identifies needed maintenance to keep roadways in good repair, as required by Florida law. The MRP grades five roadway elements and produces a composite score from 1 to 100, with 80 set as the statewide performance standard. The Department achieved an MRP grade of 83 for the fifth consecutive year. This is 103.8% of the objective.

O&M and construction projects are actively underway in the state. Construction commenced on 87.1 (or 70.1%) of 124.3 planned lane miles of additional roadway to the SHS. In addition, FDOT advanced or added 303.3 lane miles that were not in the current plan. The department also let to contract 2,426.8 (or 86.9%) of 2,791.8 planned lane miles of roadway to be resurfaced on the SHS. A total of 451 construction contracts valued at $6.34 billion were let during the year. By the end of Fiscal Year (FY) 2023-2024, the department completed 308 construction projects with a value of $2.63 billion. Of the 308 construction contracts, 254 (or 82.5%) were completed within 120% of their original contract time and 273 (or 88.6%) were completed within 110% of their original contract amount.

Public Safety

Unfortunately, Florida has some of the least safe roadways in the U.S. The fatality rate has steadily risen year over year. In 2023, there were 1.55 fatalities per 100 million vehicles miles traveled, an 8.4% increase over 2019. Taking Florida's growing population into account, it represents the third most roadway deaths in the nation. To curb accidents from distracted drivers, Florida enacted the Wireless Communications While Driving Law, which changes the ban on texting while driving to a primary enforcement law – meaning a police officer can stop a driver and issue a citation for texting. Despite these efforts, nearly 300 roadway deaths in 2023 were attributed to distracted driving, an 8% increase over 2022 figures.

Statistics fare worse for those sharing the road. In 2023 and 2024, Florida recorded 456 bicyclist deaths, far more than California (322) and Texas (197), despite both states having much larger populations. Furthermore, 55% of cyclists killed were on FDOT-owned roadways despite FDOT owning just 10% of all roadways.

Florida had made significant investments in optimizing capacity on its roadways, with both highway widening and localized road diets. These efforts put public safety at the forefront by relieving congestion, improving emergency routes, and increasing visibility of new signage and pavement markers with continuous LED lighting. Improvements to Interstate 4 (I-4 Ultimate and Beyond the Ultimate) have added pedestrian bridges and tunnel crossings, express lanes, and diverging diamond interchanges, all intended to minimize collision potential. The Turnpike Widening Infrastructure Initiative is currently under construction in the Orlando and Miami/Fort Lauderdale metropolitan areas. On the flip side, there is a growing movement to decrease capacity of local roads through lane repurposing or "road diets", in which traffic lanes may be removed in favor of dedicated left turn lanes, wider sidewalks, and bicycle lanes, thereby acting as a speed management tactic.

Across Florida, several cities are implementing road diet projects to improve safety, mobility, and multimodal access. In the Tampa Bay area, the City of Tampa's Mobility Department incorporates road diets into its strategy to improve transportation safety and efficiency. Similarly, Orange County Public Works is retrofitting roads to accommodate emerging transportation modes while prioritizing pedestrian protection. Together, these initiatives reflect Florida's growing commitment to creating safer, more balanced transportation networks across urban areas.

As of 2025, more than 40 communities in Florida have committed to Vision Zero plans aimed at eliminating traffic fatalities and severe injuries. This initiative is being implemented across various cities and counties throughout the state.

In addition, multimodal transportation options continue to grow in Florida, and they can offer significant benefits to public safety by removing congestion from roads and directing passengers to safer modes of transportation. In 2022 and 2023, Brightline opened stations in Aventura, Boca Raton, and Orlando. Since then, it has provided intercity rail service to 2.5 million riders, a 70% increase over the company's first five years in business. Local commuter trains have also experienced ridership increases. Commuter rail systems in Orlando and Miami have also experienced ridership growth in recent years. In combination with the rest of the state's 30 fixed-route bus and rail systems, annual passenger trips have increased 22% in 2023 to over 182 million. The total number of fatalities due to crashes on Florida roads in 2023 was 3,375, a 5% reduction from 2022.

Resilience

Florida's growing communities, unique location, geography, and environmental resources place the state at risk to hazards, including flooding, storms, and sea level rise. Resilience allows our infrastructure system to adapt to changing conditions and provide reliable transportation to all Floridians.

The vulnerability assessment of Florida's SHS identified several areas of concern related to flooding, storm surge, and sea level rise. Approximately 1,820 miles (15%) of roadway and 2,156 bridges are located within a 100-year floodplain, while 1,412 miles (12%) and 1,334 bridges fall within a Category 3 storm surge zone. Additionally, 138 miles (1%) and 967 bridges are in areas projected to experience up to two feet of sea level rise by 2070. It is important to note that while these facilities are located in areas exposed to potential hazards, their actual vulnerability depends on design and elevation. These findings provide an essential baseline for more detailed evaluations and will help prioritize resilience improvements across Florida's transportation network.

FDOT has long prioritized reducing the vulnerability of transportation facilities to extreme weather and remains committed to building infrastructure that can withstand and recover quickly from future shocks. The state's Resilience Action Plan outlines strategies to strengthen the resilience of the SHS and guide future investments, focusing on integrating resilience into infrastructure design, operations, and asset management—both by retrofitting existing facilities and incorporating resilient design standards in new construction. The plan also emphasizes collaboration, bringing together local governments, metropolitan planning organizations, state and federal agencies, and other partners to coordinate resilience efforts across jurisdictions.

Considering the hazards studied in combination, the plan identifies 57 centerline miles as high priority, 709 as medium priority, and 1,781 as low priority. These priorities can guide FDOT's Districts as they work with communities to determine vulnerability for retrofit, redesign, or potential relocation of

existing infrastructure. The Plan also lists strategies to increase the resilience of the SHS and identifies actions needed to implement them. The strategies address planning; project development and environment; design, materials, and construction; traffic operations and emergency management; and asset management and maintenance. While the plan focuses on the SHS, county and local facilities are critical linkages in the transportation system as a whole, and those facilities located within the priority tiers identified in the plan may also be affected by the hazards. Collaboration and partnerships with communities are key to ensuring a resilient transportation system.

Innovation

To better accommodate the state's rapid growth in population, tourism, and commerce, FDOT is committed to developing and deploying sophisticated, fully integrated, statewide Intelligent Transportation Systems (ITS) in a cost-efficient manner. ITS represents the application of real-time information systems and advanced technologies as transportation management tools to improve mobility of people and goods.

Florida set a new all-time annual record in 2024 with 143 million visitors—an increase of 1.7% over the previous record set in 2023. For 2023, Florida's system of seaports handled 114.25 million tons of cargo, shattering the 2022 record-high 112.5 million tons of cargo moved. This 1.5% year-over-year growth rate is proof that recent investments have well-positioned Florida to be America's supply chain solution.

FDOT puts safety and mobility at the forefront as it advances the vision of providing a transportation network that is well-planned, supports economic growth, and has the goal of being fatality-free and efficient. To help drive Florida towards this goal, this initiative is focused on the deployment of Connected and Automated Vehicles (CAV) and other related technologies throughout the state. FDOT has begun planning, designing, and deploying multiple pilot programs across Florida, and our partners are developing, testing, and implementing innovative CAV technologies that will support the Department's vision.

FDOT is developing a pilot project to demonstrate Driver Assistive Truck Platooning technologies and operations to State transportation stakeholders. The pilot project will highlight performance and safety considerations through a set of operational scenarios.

The Florida Automated Vehicles program, led by FDOT, is helping to educate the public by engaging stakeholders, developing research and pilot projects, and creating awareness of the technologies and how they support FDOT's vision statement. These revolutionary technologies will further FDOT's vision statement; "serving the people of Florida by delivering a transportation system that is fatality and congestion-free."

The University of Florida (UF) and its Transportation Institute, FDOT, and the City of Gainesville have partnered to create a "smart testbed" on the UF campus and surrounding highway network. The testbed will deploy and evaluate numerous advanced technologies, including connected and autonomous vehicles, smart devices, and sensors.

Located off I-4 between Orlando and Tampa, SunTrax is a large-scale, cutting-edge facility dedicated to developing, developing, and testing emerging transportation technologies in safe and controlled environments.


MIAMI, FLORIDA

C+

Recommendations to Raise the Roads Grade

- Enhance critical transportation assets which will boost the economy in the short-term by creating jobs in construction and related fields.
- Recommend policies based on transportation system performance and prioritize funding to ensure performance measures are met.
- Emphasis on innovative technologies and digital infrastructure.
- Increase the investment in the workforce, such as development of human resources needs, that should run parallel to the additional investments needed, to raise the highway grade in 2025 and beyond.
- Identify risks, particularly related to sea level rise, flooding, and storms; assess potential impacts; and employ strategies to avoid, mitigate, or eliminate impacts to build a resilient infrastructure.

Sources

- Florida Department of Transportation, "2024 Florida Transit Information and Performance Handbook." 2024.
- Florida Highway Safety and Motor Vehicles (FLHSMV), "Life Takes a Turn Every 44 Seconds on Florida's Roadways," 2024.
- Florida Office of Economic and Demographic Research, "2025 Federal, State, and County Tax Rates on Motor Fuel and Diesel Fuel in Florida's Counties," 2025.
- The Florida Transportation Commission, "Performance and Production Review of The Florida Department of Transportation Fiscal Year 2022-2023," 2023.
- The Insurance Institute for Highway Safety (IIHS), "Fatality Facts 2023 State by State," 2025.
- The League of Bicycle Friendly America, "Bicycle Friendly State Report Card, Florida 2024," 2025.
- Secretary Jared W. Perdue, PE, "2025 Construction Symposium," 2025.

D+

Florida's Infrastructure

SCHOOLS

EXECUTIVE SUMMARY

Florida is home to 2,576 public school buildings with an average age of 35 years. The Florida Legislature created the Florida Education Finance Program (FEFP) in 1973 to establish a state policy of equalized funding in order to ensure that every student in the public education system has access to programs and services that meet their educational needs and are comparable to those offered to similar students, regardless of geographic location or local economic conditions. The FEFP serves as the primary mechanism for funding the operating costs of Florida's school districts. Funding is largely determined by multiplying the number of full-time equivalent (FTE) students in each education program by specific cost factors, resulting in a weighted FTE calculation.

One change from the 2021 report is the scholarship awards for K-12 education no longer have financial eligibility requirements. The four scholarship programs (for use in enrollment in private schools) are the "Florida Tax Credit Scholarship Program", "Hope Scholarship Program", "Florida Empowerment Scholarship Program" and "Public School Transportation Stipend".

The scope of this report includes the K-12 public schools in the State of Florida.

Condition & Capacity and Operation & Maintenance

As of January 2025, Florida was home to 2,576 public school buildings. This total does not include non-education buildings, i.e., County Administration, food service, adult education, etc. The average age of Florida's schools (permanent buildings) is 35 years – significantly lower than the national average of 49 years. The condition of Florida's schools was evaluated based on funding requests for improvements to the following eight categories from a sampling of the 67 school districts:

- Roof Replacement/Repair
- HVAC replacement or repair
- Life Safety Issues
- Fire Alarm upgrades
- Indoor Air Quality Testing/Asbestos/Mold Issues
- Plumbing
- Physical Distribution Emergency Generator
- Site Security/Fencing/Walks

These 67 school districts evaluated have 2,576 traditional K-12 schools (as of January 2025): 1,677 elementary schools, 489 middle schools, 410 high schools, and 256 combination schools with a 2024-2025 student population of over 2.9 million full time equivalent students. The largest school district, Miami-Dade, had 160 elementary schools, 47 middle schools, 48 high schools, and 64 combination schools. Statewide data is not available on the condition of these buildings.

The Florida Constitution was amended in 2002, requiring free high-quality pre-kindergarten and mandating the reduction of class sizes, commonly referred to as "class size reduction." This establishes a limit of 18 students in pre-kindergarten through grade 3 classrooms, 22 students in grades 4 through 8 classrooms, and 25 students in grades 9 through 12 classrooms. As of the 2024-25 school year, 91% of schools in the state were meeting the class size requirement – see Table 1 for a breakdown by grade.

1. *Florida Department of Education*

The Solar Energy Generation and Battery Storage Concept

Grade Group	Schools Meeting Requirements	Schools Not Meeting Requirements	Total Schools	% Meeting Requirement
PK–3	1,822	0	1,822	100.00%
4–8	1,582	344	1,926	82.10%
9–12	444	16	460	96.50%
All Schools	**3,848**	**360**	**4,208**	**91.40%**

Florida has in place a regular, comprehensive and extensive construction and maintenance program administered by The Office of Educational Facilities. The mission of the Office is to provide technical support and information for all issues related to educational facility planning, funding, construction, and operations throughout Florida's K-12 Education System. While the program is structured to be effective, the scale of the work and the available funding is not sufficient to meet the needs.

Florida's Office of Economic and Demographic Research (EDR) published a 2017 report analyzing statewide construction costs for public school facilities and evaluating the statutory limits on cost per student station. Using 2016 data, the study found that construction costs varied significantly by region and school type, with high schools generally the most expensive to build. The report projected future cost increases and recommended considering a shift from the per-student-station model to a cost-per-square-foot framework to better reflect actual construction market conditions. EDR noted that factors such as inflation, material prices, and regional labor costs continue to drive

variability in school construction expenses. The findings highlight the challenges districts face in providing adequate, modern learning environments within existing funding and cost limit structures.

The "Review of Florida's Cost Per Student Station" dated January 2017 found many of the costs per student station were found to be incidental to the cost of facility construction. The student station refers to the net square footage requirements per full time student. This is used to determine school capacity. The EDR settled on a model using RSMeans for cost/square foot for budgeting. However, this model does not include architectural and engineering fees and site work other than for excavation related to the foundation, site improvements or public shelter requirements.

The security and safety elements addressed by the report card included those physical improvements required to assure student and staff protection from identifiable threats (hurricane shelters) and environmental threats. Per the 2022 Statewide Emergency Shelter Plan "all new educational facilities must be designed and constructed to comply with the EHPA criteria unless specifically exempted by the board with written concurrence of the applicable local emergency management agency or the Division". District public schools (K-12) are the primary source of public hurricane evacuation shelter space in Florida, accounting for about 97 percent of current capacity.

Funding & Future Need

Funding for Florida's schools comes mainly from state and local fund sources, primarily through legislative appropriations. School districts in 2022-23 received 32% of their financial support (for a combination of capital improvement projects, educational equipment, media centers, busing, lease purchases) from state sources, 51% from local sources and 17% from federal sources.

Since 1997, local revenues have dominated as the main source for school capital improvement projects. Local revenue for Florida's 67 counties is almost entirely from property tax collections. In 2024, Florida's school property tax rates averaged about $3.09 for every $1,000 of taxable property value, ranging from about $3.20 in Orange County to about $1.06 in Monroe County. By law, districts can collect up to $1.50 for every $1,000 of taxable property value, and those funds can be used for things like building or renovating schools, maintaining and repairing facilities, and purchasing or leasing school buses and other equipment. Districts are also authorized to share a portion of this revenue with charter schools. Many counties in the state benefit from sales tax increases or ad valorem taxes to support school funding. More than half of Florida's 67 counties have levied a sales tax surtax. Florida has one of the lowest overall tax rates in the country, in addition to no state income tax.

The major portion of state support is distributed through the Florida Education Finance Program (FEFP). State funds appropriated to finance the 2024-25 FEFP total over $12.7 billion. Included in this total is about $11.7 billion from the General Revenue Fund, $505 million from the Educational Enhancement Trust Fund, and $471 million from the State School Trust Fund. Although taxes from several sources are deposited in the General Revenue Fund, the predominant tax source is the 6% sales tax on goods and services. In addition to these funds, nearly $2.8 billion is provided in the class size reduction allocation for operations, which consists of about $2.6 billion from the General Revenue Fund, $104 million from the Educational Enhancement Trust Fund and $86 million from the State School Trust Fund.

The Florida Legislature established the Education Enhancement Trust Fund (EETF), which includes the net proceeds of the Florida Lottery and the tax proceeds on slot machines in Broward and Miami-Dade counties. For 2024-25, lottery proceeds were used to fund about $99 million for debt service for the Class Size Reduction and Educational Facilities Lottery Revenue Bond Program and about $140 million for continuing education. State appropriation currently rely almost exclusively on lottery funds to maintain facilities, and county government often rely on penny sales taxes to provide their substantial local portion. These include Public Education Capital Outlay (PECO), Effort Index Grant and Classrooms First from Lottery proceeds, penny sales tax revenue, Classrooms for Kids, other state funds, local property taxes and local bond proceeds. As part of the SMART (Soundly-Made, Accountable, Reasonable and Thrifty) Schools Act of 1997, the Florida Legislature established a 20-year capital outlay funding program designed to provide approximately $2 billion in lottery funds to school districts for the construction of permanent classrooms, this funding has since been shifted due to budget issues for the State. A school district may use Classroom for Kids funds to construct, renovate, remodel, or repair educational facilities only when necessary to meet classroom size requirements. The primary priority for these funds is to increase student station capacity. Districts already in compliance with class size reduction limits may use the funds for renovation, remodeling, or repair projects.

Florida's Family Empowerment Scholarship program, which provides school choice vouchers, is projected to cover the fees of over 429,000 students in FY 2025-26 – including facility upgrades. This expansion of the voucher program, driven by 2023 legislation removing income eligibility caps, is estimated to cost nearly $4 billion in the 2024-25 school year alone, potentially straining public school budgets that are also cover facility upgrades and expansion.

Federal sources included relief funding from the COVID-19 pandemic. The Coronavirus Response and Relief Supplemental Appropriations (CRSA) Act was signed into law on December 27, 2020, it provided an additional $3.13 billion in Elementary and Secondary School Emergency Relief (ESSER II) funds for Florida school districts. The American Rescue Plan (ARP ESSER) was also established on March 11, 2021, providing $7.04 billion for Florida schools to safely reopen and sustain safe operations. The original CRRSA ESSER II program ended January 29, 2024; however, a small number of local educational agencies (LEAs) received an extension through March 2025. Similarly, the ARP ESSER program will end in January 2025, and LEAs can seek extension through March 2026.

Estimating the costs to meet these requirements for educational adequacy is difficult and uncertain; however, by some estimates it will cost $3 billion per year to construct sufficient classrooms to achieve the class size reductions required for full implementation. The state appropriation for facilities funding since the 2008-2009 school year has been $0, declining from $650 million in 2007-2008, indicating a significant shortfall. Most school districts must make up this shortfall in facilities funding from local sales taxes. The total funding dedicated to facilities funding for the 2024-2025 school year is $3.11 billion, all devoted to operating costs, which with $0 allocated to facilities funding.

One of the largest school districts in the State, Orange County

Public Schools (OCPS) is pausing new school construction due to a projected decline in student enrollment. Enrollment was expected to drop by over 3,000 students in the next year, but it ended up dropping by more than 6,600 students – representing about a 3.5% decline in enrollment. A major factor is the expansion of Florida's school voucher program, which has led many families to opt for private or home-schooling alternatives.

Uncertainties remain as to the effect lowered county impact fees, total new construction allocations, fluctuating enrollment due to the state's scholarship options and deferred maintenance costs will have on Florida's K-12 schools.

Public Safety, Resilience, & Innovation

Schools are often used as shelters for hurricanes and other environmental threats – both for students and faculty and oftentimes for the broader community. According to the 2022 Statewide Emergency Shelter Plan, all newly built educational facilities in Florida are required to meet Enhanced Hurricane Protection Area (EHPA) standards unless an exemption is approved in coordination with local emergency management officials or the Division. Public K–12 schools serve as the primary source of hurricane evacuation shelter space statewide, providing approximately 97% of Florida's total public shelter capacity.

In addition, the State of Florida provides a funding mechanism through The Florida School Hardening Grant program. The program provides funding to public school districts and charter schools to enhance the physical security of school buildings. During 2024-2025 $42 million was allocated to school districts and charter schools, with the minimum sum being $42,000.

Recommendations to Raise the Schools Grade

- Establish reliable, consistent state funding sources beyond lottery proceeds that keep pace with inflation to support school facilities.
- Continue local county sale tax increases to support education facilities maintenance and expansion needs.
- Encourage and support county property tax rates dedicated to school infrastructure.
- Understand how varying enrollment may affect school funding and budgets for maintenance needs.
- Evaluate the security and safety of schools in light of recent tragic events by instituting statewide metrics for safety evaluations.
- Prioritize pursing federal grants for high-poverty, high-need school districts to supplement current funding levels

Sources

- Florida Department of Education, "The Office of Educational Facilities - Florida Inventory of School Houses," 2025.
- Florida Department of Education, "2024-2025 Funding for Florida School Districts – Statistical Report," 2025.
- Education Week-2012, "Quality Counts report," 2012.
- "Public Education Capital Outlay Allocations Summary 2005-2015," 2015.
- "Florida Building Code-Public Shelter Design Criteria," 2023.
- "State Board of Education, Capital Projects Plan" 2024-2025
- Florida Department of Education, "2024-2025 Appropriations from the Educational Enhancement (Lottery) Trust Fund," 2025.
- Florida Department of Education, "Class Size," n.d.
- WKMG News, "Orange County Public Schools to Pause New Construction Amid Enrollment Decline," 2025.
- Florida Department of Education, "Class Size Reduction – Averages," n.d.
- 2025 Report Card for America's Infrastructure, "Schools," n.d.
- Fox 35, "Orange County Public Schools pausing new construction amid enrollment drop," 2025.
- News 6, "Orange schools face $25M shortfall after enrollment drops nearly 7K students," 2025.

Florida's Infrastructure

SOLID WASTE

EXECUTIVE SUMMARY

Florida handles municipal solid waste (MSW) in three ways: it is either sent to a landfill, separated for recycling, or combusted for energy generation. Increased populations of both permanent residents and visitors are contributing to the amount of MSW generated per capita, nearly triple the national per capita average of 4.51 pound per day. The average cost to dispose of MSW in Florida is higher than the national average. The capacity for handling this waste is adequate for both current and future needs, but a portion of the state's counties will reach landfill capacity in about 10 years. Some metropolitan areas, like those in South Florida where land availability is sparse, are making progress by innovating waste management and recycling, while other regions still rely heavily on landfills. Florida's solid waste infrastructure is in good condition, though there are opportunities to strengthen recycling and reuse programs.

Condition and Capacity

The State of Florida offers three options for solid waste management: Landfilling, Recycling and Material Recovery, and Combusting for energy production. The Florida Department of Environmental Protection (FDEP) tracks quantities of specific waste types through monthly and annual reports provided by all permitted entities, be they public or private. The reported annual tonnage of MSW reported in 2024 was over 54.5M, up about 7.5M tons from 2019, with more than 57% of the waste generated in the eight most populous of Florida's 67 counties. Nearly 51% of the MSW in 2023 was landfilled, up from the 48% landfilled in 2019. This could be caused by population growth in less populous counties, where recycling services are not offered. In the eight counties mentioned above, landfill rates fell from 46% in 2019 to 43% in 2024.

Florida's recycling rate increased from 42% in 2017 (latest available data at time of 2021 Florida Report Card) to 49% in 2024, with 43% being recycled materials and 6% being combusted for energy. While Florida provides updates at the end of the 2nd quarter for the previous year, information for the national averages of 24% recycled and 12% combusted listed on the EPA website has not been updated since 2017.

Florida maintained a higher per capita rate for MSW production, 12.98 pounds per day in 2024 compared to 4.51 pounds per day nationally in 2017, largely due to tourism. While Florida's overall population has increased by about 600,000 people in the latest four years of reporting, the discrepancy in the state's per capita generation is due to the nearly 143 million visitors received in 2024, according to a May 2025 news release by the Governor's office. Tourists account for over six times the 23 million Florida residents and significantly influence annual waste generation rates.

The State of Florida categorizes facilities into 41 different types, including County-managed Class I and III facilities and privately-owned specialized processing facilities. Class I facilities accept MSW and ash, while Class III facilities accept non-combustible waste, such as construction and demolition (C&D) debris. Of these, the following types and numbers are currently reported as active, authorized to operate, registered, or under a solid waste permit:

Types of Facilities

CLASS DESCRIPTION	TOTAL
CLASS I LANDFILL	42
CLASS III LANDFILL	34
YARD TRASH DISPOSAL FACILITY	112
SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)	330
WTE ASH MONOFILL	5
COAL ASH MONOFILL	10
OTHER DISPOSAL/PROCESSING FACILITY	8
CONSTRUCTION/DEMOLITION DEBRIS DISPOSAL	63
MATERIAL RECOVERY FACILITY - C & D	45
TREATMENT FACILITY	1
SOLID WASTE COMBUSTOR	1
SOIL TREATMENT	2
VOLUME REDUCTION/SHREDDER	2
CONTAINER TO CONTAINER OPERATION	21
WASTE TIRE PROCESSING FACILITY	45
WASTE TIRE MOBILE PROCESSOR	2
COMPOSTING FACILITY	4
TRANSFER STATION	106
WASTE TIRE COLLECTION CENTER	56
WASTE TIRE COLLECTOR	642
MATERIAL RECOVERY FACILITY - CLASS I & III	39
USED OIL RECYCLING	18
WASTE TO ENERGY FACILITY	10
ENERGY RECOVERY	1
RECOVERED MATERIALS PROCESSING FACILITY (RMPF)	343
DISASTER DEBRIS MANAGEMENT SITE	203
Total of Sites	**2,147**

The state has extended the life and capacity of Class I landfills by including recycling programs and other processing opportunities for MSW. Even with these efforts, 18 existing facilities around the state will be reaching capacity in the next 10 years. Most notably, South Florida will be experiencing a significant shortage in landfill capacity, with all existing landfills in Miami-Dade and Broward Counties, the state's two most populous counties, reaching capacity in 2036.

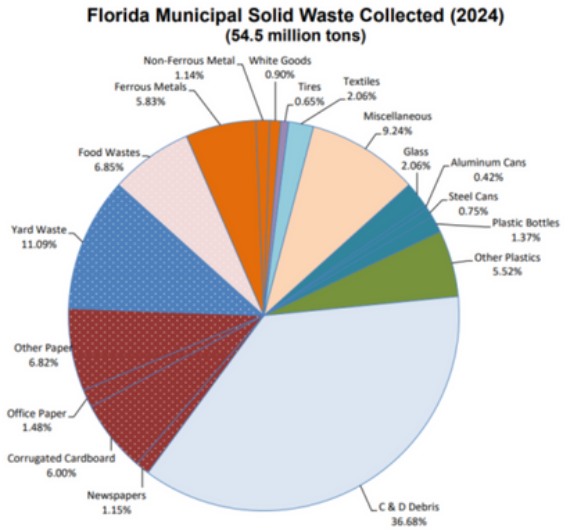
In 2024, the state recycled nearly 24 million tons of waste, up about three million tons from 2019, and combusted over 3.45 million tons of MSW, a decline of 750,000 tons from 2019. The reason for this sharp decrease in combustion is due to the destruction of Miami-Dade County's waste to energy (WTE) facility in early 2023 due to a fire that broke out in the facility. The loss of this facility has also accelerated the capacity depletion of the County's landfills, as ash remains of MSW consume only 10% the capacity that unprocessed MSW would take. The state generated about 3 million megawatt hours of energy from biomass sources, ranking Florida as the fifth highest producer of energy from biomass combustion in the US, down from second largest producer in 2019. While a new site for a replacement WTE facility in Miami-Dade has not yet been identified or planned, Lee, Palm Beach and Pasco Counties are planning for expansion of their WTE facilities.

The FDEP has made this graphic publicly available to show the different waste types received by Florida facilities.

Florida Municipal Solid Waste Collected and Recycled (2024)

MATERIALS	MUNICIPAL SOLID WASTE COLLECTED [1]		MUNICIPAL SOLID WASTE RECYCLED		
	TONS PER YEAR	PERCENT OF TOTAL TONS PER YEAR	TOTAL TONS RECYCLED	PERCENT OF TOTAL TONS RECYCLED	MATERIAL RECYCLING RATE [2] (PERCENT)
Glass	1,122,902	2.1	221,977	0.9	20%
Aluminum Cans	226,959	0.4	23,538	0.1	10%
Steel Cans	407,561	0.7	21,058	0.1	5%
Plastic Bottles	744,560	1.4	45,334	0.2	6%
Other Plastics	3,007,682	5.5	85,985	0.4	3%
C & D Debris	19,997,489	36.7	12,078,474	51.6	60%
Newspapers	627,403	1.2	61,138	0.3	10%
Corrugated Cardboard	3,272,169	6.0	1,401,636	6.0	43%
Office Paper	807,159	1.5	91,544	0.4	11%
Other Paper	3,720,750	6.8	266,494	1.1	7%
Yard Waste	6,043,696	11.1	3,828,810	16.4	63%
Food Wastes	3,736,521	6.9	150,410	0.6	4%
Ferrous Metals	3,179,176	5.8	2,435,344	10.4	77%
Non-Ferrous Metal	622,710	1.1	508,577	2.2	82%
White Goods	491,689	0.9	261,047	1.1	53%
Tires	353,113	0.6	155,696	0.7	44%
Textiles	1,120,388	2.1	40,126	0.2	4%
Miscellaneous	5,037,268	9.2	1,607,562	6.9	32%
Process Fuel [3]	N/A [4]	N/A	108,311	0.5	100%
TOTAL	54,519,195	100.0	23,393,061	100	43%

[1]Municipal solid waste collected is the total recycled, landfilled and combusted.
[2]Unadjusted traditional recycling rate.
[3]Process fuel is composed of yard, wood and paper waste used in process boilers.
[4]Process fuel is not included in the total. The tonnage collected has been counted in other material categories.



Operation & Maintenance and Funding & Future Need

Various solid waste facilities are operated by both public and private entities. The larger landfills are typically operated by either counties or municipalities, with a few larger private operators. The FDEP requires that any operator, whether private or public, comply with all rules and regulations set forth in the Florida Administrative Code. Because Florida's groundwater is close to the surface, landfills use protective liners and leachate collection systems to capture and treat any contaminated liquid that could seep out. The FDEP reporting requirements cover all aspects of landfill management, including landfill gases, surface water, and groundwater. Liquids and gases from landfills are either treated and safely disposed of, used in other ways (like turning methane into energy), or pumped into deep underground wells.

The state requires that all operators provide financial assurances that the facilities are properly funded for operation, maintenance and closure/abandonment. All facilities report current capacities and any future plans for adding capacity. Closed landfills are required to maintain monitoring for a period of 30 years to ensure that no impacts are seen in the surrounding areas.

All facilities accepting MSW are funded through a combination of tipping fees and property assessments, depending on the facility and municipality/county. Various waste types have different tipping fees, and the average tipping fees for the state (as of 2024) vary between $53.50 per ton for WTE Facilities to $71.50 per ton for Class I landfills, which is higher than the 2024 national average of $66.92. In 2019, average tipping fees for Class I landfills were lower, nearly half of the average fees in 2024. Tipping fees for hazardous materials are typically higher, ranging in average between $101.22 per ton for petroleum contaminated soils to $190.00 per ton for passenger tires. Information on national tipping fees can be found in a report produced by the Environmental Research & Education Foundation (EREF), which analyzes fees across the country (latest available at time of writing is for 2023).

Tipping Fees (2024)

	Class 1	WTE Facility	Yard Trash	White Goods	C&D
State Low	$0.00	$0.00	$0.00	$0.00	$0.00
State High	$143.00	$107.00	$143.00	$143.00	$143.00
State Average	$71.50	$53.50	$71.50	$71.50	$71.50
National Average*	$66.92	$59.93			$54.04
	Passenger Tires	Asbestos	Out of County	Petroleum Contaminated Soils	
State Low	$0.00	$0.00	$0.00	$0.00	
State High	$350.00	$1200.00	$148.00	$2000.00	
State Average	$175.00	$600.00	$74.00	$1000.00	

As additional growth is predicted in all parts of the state, many municipalities have increased fees to raise capital reserves for expansion. Florida is predicting a population growth of approximately 4.5 million people in the next 20 years. Additional loads from tourism are also predicted to rise. The Florida Climate Book, published in 2017 by the Florida Climate Institute, dedicates a chapter to tourism and predicts that the next 10 years will show a rise of 7 million (pessimistic) to 50 million (optimistic) visitors in the state. While this book concentrates on the ecological burden on the state, the additional population, though temporary, advances the burden on our solid waste system.

Public Safety; Innovation; Resilience

The FDEP is the governing agency in charge of the Solid Waste Program. The Division of Waste Management (DWM) is responsible for the permitting and compliance monitoring of all waste programs throughout Florida. The following programs are managed under the DWM:

- District and Business Support Program, providing technical support services to the division and DEP district offices.
- Permitting and Compliance Assistance Program, implementing the state's financial assurance and financial responsibility programs for Solid and Hazardous Waste and Tanks programs.
- Petroleum Restoration Program, overseeing cleanup of sites contaminated by petroleum and petroleum products from stationary petroleum storage systems.
- Waste Cleanup Program, managing state-funded investigation and cleanup of hazardous waste sites and coordination with EPA during cleanup of federal Superfund sites.
- Waste Reduction, promoting and monitoring statewide recycling and waste reduction programs, and providing grants and technical assistance to local governments.

The Permitting and Compliance Assistance Program is responsible for monitoring Financial Assurance, Hazardous and Solid Waste Management, Storage Tank Compliance, and Waste Reduction and Registration. These compliance tools ensure that proper attention is given to all counties and municipalities handling of MSW, and that problems are identified and corrected promptly.

The Division of Water Resource Management (DWRM) is responsible for the permitting and compliance of the wells systems at landfill sites, as well as deep injection wells that are associated with some of the sites' operations. Programs that are used to enforce compliance and protect Florida's water bodies and groundwater are:

- Aquifer Protection Program – UIC, implementing Florida's Underground Injection Control program, which provides necessary disposal while protecting underground sources of drinking water.
- Industrial Wastewater Program, regulating facilities and activities that discharge to surface waters and ground waters of the state.
- NPDES Stormwater Program, Regulating point source discharges from three potential sources: Municipal Separate Storm Sewer Systems (MS4s), construction activities and industrial activities.
- Water Compliance Enforcement Program, leading statewide coordination of compliance and enforcement activities relating to the Industrial Wastewater, Domestic Wastewater and the NPDES Stormwater programs.

The Division of Air Resource Management (DARM) oversees the emissions from landfills and waste-to-energy facilities to ensure that clean air regulations are met. These programs are:

- Office of Air Monitoring, overseeing air monitoring operations across the state of Florida and assessing the air quality for over 90% of Florida's 23 million citizens.
- Permit Review & Compliance Assurance, coordinating statewide regulatory activities among the State's district air programs, local air programs and the U.S. Environmental Protection Agency.

The FDEP is responsible in some capacity for every stage of a solid waste-related facility's life, from planning and construction to post-closure and long-term monitoring requirements.

In 2010, the Florida Legislature established a statewide weight-based recycling goal of 75% by 2020. The State has since met the 40% recycling goal by 2012 and 50% by 2014 but has yet to meet any further goals. Only three of the four counties in Florida that achieved the 70% recycling benchmark goal in 2019 have maintained that benchmark, and the statewide value dropped from 2019 from 52% to 49% in 2024. Studies are currently being done at the Hinkley Center for Solid and Hazardous Waste Management, an independent institute at the University of Florida, to find opportunities for decreased landfill usage and increase recycling efforts. At this time, 8 of Florida's 67 Counties combust waste for energy, an opportunity that could benefit the population in two ways: energy generation and reduction in landfill use, which preserves its capacity. Recent Hinkley Center studies have focused on improving waste management by exploring ways to reuse incineration ash in concrete, addressing new challenges in managing landfill liquids, and advancing recycling and circular use of materials in Florida's curbside programs.

The state continues to promote recycling in all sectors, from home curbside recycling to tourism industry programs. The Recycling Recognition Program was developed to encourage private businesses, institutions, schools, public organizations and citizens to increase recycling to reach Florida's recycling goal. The Small County Solid Waste grants aid small counties for their solid waste management and recycling programs. Household hazardous waste collection center grants help finance household hazardous waste collection events provided by counties with expertise and equipment for smaller counties that may not have sufficient expertise and equipment. Organics (yard or food scrap waste) recycling in Florida is another effort made in the state to reduce organics entering the waste stream. A few of the entities, programs, and reports available for further reading include: F.O.R.C.E. (Florida Organics Recycling Center for Excellence), Composting/Separated Organics Processing Facilities (SOPF), 2020 Food Donation Report, Florida Food Waste Prevention Week, and the Florida Composting Council.

The state manages data through a variety of means, depending on the program in question. All permitting requirements and applications are filed electronically. The FDEP manages these data repositories for everything from site usage to groundwater monitoring and reporting. While the State receives all data for permitting and compliance, the individual counties and municipalities are largely responsible for their own asset management and public outreach programs. Recycling efforts are managed at the municipal level, so counties that are better funded can have greater successes in recycling and sustainability efforts.

All facilities are required to adhere to FDEP and state building regulations that would keep the facility safe and resilient, as Florida is prone to natural disasters, such as hurricanes. However, funding sources in individual counties and municipal entities play a large role in how sustainable, resilient, or future thinking a utility may be. For example, Palm Beach County's

Solid Waste Authority has enjoyed a well-funded program that has encouraged innovation and leadership in the state for recycling and WTE facilities, with a campus that boasts two waste-to-energy facilities, a Class I landfill that is mainly used for ash, a Class III landfill for non-combustible waste, a recovered materials processing facility, a biosolids processing facility, a ferrous materials recovery facility, a home chemical recycling center, an education center, and a trailway system open to the public. Conversely, many of the agricultural counties, where population density is low and funding may be limited, have mainly relied on the traditional landfill or improper disposal of all MSW.

The Palm Beach Renewable Energy Facility 2, completed in 2015, is the newest municipal waste-to-energy facility in the country. It cost $672 million and can process up to 3,000 tons of municipal solid waste per day.

B

SOLID WASTE

Recommendations to Raise the Solid Waste Grade

- Florida should concentrate its efforts on making recycling and reusing waste more prevalent throughout all counties. By adding curbside collection and educating the residents on proper disposal, recycling rates can be improved throughout the state. As capacity in landfills is depleted, more efforts should be directed at finding waste stream diversion.
- Additional waste-to-energy facilities would help create an opportunity for reuse of waste and reduction of landfill capacity use, while providing a renewable energy source.
- As tourism is a large waste generator in Florida, efforts should be made to work with businesses in the tourism industry to reduce waste streams. As with residential efforts, businesses can implement separated waste receptacles for landfill and recyclable waste, and the state could offer programs/grants and education for businesses to carry out these efforts.
- Promote organics recycling efforts and reduction in food waste programs. Offer programs for in home composting and encourage restaurants to use composting businesses for their waste.

Sources

- Environmental Research & Education Foundation, "Analyzing Municipal Solid Waste Landfill Tipping Fees," 2024.
- Executive Office of the Governor, "Florida Sets New Tourism Record: 2024 Marks Highest Annual Visitation in State History," 2025.
- Florida Climate Institute, "Book on Florida's Climate: Changes, Variations, & Impacts, Chapter 10," 2017.
- Florida Department of Environmental Protection, "2024 Florida Municipal Solid Waste Collected," 2024.
- Florida Department of Environmental Protection, "2024 Solid Waste Management Report," 2025.
- Florida Department of Environmental Protection, "FDEP 2024 Florida Municipal Solid Waste Management," 2024.
- Florida Department of Environmental Protection, "FDEP 2024 Florida Solid Waste Disposal Fees," 2024.
- Florida Department of Environmental Protection, "FDEP Active Sites," 2025.
- Florida Department of Environmental Protection, "FDEP County Municipal Solid Waste Collected Per Capita 2024, and By Descending Population Rank," 2024.
- Florida Department of Environmental Protection, "FDEP Final Disposition of Municipal Solid Waste," 2024.
- Florida Department of Environmental Protection, "The Florida Department of Environmental Protection Division of Waste Management," 2025.
- Hinkley Center, "Research Advances on the Use of Solid Wastes in Concrete and Asphalt," 2017.
- Hinkley Center, "The Hinkley Center for Solid and Hazardous Waste Management," 2025.
- Miami-Dade County, "Fire at County Waste-to-Energy Facility," 2023.
- Miami-Dade County, "Miami-Dade County Update on Waste-to-Energy Facility Fire," 2023.
- U.S. Energy Information Administration, "U.S. Energy Information Administration Table 3.19. Utility Scale Facility Net Generation from Biomass," 2024.
- U.S. Environmental Protection Agency, "Advancing Sustainable Materials Management: 2018 Fact Sheet, Assessing Trends in Materials Generation and Management in the United States," 2020.
- U.S. Environmental Protection Agency, "National Overview: Facts and Figures on Materials, Wastes and Recycling," 2024.
- Waste Business Journal Research, "Landfill Pricing Continues to Rise, Up 6 percent From a Year Ago," 2024.

C

Florida's Infrastructure

STORMWATER

EXECUTIVE SUMMARY

Florida's stormwater infrastructure plays a critical role in protecting communities and waterways, yet faces mounting challenges from aging assets, increased nutrient pollution, and funding shortfalls. The state's updated stormwater management rule—effective December 2025—marks a major policy shift toward performance-based design, measurable pollutant reduction, and stronger maintenance requirements. These reforms aim to improve water quality and promote sustainable development statewide. Despite historic levels of investments, including over $389 million in recent state funding and federal support through the Infrastructure Investment and Jobs Act, the scale of need remains substantial. Much of Florida's stormwater system, such as the South Florida Water Management District's extensive canal and pump network, was built mid-century and now requires significant rehabilitation. Local utilities continue to raise rates, yet revenues lag behind rising maintenance costs. Sustained investment, proactive asset management, and continued innovation in best management practices will be essential to meet long-term water quality and flood-resilience goals.

Background

Stormwater runoff is generated from rain events that flow over land or impervious surfaces, such as paved streets, parking lots and building rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, and sediment that can harm our streams, rivers, lakes, bays and estuaries. To protect these resources, municipalities and operators of construction and industrial activities can use stormwater controls to prevent pollution by controlling it at its source. The 2024 Annual Assessment of Florida's Water Resources, Stormwater Management Inventory estimates the state has 39,059 miles of buried culverts, 59,500 miles of open ditches/conveyances, 37,039 storage or treatment basins, 7,606 gross pollutant separators/engineered sediment traps, 64 chemical treatment systems, 630 stormwater pump stations, 10,138 dynamic water level control structures and 85 stormwater treatment wetland systems.

An impervious surface area is defined by FDEP as the area on a property that is covered by hard surfaces that do not absorb water and impede the natural flow of water into the soil. This includes structures such as buildings, driveways, parking lots, and other hard surfaces that allow little to no rainwater to infiltrate into the ground, resulting in stormwater runoff.

Stormwater runoff or nonpoint pollution, impacts water quality. Florida faces widespread nutrient pollution challenges, with 35% to 44% of impaired waters linked to excess nitrogen and phosphorus, and 82% of adopted Basin Management Action Plans targeting nutrient-impaired waterways. New research shows that stormwater systems, once assumed to remove at least 80% of pollutants, are far less effective at reducing nutrient loads. As a result, 87% of Florida's counties—58 out of 67—now contain nutrient-impaired waterbodies. Improving stormwater management to better address nutrient pollution is therefore essential to protecting the state's waterways.

Table 1 summarizes reductions and project cost estimates for all 33 BMAPs as of Dec. 31, 2024. Reductions for completed and ongoing projects shown in the table have been reviewed and verified by DEP. As projects move to a completed or ongoing status, DEP reviews the project information and revises reductions as appropriate.

1. *U.S. EPA*

Basin Management Action Plans - Reductions and Cost Estimates

Project Status	TN Reduction (Lbs/Yr)	TP Reduction (Lbs/Yr)	Cost Estimate	Cost Annual Operation And Maintenance
Completed	5,594,685	801,234	$10,204,436,041	$211,304,385
Ongoing	3,526,523	377,364	$93,776,123	$50,715,442
Planned	756,635	9,290	$5,001,181,846	$13,136,432
Underway	1,343,167	108,353	$10,316,059,478	$30,498,246

Stormwater Explained[1]

Across Florida, state, regional and local (stormwater utilities) governments and special districts are working to manage the infrastructure that conveys stormwater runoff from rainfall from communities to receiving waters. The new stormwater rule in Florida enhances water quality and management practices across the state, effective from December 28, 2025. On June 28, 2024, Governor Ron DeSantis signed Senate Bill 7040 into law, updating Florida's stormwater management regulations. This legislation is a significant step towards improving the state's waterways and ensuring sustainable

development practices. The new rule introduces several key changes and requirements for stormwater management systems:

- Performance-Based Design: The rule emphasizes a performance-based approach, allowing flexibility in design while requiring measurable reductions in nutrient pollutants, including Total Nitrogen (TN) and Total Phosphorus (TP).
- Pollutant Reduction Standards: Stormwater systems must achieve at least an 80% reduction in total suspended solids (TSS) and a 95% reduction in areas with Outstanding Florida Waters (OFW). TSS are comprised of suspended organic particles including soil, silt, plankton, and debris. An excess of TSS affects water quality and reduces the quality of life of both human and aquatic life. Additionally, post-development nutrient loading must not exceed pre-development levels.
- Maintenance and Inspection Requirements: The rule mandates that applicants provide estimates for routine maintenance costs and certify their financial capability to maintain stormwater systems over time. Regular inspections will also be required to ensure compliance.
- Innovative Best Management Practices (BMPs): The new regulations encourage the use of innovative BMPs tailored to specific site conditions, allowing for off-site compensation to meet treatment performance standards.
- Grandfathering Provisions: Projects with completed Environmental Resource Permit (ERP) applications within 12 months of the rule's ratification will be grandfathered, meaning they will not need to comply with the new standards.

The updated stormwater rule represents a shift in how Florida manages stormwater runoff, focusing on long-term water quality improvements and sustainable practices.
However, over the last decade, Florida has experienced an increase in the number and extent of waters classified as impaired under state and local water quality standards. The Florida Department of Environmental Protection's (FDEP) transition to biennial statewide assessment cycle and the 2024 update to the Verified List of Impaired Waters reflect both improved monitoring coverage and more stringent assessment criteria. With over 50,000 miles of rivers and streams statewide, these findings underscore the scale of the challenge to protect surface waters from nutrient enrichment, sedimentation, and pollutant discharges.

Capacity

Florida's stormwater capacity is increasingly tested by single day precipitation events. The 2023 Fifth National Climate Assessment (Southeast chapter) finds that across the Southeast, including Florida, extreme, single-day rainfall has increased and is projected to intensify further. Many communities still plan with outdated assumptions, which strains system performance and complicates capacity design for new and recently upgraded assets. Complementing this, NOAA's Florida State Climate Summary flags ongoing and future increases in the frequency and intensity of extreme precipitation, underscoring the need to reassess intensity-duration-frequency (IDF) criteria. Florida practitioners commonly reference NOAA Atlas 14 Precipitation-frequency estimates for siting and sizing conveyance, storage, and pumping. Continued IDF updates remain pivotal for right-sizing capacity under heavier rainfall events.

Florida's stormwater systems face simultaneous capacity, conditions, and funding pressures. The South Florida Water Management District (SFWMD) operates one of the largest regional flood control systems in the world, more than 2,174 miles of canals, 2,130 miles of levees and berms, 98 pump stations, 936 water-control structures, and 620 culverts, much of which was constructed between 1950 and 1980. Many of these assets are approaching the end of their service life, now requiring escalating rehabilitation and preventive maintenance to sustain reliability. Other districts report comparable asset footprints and upkeep needs, underscoring the statewide nature of aging infrastructure.

Florida's capacity portfolio spans gray conveyance and storage (storm sewers, culverts, canals, outfalls, pump stations) alongside green and hybrid measures. The Resilient Florida Annual Plan - Statewide Flooding and Sea Level Resilience Plan (FY 2025-26) shows a strong emphasis on pump stations and major conveyance/outfall projects. Example projects include: Bal Harbour Village Stormwater Pump Station upgrades, Naples Coastal Stormwater Outfall Improvements (storm-sewer piping), Clearwater North Beach Stormwater Pump Stations, and multiple drainage improvements in Miami-Dade, paired in places with hybrid green/gray shoreline work. FDEP's green stormwater infrastructure guidance reinforces that green stormwater infrastructure manages rainfall near its sources, and it is most effective when coupled with gray infrastructure where basin conveyance and pumping capacity are required. Florida's Water Management Districts (WMDs) are also investing to maintain and expand the effective capacity of its legacy systems. The SFWMD's FY 2025-26 budget details a sustained program of canal/levee upkeep and structure/pump stations overhauls, mowing and bank stabilization, pump/engine and gate overhaul programs, and modernization that includes telemetry and cyber upgrades. These are all core to maintaining conveyance and pumping performance as shorter, more intense storms are projected to load the network. Selected capital improvement items such as the S-7 Pump Station Refurbishment and the S-193 navigation lock gate replacement further illustrate the scale of capacity renewal that is underway.

A municipal separate storm sewer system (MS4) is a publicly-owned conveyance or system of conveyances (i.e., ditches, curbs, catch basins, underground pipes, etc.) designed or used for collecting or conveying stormwater and that discharges to surface waters of the state. Examples of MS4 operators include, but are not limited to, municipalities, counties, community development districts, universities, military bases or federal correctional facilities. Operators of large, medium and regulated small MS4s are required to obtain NPDES permit coverage to discharge to waters of the state. As implemented by Chapter 62-624, F.A.C., Phase I addresses discharges of stormwater runoff from "medium" and "large" MS4s (i.e., those MS4s located in areas with populations of 100,000 or greater). Under Phase II, the program regulates discharges from certain MS4s not regulated under Phase I, and that meet designation criteria set forth in Chapter 62-624, F.A.C. According to the FDEP, there are 217 Phase I MS4s (typically, medium or large cities and certain counties) and 176 Phase II MS4s (typically, smaller systems and other non-traditional systems) across numerous cities and counties subject to MS4 discharge regulations.

Condition, Operation and Maintenance

Stormwater systems are designed to capture and move runoff to nearby bodies of water. The protocols and approaches of operation and maintenance on Florida's stormwater infrastructure are primarily managed by local governments and stormwater utilities, which show varied capacity in operating and maintaining these systems.

In the Florida Stormwater Association (FSA) and the MS4 2024 Report, 20% of surveyed municipalities cited that utility fees are adequate to meet all operation and maintenance needs (O&M), 41% cited most needs, 29% cited only urgent needs, and 1% cited not adequate to meet urgent needs. According to the 2024 FSA Stormwater Utility Report, most jurisdictions reported that user fees adequately cover most administrative and operational costs. However, sufficient funding for capital improvements is lacking. About 30% of the survey respondents reported that funding for capital improvement projects does not even meet urgent needs. Urgent needs refer to critical stormwater infrastructure projects that require immediate addressing to prevent system failure, flooding, or water quality standard violations. These include repairs or replacements of deteriorated drainage systems, collapsed culverts, failing outfalls, undersized pump stations, or flood-prone roadway systems that pose an immediate risk to public safety. These urgent needs represent high-priority capital improvement projects that go beyond routine maintenance.

At the regional level, Florida's WMDs, which oversee flood control, drainage, and land management, have expanded their operational capacity. The South Florida Water Management District (SFWMD) has implemented telemetry, automation, and predictive maintenance to manage gates, pumps, and structures more efficiently than in the past. These recent investments allow for real-time monitoring of system performance, which ensures faster response during storm events. Independent of the District's workload incurring a 50% increase in the past 15 years, they have been able to remain reliable through technological innovation rather than workforce expansion. At a state level, the Resilient Florida Program, launched in 2021, has significantly strengthened the institutional framework supporting O&M. Many of the funded projects include asset-management systems and conditioning tracking to ensure long-term sustainability of the state's growing inventory of stormwater facilities. Additionally, Florida stormwater systems are required to comply with the National Pollutant Discharge Elimination System (NDPES). This is mainly achieved through MS4 permits. These permits require local governments to enforce programs for illicit discharge detection, construction site runoff, etc. Many jurisdictions use online tools such as NPDESPro to manage permit compliance. The FDEP enforces compliance requirements and oversight, which enforces routine maintenance and inspections. Together, these advancements demonstrate that Florida's O&M capacity is more proactive and data-driven. However, the pace of system expansion and regulatory requirements still outpaces available maintenance resources. Continued investment in asset renewal, resilient designs and workforce expansion is crucial to meet the needs of population expansion and climatic pressures in the upcoming decades.

Funding and Future Need

State-level agencies such as FDOT or organizations like the WMDs typically receive dedicated funding from the state legislature. FDOT receives funding to address stormwater management within its portfolio of transportation infrastructure, while the WMDs receive dedicated funding to address stormwater management planning, capital projects, and O&M. The anticipated needs for the WMDs and FDOT related to stormwater are projected to total $187.9 billion over the next 20 years (funding allocated for routine operations and maintenance: - 52% and major capital improvements: 48%).

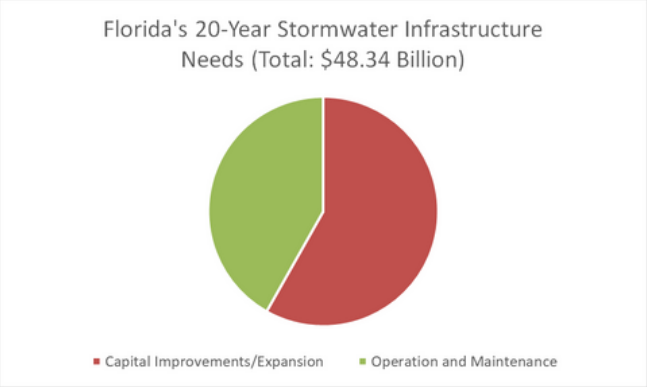
Stormwater infrastructure funding across Florida is mostly paid for by Floridians, with user fees generating 62% of revenue, while the other sources come from ad valorem taxes, state grants, and Clean Water State Revolving Fund loans. Approximately 171 stormwater utilities exist statewide monthly utility fee is $8.86 per Equivalent Residential Unit (ERU).
A total of $550 million has been included in Florida's 2025-26 budget proposal toward water quality improvements. The improvements include:

- $275 million to expand the Water Quality Improvement Grant Program that funds stormwater management projects across the state.
- $50 million to accelerate projects to meet the nutrient reduction goals as required by the SFWMD Applicant Handbook, effective December 2025.
- $20 million in improvement projects to address water quality impairments and coral reef restoration in Biscayne Bay.

The Infrastructure Investment and Jobs Act (IIJA) provides over $50 billion for water infrastructure improvements across the nation. Through a combination of federal funding through the IIJA and state funding, Florida has recently invested $1.5 billion to enhance water quality and infrastructure, focusing on ecological restoration and public health. Approximately $850 million will go towards Everglades restoration projects, including $614 million to support the Comprehensive Everglades Restoration Plan (CERP) and the Everglades Agricultural Area Reservoir. This is the largest state investment in a single year since CERP was established in 2000. Additionally, this funding includes $100 million for the second phase of the C-51 Reservoir, which will support the water needs of Palm Beach and Broward counties while also reducing freshwater discharges to the Lake Worth Lagoon. Also included is approximately $530 million for targeted water quality improvement projects, including $135 million for the Water Quality Improvement Grant Program which funds projects that reduce harmful nutrients in Florida waterways like septic-to-sewer and wastewater treatment upgrades. $100 million is committed to support the Indian River Lagoon. The Governor also approved $45 million for water quality improvements in Biscayne Bay and the Caloosahatchee Estuary. These investments are crucial for ensuring Florida's water resources are sustainable and healthy for future generations.
Despite historic levels of infrastructure funding in these past years, Florida's rapidly expanding population and aging stormwater infrastructure is outpacing the current funding capabilities. Florida's recent legislative strides such as the 2024 SB 7040 and the 2025 SB 810, requiring more stringent water quality criteria and mandating inventory-driven infrastructure oversite indirectly increase the costs associated with stormwater management and infrastructure, this emphasizes the need for reliable funding methods that keep pace with needs. At the local level, stormwater utilities have raised residential fees in recent years, yet capital investment and

maintenance remain the top challenges, indicating revenues are not keeping pace with needs. Statewide programs and one-time deferral awards have advanced resiliency and critical pump-station work, however, funding demand continues to exceed available appropriations-as reflected by the Resilient Florida Program's FY 2025-26 requests versus awards-leaving a significant gap to meet long term water quality compliance and flood-risk reduction objectives.

Florida's 20-Year Stormwater Infrastructure Needs[2]



Florida is facing significant challenges to finance its stormwater infrastructure improvements with $48.3 billion estimated needs in a span of 20 years. Florida is taking proactive steps to fund resilience projects, such as establishing the Resilient Florida Grant Program, which allocates $100 million annually and up to $200 million in recent years. Additional funding sources include the Clean Water State Revolving Fund (CWSRF), which offers low-interest loans for stormwater projects, and EPA-administered IIJA grants, which have injected over $360 million into Florida's water systems as of 2024. Local governments are also leveraging nonpoint source (Section 319) grants and tax increment financing (TIF) mechanisms to finance targeted upgrades. Without significant expansion of state-level appropriations, broader adoption of dedicated stormwater utilities, or innovative funding models like public-private partnerships (P3s), most Florida's stormwater infrastructure needs will remain unmet.

Public Safety

Stormwater infrastructure plays a critical role in public safety during Florida's many rain events and hurricanes by mitigating flooding and erosion. Additionally, stormwater management in Florida includes water quality evaluations which protect our natural environment, drinking water supply, and recreational waters. Generally, new development or re-development projects in Florida must obtain an Environmental Resource Permit (ERP) from the appropriate WMD based on the project location. The ERP process ensures that projects are compliant with rules and regulations that protect public safety and health. The four core mission areas of WMDs are as follows:

- Flood Protection and Floodplain Management. The districts construct, operate and maintain flood protection structures throughout their region to prevent increases in flooding events.
- Water Quality. The districts perform a significant amount of water quality monitoring and assessment. For waterbodies within their regions, the districts construct or help fund the construction of water quality projects to protect public health and the environment.
- Water Supply. The district develops a Regional Water Supply Plan setting forth projects, costs and projections over a 20-year period that are needed to meet all existing and future reasonable-beneficial uses and to sustain the water resources and related natural systems.
- Natural Systems. The districts evaluate and protect natural systems through the implementation of the Minimum Flows and Levels program and through reservations of water.

Since the publication of the 2021 Report Card, four major hurricanes have made landfall in Florida (Ian 2022, Idalia 2023, Milton 2024, and Helene 2024). These hurricanes were responsible for dozens of fatalities related to storm surge and freshwater flooding, thousands of water rescues, and billions of dollars in damage. Lesser hurricanes, tropical storms, and other weather systems also cause flooding and damage every year.

According to the NOAA Billion-Dollar Weather and Climate Disasters dataset, from 2020-2024 there were 34 disasters in Florida costing more than $1 billion in damage. Adjusted for Consumer Pricing Index (CPI) changes, in just five years there were nearly double the number of disasters as in any previous decade.

Innovation

In order to meet Florida's growing stormwater needs, innovation is critical to bring about new engineering ideas and standards. Several Universities within Florida conduct stormwater research, and government agencies and independent organizations participate in implementing innovative ideas.
The University of Florida (UF) IFAS program is currently monitoring the first Florida installation of a Regenerative Stormwater Conveyance system, which provides nutrient removal within a channel during low-flow and provides flood protection and stabilization during larger storm events.

On the east coast, the Indian River Lagoon experiences frequent algal blooms and fish kills, which are exacerbated by excess nutrients. In 2023, Indian River County and St. Johns Water Management District opened an innovative stormwater treatment plant called the Moorhen Marsh Low Energy Aquatic Plant System. This facility diverts 10 million gallons per day from a nearby canal that carries excessive nutrients from fertilizer and agricultural waste. Using waterlettuce, and abundant invasive aquatic plant, the water is treated in a series of troughs and then oxygenated prior to discharge back into the canal.

2. 2024 FSA Report, Florida Resilient Annual Plan FDEP

A recent initiative by FDEP is underway to create a new program called the Florida Center for Innovative Stormwater Technology and Engineering Review Network (CISTERN). This program will provide a centralized online hub of innovative ideas, Best Management Practices (BMPs), and resources. Hopefully, this program will be complete and ready for review by the publication of the next Florida Report Card.

Resilience

Resiliency is defined as the "capacity to withstand or to recover quickly" and is often considered within stormwater projects. Sea level rise and changing rainfall patterns create new challenges in flood protection, including maintaining and restoring coastlines, inland waterways and wetland systems. While it is impossible to prevent any storm surge or flooding within Florida, especially during major storm events, engineers and lawmakers can work together to design and prioritize projects that promote smart development to begin with and allow for faster emergency response and recovery when required.

In 2021, Senate Bill 1954 was signed into law to fund resilient stormwater projects. A major outcome of this bill was the creation of the Resilient Florida Program and subsequent FDEP Comprehensive Statewide Flood Vulnerability and Sea Level Rise Assessment. This initiative sought to identify all critical infrastructure within Florida (such as drinking water facilities, waste facilities, schools, emergency services, and government facilities) and evaluate their vulnerability to flooding caused by storm surge or rainfall. The program also creates an annual grant system, allowing municipalities to apply for funding to support projects that will promote resiliency within their communities. Projects funded for the 2025-2026 grant cycle include dozens of vulnerability assessments and adaptation plans, stormwater master plans, and watershed studies. Additionally, the new Florida Flood Hub based out of the University of South Florida is working to develop better flood forecasting tools and online services that will be available to lawmakers and the public.

The Resilient Florida Program is an important step in ensuring our state's long-term resiliency. However, it is critical that future policymaking continues to promote resilient development. Recently, the Florida legislature passed SB 180, which prevents cities and counties from enacting more restrictive building ordinances in areas recently hit by flooding. While the intent is to reduce hardship on property owners created by stricter redevelopment guidelines, it would also prevent resiliency initiatives like requiring coastal homes be re-built on stilts after suffering storm surge damage.

Recommendations to Raise the Stormwater Grade

- Establish a statewide database of Florida's existing stormwater assets. Establish a database tracking new and ongoing stormwater projects, funding sources, and costs and use data to show impacts of new laws including Resilient Florida Program and FDEP Statewide Stormwater Rule.
- Develop a stormwater-specific funding and financing program based on best practices from the existing Clean Water State Revolving Fund and ensure stormwater infrastructure is fully eligible to receive funding and financing from federal programs.
- Develop a comprehensive, public-facing education campaign on the true costs, savings, risks, and avoided hazards associated with resilient stormwater investments.
- Develop state-based peer-to-peer partnerships to build local government capacity to create and manage stormwater utilities that sustainably fund, operate, maintain, assess, and, when necessary, expand stormwater infrastructure.
- Consider increasing requirements for flood protection by designing for more severe storm events with higher intensity and total rainfalls.
- Establish a grant program for 21st century technical career training for "green collar jobs" in the stormwater sector that recruit the next generation's talent.
- Expand the inclusion of current and forecasted climate variability in codes and standards for the design, operation, maintenance, and expansion of stormwater infrastructure, and routinely provide funding to NOAA to update the climate data.
- Communities should create stormwater utilities that institute rates reflecting the true cost of treating and handling stormwater runoff.
- Encourage the expanded use of "green" best management practices (BMPs). For stormwater management, these practices are meant to minimize interference in the natural water cycle. Tree boxes, rain gardens, green roofs, and pervious pavement (which water can flow through) all allow water to be absorbed before it flows into a culvert or ditch and into a stormwater basin.
- Address point source and nonpoint-source pollution through a watershed approach that encourages regional coordination to improve impacts from stormwater-induced flooding.

Sources

- FDEP Watershed Assessment Section, "Notice of Biennial Assessment 2022-2024 Final Assessment Lists," 2024.
- Florida Department of Environmental Protection, "2025-26 Resilient Florida Annual Plan," 2025.
- Florida Department of Environmental Protection, "Lists of NPDES Stormwater Permits, NPDES Phase I MS4 Facilities," 2025.
- Florida Department of Environmental Protection, "Resilient Florida Program," n.d.
- Florida Department of Environmental Protection, "Statewide Annual Report - Basin Management Action Plans," 2024.
- Florida Department of Environmental Protection, "Water Management Districts," n.d.
- Florida Stormwater Association, "Storm Water Utility Report," 2024.
- Modernizing Florida's Stormwater Rules, "John Coates, Director, Division of Water Resource Management, Florida Department of Environmental Protection, Blue-Green Algae Task Force Meeting," 2024.
- National Oceanic and Atmospheric Administration, "2025 Atlantic Hurricane Season," 2025.
- National Stormwater Trust, "Florida Cistern: A New Platform for Sharing Innovative Stormwater Solutions," 2025.
- NOAA, "U.S. Billion-dollar Weather and Climate Disasters, 1980-present," 2025.
- Office of Economic and Demographic Research (EDR), "Annual Assessment of Florida's Water Resources: Infrastructure Investments," 2024.
- SJRWMD, "Indian River County opens plant-powered stormwater cleanup project," 2023.
- South Florida Water Management District, "Fiscal Year 2025-26 Preliminary Budget Submission Report," 2025.
- University of Florida IFAS Extension, "Sustainable Human and Ecological Development – Stormwater Management," 2022.

C+

Florida's Infrastructure

TRANSIT

EXECUTIVE SUMMARY

Transit is a vital part of Florida's transportation system, supporting economic growth, social equity, sustainability, and congestion reduction. Florida's 34 urban and 16 rural systems provide multimodal service to millions, though ridership declined by over 10% from 2014 to 2022, driven by factors such as economic displacement of low-income riders and the COVID-19 pandemic. Federal relief funding helped stabilize budgets, and many systems have recovered to nearly 80% of pre-pandemic ridership. Florida's transit assets are generally newer than those in most states, and FDOT's asset management plan strategically allocates limited resources to maintain system quality and reliability. Despite ongoing challenges—including first- and last-mile connectivity, population growth, climate impacts, and digital infrastructure needs—Florida's transit agencies are advancing adaptive planning, technology integration, and safety-focused investments to ensure transit remains a resilient and efficient component of the state's growing transportation network.

Capacity

There are 34 urban fixed-route and 16 rural public transportation systems in Florida, connecting residents to work, school, and health care services. Florida's largest public transit organization is the South Florida Regional Transportation Authority, which serves approximately 5.5 million residents of Broward, Miami-Dade and Palm Beach Counties. The American Public Transportation Association (APTA) estimates that Florida's transit footprint includes at least 48 transit systems containing upwards of 1,700 automobiles1, nearly 4,900 buses, 260 rail cars, and 260 ferries.

Florida's Major Public Transit Systems, Population Served, Predominate Mode, Annual Ridership and Number of Revenue Vehicles[1]

Population	Florida Transit System	Predominate Mode	Annual Ridership	Number of Revenue Vehicles
5.5 million	South Florida Regional Transportation Authority	Rail	4.2 million	71
3.3 million	Tampa Bay Area Regional Transit Authority (Hillsborough and Pinellas Counties)	Bus	23.2 million	1074
2.5 million	Miami-Dade Transit	Bus	64.1 million	1604
2.1 million	Central Florida Regional Transportation Authority	Bus	19.6 million	572
1.9 million	Broward County Transit Division	Bus	25.2 million	819
1.3 million	Palm Beach County Palm Tran Public Transportation	Bus	9.6 million	458

There have been recent expansions and developments of Florida's Bus Rapid Transit (BRT) network. In 2020, the South Florida Regional Transportation Authority launched a new BRT system called "The Wave" in Broward County, which connects several cities and destinations along a 4-mile corridor. Additionally, plans are in place to expand existing BRT systems in Tampa Bay and Orlando, with proposed routes connecting major job centers and residential areas. The state also received funding from the federal government for the development of BRT projects in Jacksonville and Miami-Dade County. Overall, these expansions aim to improve public transportation options and connectivity in Florida. In 2022, a bus rapid transit line called the SunRunner opened in St. Petersburg, offering "Beach to 'Burg" service between downtown and the beach across 17 stations. This service was expanded in 2025 to include a new downtown station to the St. Petersburg Pier. In 2025, Miami Dade County's will open its first-ever BRT service along the South Dade TransitWay. The new, state-of-the art service will be the longest battery electric BRT corridor in the nation at 20 miles, with 14 iconic stations that will be at the heart of Metro Express service that will reduce commute times on the current corridor by as much as 40% during peak times.

In 2023, thirty urban fixed-route transit systems in Florida (including bus, rail, and vanpool modes) and two other separate vanpool services provided transportation for approximately 182 million trips annually.

Florida mirrors the nationwide trend of decreasing ridership. From 2019 to 2023, the state saw its public transit ridership fall from more than 245 million to about 217 million, or more than a 10% decline. In 2023, the U.S. Census Bureau reported that only 1.36% of Floridians' trips to work were made by public transit, down slightly from 2019. Year 2023 Commuting Characteristics in Florida indicated the commuting mode by transit in Metropolitan Statistical Areas (MSAs) in Florida, in comparison to the state and national values. Commuting mode by transit shares in all Florida MSAs were below the national average of 3.53%. The transit commuting share in the state of Florida is 1.36%.

1. *American Public Transportation Association (APTA)*

C+

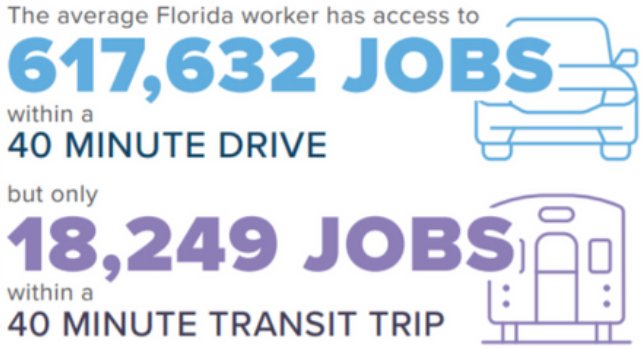
TRANSIT

Percent of Commuters Taking Transit by MSA[2]

Rank	Metropolitan Statistical Area (MSA)	Transit, %
1	Miami-Fort Lauderdale-West Palm Beach	2.75%
2	Gainesville	2.12%
3	Tallahassee	1.83%
4	Tampa-St. Petersburg-Clearwater	1.05%
5	Orlando-Kissimmee-Sanford	0.99%
6	Naples-Marco Island	0.96%
7	North Port-Bradenton-Sarasota	0.70%
8	Cape Coral-Fort Myers	0.61%
8	Panama City-Panama City Beach	0.61%
10	Deltona-Daytona Beach-Ormond Beach	0.55%
11	Jacksonville	0.50%
11	Lakeland-Winter Haven	0.50%
13	Crestview-Fort Walton Beach-Destin	0.36%
13	Port St. Lucie	0.36%
15	Pensacola-Ferry Pass-Brent	0.29%
16	Palm Bay-Melbourne-Titusville	0.27%
17	Ocala	0.25%
	Florida	**1.36%**
	United States	**3.53%**

FDOT has identified a large disparity in transit access, noting that the current system does not provide sufficient access to connect riders to employment centers. The Florida 2045 Long Range Transportation Plan (LRTP) found that the average Florida worker has access to about 18,000 jobs within a 40-minute transit trip and more than 617,000 jobs within a 40-minute drive in a personal vehicle. Due to the importance of this issue, a statewide goal of enhancing transportation choices to improve transit equity, capacity, and accessibility continues to be a focus in the Florida LRTP.

2045 LRTP[3]



There are 72 Ferry services in Florida, United States as of October, 2025. The highest number of Ferry services in Florida are in Fort Lauderdale and Miami with 8 businesses and 6 businesses, respectively. Ferry services have seen a slight decrease in ridership, from 474,404 yearly passengers between 2017 and 2020 to 418,487 yearly passengers between 2021 and 2024. The decline may be a result of the influence of the pandemic, which disrupted regional travel patterns. Nonetheless, passenger counts appear to be steadily increasing, with 2024's passenger count exceeding counts in previous years.

Condition

To ensure the inventory of Florida's transit assets remain in a state of good repair or are appropriately targeted for improvements, FDOT's Group Transit Asset Management Plan (TAMP) for Fiscal Years (FY) 2018-2022 used two measures to assess infrastructure performance – useful life benchmark (ULB) and condition rating. The ULB is the expected life-cycle of a capital asset or the acceptable period of use determined by a particular transit provider. When determining the ULB of an asset, unique factors such as a provider's geographic setting and service frequency are also taken into consideration. When assessing transit facilities, the Federal Transit Administration's (FTA) Transit Economic Requirements Model (TERM) outlines a condition rating scale from poor to excellent . When an asset's TERM rating is marginal or poor (described in Table below), replacement efforts must be coordinated.

Transit Economic Requirements Model (TERM) Condition Rating Descriptions[4]

Condition	Description	Mileage	Rating
Excellent	New asset; no visible defects		4.8 - 5.0
Good	Asset showing minimal signs of wear; some (slightly) defective or deteriorated comment(s) but is overall functional		4.0-4.7
Adequate	Asset has reached its mid-life; some moderately defective or deteriorated component(s)	50-99% of Useful Life	3.0-3.9
Marginal	Asset reaching or just past the end of its useful life; increasing number of defective or deteriorated component(s) and increasing maintenance needs	100-124% of Useful Life	2.0-2.9
Poor	Asset is past its useful life and is in need of immediate repair or replacement; may have critically damaged component(s)	125% or more of Useful Life	1.0-1.9

2022 Transit Asset Condition Ratings[5]

Asset Types	Average Condition
Rolling Stock (Vehicles)	2.83
Revenue Vehicles	2.83
Non-Revenue Vehicles	2.70
Systems	1.95
Communications	1.95
Facilities	**3.33**
–	1.70
Buildings	3.47
Storage Yard	3.41
Equipment	2.43
Total	**3.09**

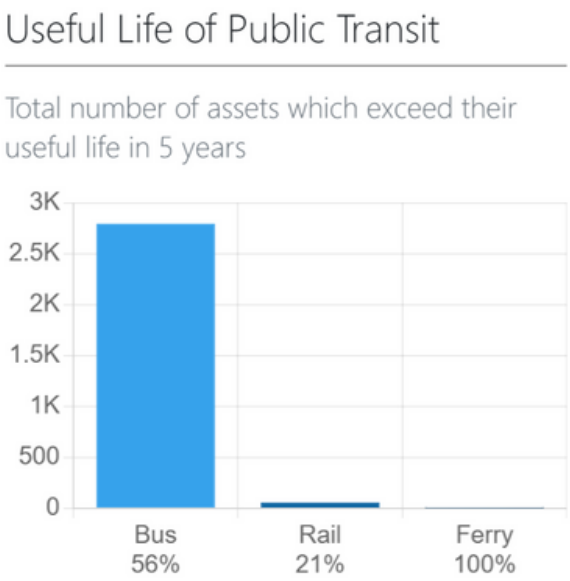
2. FDOT 2023 Commuting Trends in Florida
3. FDOT 2045 Long Range Transportation Plan (LRTP)
4. FDOT's Group Transit Asset Management Plan (TAMP) for Fiscal Year (FY) 2018-2022
5. FDOT's Group Transit Asset Management Plan (TAMP) for Fiscal Year (FY) 2018-2022)

C+

TRANSIT

The condition of Florida's transit assets reflects steady maintenance with room for improvement. In 2022, most of the state's transit assets were reported to be within their ULB. Overall, the average TERM condition assessment rating was 3.09 on a scale of 1-5, with 5 being the highest rating. In 2022 (latest available data), 56% of buses were at or beyond their ULB. Looking ahead, 21% of rail cars and 100% of ferries are projected to exceed their ULB in the next five years.

Number of Transit Assets Exceeding their Useful Life



The Revenue Miles Driven Between Failures (RDMBF) is a key metric used to assess the reliability of transit systems. It is calculated by dividing the total Vehicle Revenue Miles (VRM) traveled by the number of major mechanical failures experienced. This metric provides a clear measure of the average distance between major mechanical failures, indicating the system's reliability and the condition of the transit vehicles.

Transit agencies use this data to set Safety Performance Targets (SPTs) and monitor the performance of their systems. The RDMBF is a critical component of the National Public Transportation Safety Plan, which aims to minimize the value of safety performance measures, including fatalities, injuries, safety events, and system reliability. In recent years, the amount of revenue miles driven between transit failures has followed an overall upward trajectory, from slightly more than 4,000 miles in 2016 to less than 5,000 miles in 2023.

Florida has made significant strides to improve rural transit accessibility. Through the Rural Transportation Assistance Program (RTAP), the state provides funding and technical support to expand services in underserved areas. FDOT also partners with local governments to coordinate coverage, offers grants and subsidies for low-income individuals and people with disabilities, and requires all new public transit vehicles to be accessible. Recent efforts to improve coordination between bus and paratransit systems have further enhanced efficiency and service for rural residents.

6. American Public Transportation Association (APTA)

Operation & Maintenance

FDOT takes a decentralized approach to managing the state's transit system. The state is subdivided into seven districts comprised of a few to more than a dozen counties, each one overseen by a District Secretary. Across all districts, transit services are operated and maintained by a variety of local or regional transit organizations. The FTA's National Transit Database reported there were 4,652,287,575 vehicle revenue miles served in Florida in August 2025 over the previous 12-month period, compared with 4,535,730,499 in August 2024, an increase of 3%. Managing and maintaining capital assets like vehicles, track, roadway, and facilities is a fundamental part of providing public transit. As an example, South Florida Regional Transit Authority reported $127 million in 2024 for operating costs and the Central Florida Regional Transit Authority which reported $45 million in 2024.

FDOT's operation and maintenance (O&M) framework promotes an investment strategy that targets assets at the upper range of the condition spectrum in order to efficiently program limited resources to enhance the quality and reliability of transit stock. The remaining transit infrastructure is prioritized with the goal of eliminating or, at the very least, minimizing assets in poor or marginal condition. On a continuous basis, FDOT and transit providers monitor all assets for safety concerns and, when an unacceptable safety risk is identified, the ranking of the asset is adjusted to ensure it has a higher investment prioritization. Finally, acting as the "eyes, ears, and voice" of the state's transit maintenance departments, the Florida Transit Maintenance Consortium provides professionals with a community for sharing best practices on critical O&M-related issues. This statewide consortium serves not only to improve the industry's performance, but also to inform policymakers and agencies. The Consortium is overseen by FDOT and was established to provide direction to the Florida public transit community and allow for communication among transit personnel.

Funding

To meet the state's funding needs, transit system budgets typically rely on fare revenues, locally generated funds, and support from state and federal programs. Between 2020 and 2023, Florida's transit sector saw operating expenses increase from $1.37 billion to more than $1.73 billion, while total revenues between these years declined from $311 million to about $309 million. The farebox recovery ratio, a measure of revenues as a percentage of total transit costs, decreased to about 11%. In other words, transit fares have become a less dependable funding stream, shifting more of the financial burden onto other revenue mechanisms.
With the historic migration of individuals entering Florida, the boost to infrastructure funding is needed now more than ever.

Transit fares have become less reliable as a funding source due to d eclining fare revenue, inflation and rising costs, aging infrastructure, lower ridership, and expiring federal subsidies. These factors combined have led transit agencies to seek alternative revenue streams and sustainable financing solutions to ensure the financial stability and quality of service for their communities.

One of the most significant tools for regional revenue is surtaxes, additional levies imposed on top of existing taxes. They are generally used to fund specific projects. In 2018, Broward County voters approved a 30-year, one percent surtax to support the Mobility Advancement Program (MAP), a plan including transportation, public works, municipal projects,

C+

innovation investments, planning, operations, maintenance, and administrative support services.

Florida's transportation budget has grown from approximately $10 billion in 2021 to more than $15.1 billion in 2025. The state's FY 2025-2026 budget provides $13.7 billion for the State Transportation Budget. For transit initiatives, the budget includes $787.7 million for freight, rail, and community transportation systems and $253.8 million for safety initiatives. For comparison, FDOT's rail/transit budget in 2021 was $703.4 million and in 2025 the freight, rail and community transportation budget increased to $787.7 million.

Transit in Florida has benefitted from increased federal investments through the Infrastructure Investments and Jobs Act (IIJA), which authorized up to $108 billion for public transportation – the largest federal investment in public transportation in the nation's history – through 2026. Over the last decade, Floridians have relied on federal funding to support 36% of state highway and bridge capital improvements and 34% of transit capital outlays. In that same time, the federal transit investment has supported nearly 100 urban and rural transit agencies throughout Florida.

For example, in 2024, FTA awarded the Hillsborough Area Regional Transit Authority in Tampa $23.3 million RAISE grant to fund the first phase of site remediation and modernization for a maintenance facility that will eventually support a fleet of 250 compressed natural gas (CNG) buses with future plans for CNG and/or hydrogen fueled low-emission vehicles. Additionally, FTA Region 4 awarded a total of 90 grants in Florida totaling almost $800 million. See table 4 for a breakdown of IIJA funding for transit in Florida.

Transit IIJA funding in Florida[7]

Florida IIJA Transit Programs and proposed funding by funding type Program Name	Funding Type Competitive	Formula
5307 Ferry Program	$150,000,000	
All Stations Accessibility Program	$1,750,000,000	
Bus and Bus Facilities	$2,000,000,000	
Capital Investment Grants	$15,000,000,000	
Clean School Bus Program	$5,000,000,000	
Electric or Low-Emitting Ferry Pilot Program	$250,000,000	
Ferry Service for Rural Communities	$1,000,000,000	
Low and No Emission Bus Program	$5,600,000,000	
State of Good Repair Grants	$4,750,000,000	
Transit Formula Grants		$72,549,900,000

Future Need

Florida's roadways are often overwhelmed, especially in cities like Miami, Orlando, and Tampa, leading to increased travel times and economic productivity strain that could be mitigated through increased transit ridership. At the same time, transit systems are aging and require modernization to meet current safety and capacity demands, and Florida's vulnerability to hurricanes, flooding, and sea-level rise poses serious threats to its infrastructure, particularly in coastal communities.

Like some other transit agencies nationwide, certain providers in Florida, such as Manatee County Area Transit, are exploring the expansion of free-and reduced-fare programs to bolster ridership and public transit affordability, with an eye toward reducing vehicle miles traveled (VMT).

While local funding is tracking with operational needs, federal funding has increased through the IIJA to fill in some of those gaps and to provide resources towards capital investments and system upgrades. At the same time, ongoing resources from statewide fares have decreased, potentially leaving some transit funding shortfalls. Comprehensive data on state of good repair backlogs and unfunded transit projects is not available for the state, making it difficult to properly assess funding needs and gaps in the state.

Florida's Regional Sources of Funding[8]

Type of Funding	Percentage in 2020	Percentage in 2025
Fares	12%	10%
Local	53%	41%
State	16%	12%
Federal	19%	36%

Resilience

The 2024 hurricane season provided a significant test for the resilience of Florida's transit system. A record of 6.5 million Floridians evacuated due to Hurricanes Helene (Category 4) and Milton (Category 5), which made landfall within three weeks of each other. Emergency shoulder use was opened on Florida's interstate system to allow drivers and transit vehicles to access additional lane space rather than deploying a counterflow method. During the 2024 evacuation periods, transit networks quickly changed from regular service to emergency service plans, effectively routing evacuees to designated shelter facilities. The transit sector's resilience is particularly important to the public safety of Florida's growing older population. By 2045, Florida's population of individuals 65 and older is projected to grow by 60%, meaning more people will transition away from driving and depend on public transit. A national study was published in March 2025 in the Journal of Transport and Health which determined among older adults who drove, 8.9% were users and 3.2% were frequent users of public transit, respectively. These proportions were 26.2% and 16.9% among older adults who were non-drivers, respectively.

As an increased dependence on digital connectivity brings challenges such as cybersecurity and data privacy to the forefront, Cyber Florida's Critical Infrastructure Protection (CIP) Program offers vetted, best-practice cybersecurity resources to public and private critical infrastructure entities.

The Cybersecurity and Information Technology Pathways (Cyber/IT Pathways) program is a joint endeavor of the Florida Department of Education and the Florida Center for Cybersecurity (Cyber Florida at the University of South Florida) to inspire and prepare more students to pursue fulfilling ad lucrative careers in cybersecurity/information technology (IT) while helping address a national skills shortage in these areas. The State of Florida dedicated $20 million in non-recurring funding toward this effort. Projects were awarded funding based on a competitive proposal process that invited existing, successful programs that could use funding to scale up and benefit more students across the state to apply.

The Local Government Cybersecurity Grant Program, a $15 million grant opportunity, is designed to enhance cybersecurity resilience in local governments, with a focus on small and fiscally constrained communities and those within rural areas of opportunity.

7. FDOT IIJA Formula and Competitive Funding Programs
8. American Public Transportation Association (APTA)

TRANSIT

C+

TRANSIT

Public Safety

Public transit systems continue to be one of the safest modes of transportation, with a low number of bus related crashes occurring each year. Overall, there were 2,398 bus-related collisions (Jan 1, 2021, to Dec 31, 2024) with an average of 12 fatalities and 229 injury-related crashes occurring per year, which represents only 0.34% of all collisions and roadway fatalities occurring per year in Florida.

FTA actively supports transit safety in Florida through oversight, funding, and targeted programs. Florida also benefits from FTA-funded research and training initiatives, such as the $500,000 awarded in 2023 to the University of South Florida to study and improve transit workers and rider safety. Additionally, FTA collaborates with Florida transit agencies through the Transportation Safety Institute (TSI), which provides safety training and certifications aimed at reducing hazards and improving transit system performance statewide.

Innovation

Florida municipalities are actively investing in the electrification of their bus fleets as part of broader efforts to modernize public transit and reduce environmental impacts. Miami-Dade County and Broward County have invested $126 million to purchase 75 and 42 electric buses, respectively. However, the majority of these buses are not in use due to issues with reliability and lack of replacement parts. Despite these setbacks, many municipalities remain committed to electrifying their fleets as reliability increases. Orlando's LYNX transit agency secured a $1.9 million federal grant in 2025 to deploy electric buses for downtown routes and previously obtained $27.6 million to modernize their fleet in 2024. In Tampa, the Hillsborough Area Regional Transit Authority (HART) was awarded $700,000 to continue providing fare-free services for their Tampa Electric Company (TECO) Line Streetcar. Meanwhile, the Jacksonville Transportation Authority (JTA) in 2025 plans to launch the first autonomous transit system with regular fare-paying services.

Seminole County has a new transit option, Freebee, a Miami Beach-based microtransit company and includes 35 sustainable transit vehicles for $4.8 million a year, with a $100,000 initial setup fee. Ideally, this will solve the last mile issue of public transit, in which riders are left walking upwards of a mile to their next point of connection.

Additionally, artificial intelligence (AI) enables pedestrian detection, possibly increasing road safety by identifying and predicting driver and pedestrian movements. AI may improve traffic flow, aid in road condition monitoring, detect traffic incidents, and alert authorities to crashes or road obstructions. This versatile integration of AI across these applications fosters safer, more efficient transportation networks.

Florida is at the forefront of AI innovation in transportation, with several initiatives and systems in place to enhance traffic management and safety. For example, NoTraffic is an AI-driven traffic management system that has been approved by FDOT and is already operational in Orlando, Collier County, and Pasco County. It combines smart sensors with AI software to control and prioritize traffic flow for all modes of transportation. Additionally, in collaboration with FDOT, Flow Labs has launched a region-wide AI-powered traffic management system across 2,000 intersections in the Orlando metropolitan area. This system provides real-time turning movement counts, which are traditionally difficult to obtain.

C+

Recommendations to Raise the Transit Grade

- Invest in transit projects that improve quality of life, social equity and, combined with housing, transport affordability. Additional investment in transit needs to be provided through all levels of government, local, state and federal
- Increase investment in resilience and innovations.
- Implement safety programs to reduce transit safety risks, increase security, improve staff training, establish safety committees, and implement safety protocols to ensure a future with zero transportation-related fatalities and serious injuries.

Sources

- American Public Transportation Association, "2024 Public Transportation Vehicle Database," 2024.
- Center for Urban Transportation Research, "CUTR partners with Florida Center for Cybersecurity on statewide effort," 2025.
- Federal Transit Administration, "2023 National Transit Database," 2023.
- Federal Transit Administration, "INVESTING IN AMERICA: Biden-Harris Administration Strengthens Transit Manufacturing Industry with $1.5 Billion from Bipartisan Infrastructure Law to Put More American-Made Buses on the Road," 2024.
- Florida Department of Transportation, "Public Transit Office, Transit Asset Management Plan," 2025.
- Florida.gov, "Florida Local Government Cybersecurity Grant Program," 2025.
- LYNX, "LYNX to Receive $1.9 Million Federal Transit Administration Grant," 2019.
- Miami Herald, "South Florida's fleet of electric buses cost $126 million. Only a few are still running," 2025.
- National Highway Traffic Safety Administration, "Fatality Analysis Reporting System," n.d.
- National Transportation Safety Board, "Agricultural Labor Bus and Truck-Tractor Collision at US-98–SR-363 Intersection Near St. Marks, Florida," 2016.
- Pinellas Suncoast Transit Authority, "Transportation Disadvantaged Program," 2025.
- U.S. Census Bureau, "2024 Population Estimates," 2024.
- USA Today network, "Self-driving vehicles will operate as transit shuttles in Jacksonville," 2025.
- WUSF, "Money approved to keep Tampa's streetcar free, officials say," 2025.

C+

Florida's Infrastructure

WASTEWATER

EXECUTIVE SUMMARY

Florida's wastewater infrastructure is undergoing significant modernization as the Department of Environmental Protection (DEP) implements the 2020 Clean Waterways Act and subsequent reforms. The state oversees more than 4,100 permitted facilities with 2.7 billion gallons per day of domestic treatment capacity, currently using about 1.5 billion gallons, while an estimated 2.5 million onsite systems still serve roughly one-third of residents. New statutory and rule requirements are driving asset management, backup power and resiliency planning, and greater emphasis on reuse and nutrient reduction. Utilities are adopting digital tools, advanced diagnostics, and innovative reuse projects, yet aging collection systems, growing sanitary sewer overflows during hurricane season, and rising cybersecurity risks expose vulnerabilities. Although rates have increased, long-term capital needs—estimated at $90.5 billion for wastewater through 2040—far exceed available funding, especially for small and rural systems. To raise the grade, Florida must expand targeted funding, accelerate septic-to-sewer conversions, strengthen climate resilience, and invest in a skilled workforce.

Introduction

The Florida Department of Environmental Protection (DEP) oversees statewide wastewater policy, regulatory compliance, and permitting, including onsite sewage systems transferred from the Department of Health under the 2020 Clean Waterways Act. In recent years, the Legislature and DEP have advanced major updates to modernize wastewater regulation and expand reuse requirements, including a 2024 law mandating reuse feasibility studies for new or modified treatment facility permits. DEP is also developing potable reuse rules and has updated regulations on biosolids, nutrient control, and collection system management, introducing requirements such as backup power planning, annual inspections, and renewal and replacement schedules. Together, these evolving statutory and regulatory frameworks increasingly emphasize reuse, nutrient reduction, and system modernization, strengthening DEP's role in guiding Florida's wastewater infrastructure toward more sustainable and resilient operations.

Capacity and Condition

Florida's wastewater portfolio includes centralized and onsite systems (OSTDS). The infrastructure within a centralized system includes a network of collection and transmission pipelines, manholes, and pumping stations that transfer wastewater to the treatment plants. After multiple physical and chemical processes, the treated effluent may be reused for irrigation and/or other uses, discharged to nearby surface waters or injected into deep wells for disposal. Onsite system infrastructure is less extensive due to the smaller footprint and includes conveyance lines, a septic tank or more advanced treatment unit, sometimes a pump, and an underground drainage area called a leach field.

As of the most recent DEP data, the state has more than 4,100 active/permitted wastewater treatment facilities of which approximately 2,100 are classified as industrial while the remaining 2,000 are domestic municipal systems. All of Florida's domestic wastewater systems have a combined treatment capacity of 2.7 billion gallons per day, though only about 1.5 billion gallons is used, leaving adequate capacity to accommodate future population growth. Florida's largest domestic wastewater treatment systems, those with a capacity of at least 1 million gallons per day, are adequately treating upwards of 95% of the state's overall domestic wastewater needs. However, most of the state's permitted domestic wastewater systems are much smaller, less than 100,000 gallons per day, and serve only about 1% of the state's total domestic wastewater needs. Florida's increasing dependence on larger capacity, centralized wastewater treatment facilities is driven by urbanization and consistent with nationwide wastewater trends. Fortunately, at this point, Florida's wastewater treatment systems have enough capacity to provide an adequate level of service to users.

On the onsite wastewater side, approximately one-third of Florida's population continues to rely on septic / OSTDS systems which means an estimated 2.5 million systems are currently in operation. Because Florida relies heavily on groundwater as a potable source and on high-quality surface waters for its tourism economy, septic-to-sewer conversions have become a key environmental and public health priority. Several municipalities and utilities including JEA (Jacksonville Electric Authority), Indian River County Utilities, Miami-Dade County Water and Sewer Department, and Monroe County, have launched programs to remove or retrofit aging septic systems in coastal and low-lying areas vulnerable to nutrient pollution, flooding, and saltwater intrusion. These initiatives, supported by the FDEP Septic Upgrade Incentive Program, the Clean Waterways Act (2020), and federal infrastructure funding under the Infrastructure Investment and Jobs Act (IIJA), represent critical progress in safeguarding Florida's coastal ecosystems and reducing nutrient loads to impaired waters.

Florida lacks comprehensive statewide data tracking the average age of centralized wastewater systems, including pipelines, pump stations, and treatment facilities. As a result, condition data are managed locally through utility asset management programs and capital improvement plans. Many urbanized counties like Miami-Dade, Broward, Hillsborough, and Pinellas report that large portions of their gravity mains, force mains, and manholes were installed between the 1950s and 1980s, and are now reaching or exceeding their design life. Similarly, treatment plants constructed during the 1970s–1990s expansion era are undergoing phased rehabilitation or replacement to meet modern nutrient reduction, reliability, and resiliency standard. Local utilities use CCTV inspections, infiltration/inflow analyses, and hydraulic modeling to assess deterioration from corrosion, inflow/infiltration, and root intrusion, which remain the most common causes of system failures.

As population, per-capita water use, climate change pressures (elevated groundwater, saltwater intrusion, increased infiltration),

C+

WASTEWATER

and regulatory expectations (higher reuse or nutrient limits) grow, the existing capacity margins may narrow. Therefore, ongoing upgrades, collection enhancements, permit renewals, and modernization of on-site systems will be essential to maintain adequacy.

Operation and Maintenance

Wastewater treatment plants and collection systems represent extensive, capital infrastructure assets that demand continuous, disciplined operation and maintenance (O&M) to safeguard public health and environmental quality while providing efficient and affordable service. Recognizing the challenge of prioritizing limited funds, Florida's Clean Waterways Act (SB 712, 2020) mandated that wastewater utilities implement comprehensive asset management practices. These included developing five-year pipe inspection, repair, and replacement plans and conducting proactive condition assessments throughout their collection and conveyance systems to minimize leaks, inflow and infiltration (I&I), and sanitary sewer overflows. Further strengthening this requirement, Rule 62-600.705, F.A.C., which became effective June 28, 2023, mandates that domestic-wastewater-facility permittees prepare and submit a "collection system action plan" (CSA Plan) that lays out a 5-year horizon for collection/transmission system evaluations, inventories, maintenance and repair protocols, resiliency measures (including for power outages and sea-level rise), and an annual implementation report due each June 30.

Equally important, the success of these programs depends on maintaining a well-trained and adaptive workforce. Utilities across Florida are increasingly focused on developing technical staff capable of managing digital asset-management systems, implementing cybersecurity protections, and integrating emerging reuse and monitoring technologies. Building and retaining this skilled workforce is critical to sustaining regulatory compliance, operational reliability, and long-term infrastructure resilience.

Compliance remains a core responsibility. All wastewater utilities must operate under DEP and EPA regulatory frameworks, including NPDES permits and groundwater discharge authorizations that mandate effluent monitoring, reporting, and corrective action. DEP's Water Compliance Enforcement Program (WCEP) coordinates statewide enforcement and provides training and data systems (such as EzDMR) to ensure consistency among district offices. At the same time, local governments are making significant O&M-related capital investments to address failing and flood-vulnerable systems.

Unlike centralized systems, O&M for OSTDS, including septic tanks and advanced onsite systems, remains the responsibility of homeowners. Limited homeowner awareness and maintenance often result in failures that contaminate surface and groundwater. To mitigate this, DEP has expanded inspection and maintenance requirements for advanced systems in environmentally sensitive areas, instituted contractor certification programs, and provided homeowner education on proper O&M.

Overall, Florida's wastewater O&M landscape has evolved since 2020 toward proactive, data-driven asset management, climate-resilient upgrades, and greater regulatory coordination. Yet disparities persist between large urban utilities and smaller, rural systems, underscoring the need for sustained funding, technical assistance, and workforce development to ensure reliable operation, compliance, and resilience statewide.

Funding

Florida's wastewater infrastructure is financed through a combination of local user fees, municipal bonds, state grants, and federal financing programs. According to the Florida Rate Survey, the state's average monthly wastewater bill in 2025 was $46.25 which has increased from $34.60 five years ago. While these revenues are adequate for O&M, they are insufficient to meet the large capital investments required to modernize aging infrastructure and expand treatment capacity.
The Miami-Dade Water and Sewer Department (WASD) is currently investing $126 million in General Obligation Bond (GOB) funds to connect over 1,000 commercial properties from septic to the county's centralized sewer system, part of a larger $200 million project including water infrastructure upgrades. The initiative enhances both economic development and environmental protection by removing commercial and industrial septic tanks from sensitive aquifer areas.

This commitment forms a key component of WASD's Connect2Protect (C2P) Program, launched in January 2022, which represents one of Florida's largest septic-to-sewer conversions. With more than 120,000 septic systems countywide, many threatened by rising groundwater and sea-level rise, C2P prioritizes projects using a Groundwater Vulnerability Analysis to target at-risk properties equitably. To date, the program has completed over 1,000 conversions, finalized more than 3,000 site designs, and secured approximately $280 million in awarded funding for continued implementation. Through C2P, WASD is improving public health, protecting Biscayne Bay from nutrient pollution, and demonstrating sustainable engineering principles while minimizing environmental impact while meeting community needs.

The Clean Water State Revolving Fund (CWSRF) remains the state's primary low-interest financing mechanism for wastewater projects, funded through annual federal capitalization grants and a 20% state match. Since 2020, CWSRF allocations have increased significantly due in part to new resources under the Infrastructure Investment and Jobs Act (IIJA). Despite these increases, current funding levels remain far below the state's long-term capital requirements.

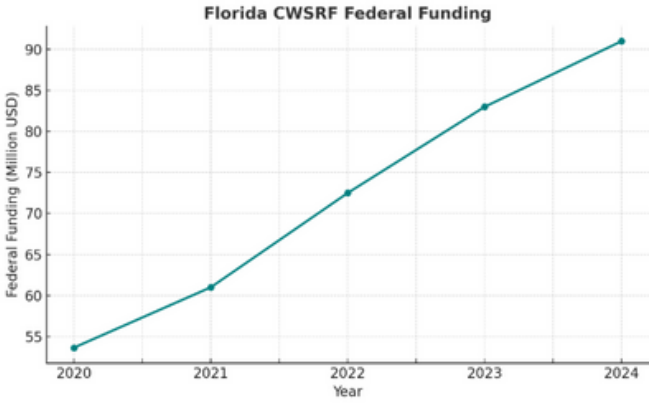
At the local level, onsite and decentralized system owners still bear the full cost of installation, maintenance, and decommissioning. DEP's Septic Upgrade Incentive Program, which once provided homeowner assistance, is no longer accepting new applications due to exhausted funds. To fill this gap, the Clean Waterways Act of 2020 established the Wastewater Grant Program, prioritizing areas with severe water-quality impairments and requiring a 50 percent local match.

Figure 1 provides a visual summary of CWSRF's recent trajectory, showing the substantial rise in federal funding under IIJA while underscoring that these annual increments remain small relative to the state's multibillion-dollar wastewater infrastructure needs.

C+

WASTEWATER

Florida Clean Water State Revolving Fund (CWSRF) Federal Funding Over Time



Future Need

Florida's capital improvement need is enormous and meeting it will challenge future funding prospects. The state's average monthly wastewater bill has increased about 3% per year; although, many utilities have reported that their operating revenues were sufficient to cover routine O&M costs. However, the capital burden of constructing new plants, upgrading aging systems, expanding capacity, and making resilience improvements far exceeds what user revenue can support.

According to the Florida Legislature's Office of Economic and Demographic Research (EDR), between 2023 and 2040 Florida will need approximately $201.5 billion for stormwater and wastewater infrastructure, of which $90.5 billion is estimated for wastewater capital improvements alone. In the shorter term, EDR's analysis (for 2022–2027) forecasts that publicly owned wastewater systems alone will require $23.2 billion in capital projects, in addition to $15.3 billion in O&M costs.

While increased funding through the IIJA offer some relief, the projected investment need for wastewater in Florida outpaces current and near-term funding flows by a wide margin. Even with enhanced federal and state support, closing that capital gap will depend on aggressive prioritization, leveraging alternative financing (like public-private partnerships, performance-based contracts, and enhanced local matches), and continuous reassessment of cost estimates.

The wastewater sector is becoming increasingly innovative and data-driven which is fueling the demand for a more technically skilled workforce. As such, Florida's utilities, universities, and professional organizations are broadening access to educational materials for wastewater treatment plant operators, engineers, and other clean water professionals regarding changes in environmental regulations, evolving security considerations, new technologies, and public health concerns. Though helpful in expanding the technical training of the state's current wastewater practitioners, it does not address the long-term need of an aging workforce, a large portion of which is nearing retirement. To encourage the next generation of industry leaders, Florida educational institutions have sharpened their career development and workforce readiness programs to fill the forecasted gap.

Innovation

Since 2020, utilities have increasingly adopted digital asset management systems, integrating GIS, real-time monitoring, and predictive analytics to prioritize maintenance and optimize investments. Larger utilities such as Miami-Dade, Hillsborough, and Pinellas County are now leveraging AI-enabled predictive maintenance and digital twin modeling to forecast infrastructure needs and enhance resilience. However, as these programs are integrated, the sector must retain vigilance, due to growing threat to vulnerable cyber security networks.

Some wastewater utilities in Florida are pushing the envelope on innovative O&M and diagnostic approaches designed to reduce public disruptions during inspections. For instance, Pinellas County Utilities in Clearwater has adopted ground-penetrating radar (GPR) in tandem with ultrasonic thickness testing to assess conveyance system integrity noninvasively and to better schedule proactive rehabilitation.

Beyond conventional techniques, utilities are piloting advanced geophysical tools such as underground imaging and mapping to evaluate buried pipes without excavation, helping to improve accuracy and lower O&M costs. Meanwhile, utilities are increasingly building digital twins of treatment and conveyance systems, integrating sensor networks, real-time flow analytics, and model-based control logic to anticipate overflows, optimize operations, and run "what if" scenarios. In Florida, a Miami-Dade pilot has developed 3D and vertical models of infrastructure for these purposes.

Florida is a leader in innovative water recovery. Polk County's DPR demonstration at the Cherry Hill WPF aims to produce up to 1.5 MGD of potable-quality reclaimed water using advanced treatment trains. Fort Pierce is relocating its wastewater plant to avoid flood risk and adopting new efficient technologies to economize energy and footprint allowing more wastewater to be processed in the same footprint and greatly increasing treatment capacity. Hybrid approaches combining digital and physical twins are also being explored to dynamically optimize reuse systems. Innovations in materials and rehabilitation remain active: durable cured-in-place linings, antimicrobial coatings, fiber-reinforced composites, and trenchless rehab techniques are gradually being introduced, though Florida-specific deployments are less documented in public sources.

Reclaimed water is wastewater that has undergone at least secondary treatment and basic disinfection that is productively reused for activities including irrigation, groundwater recharge, aesthetic architectural features like fountains, and cooling towers used in energy production. As reclaimed water becomes more of a norm for reducing freshwater demand and maximizing the utility of treated wastewater, DEP's 2024 Annual Agency Reuse Report states that, among state agencies, there is ongoing monitoring of reuse percentages across Florida's domestic wastewater systems.

Overall, while Florida's wastewater sector has long been recognized as a national leader in water reuse and reclamation, the past five years have marked a steady evolution toward innovation, embracing digital water technologies, predictive O&M, resource recovery, and advanced diagnostics. These advancements are transforming wastewater systems from passive infrastructure into adaptive, data-driven, and resource-generating networks equipped to meet emerging climate, population, and regulatory challenges.

C+

WASTEWATER

Public Safety

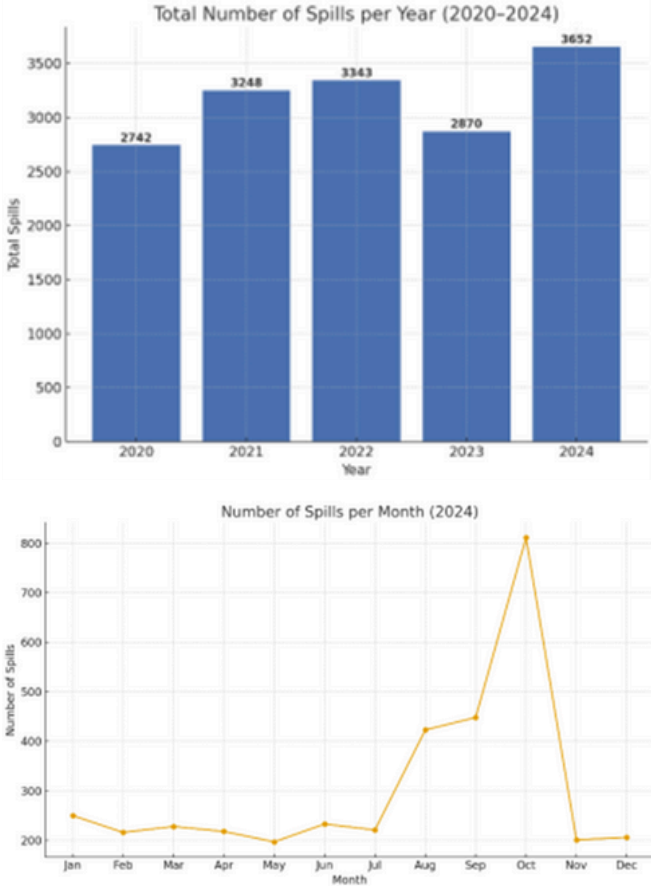
To protect public safety and reinforce Florida's leadership in reclaimed water use, state statutes continue to direct DEP to enforce strict public health rules for potable reused water, including monitoring for emerging contaminants and maintaining or exceeding federal and state drinking water standards. Recognizing that operational control systems (SCADA, HMIs, networked controllers) are increasingly vulnerable, EPA and the Cybersecurity and Infrastructure Security Agency (CISA) have published guidance and fact sheets warning about risks in unsecured Human Machine Interface devices. Under AWIA and updated resilience planning rules, utilities must integrate cybersecurity into Risk and Resilience Assessments (RRAs) and Emergency Response Plans, and EPA's cybersecurity program now offers training, scenario exercises, and vulnerability-assessment tools (such as VSAT Web) to support implementation. Florida's DEP supports related efforts through its Office of Technology and Information Services (OTIS), which includes a Security & Infrastructure Services (SIS) unit responsible for network security, compliance assessments, and security awareness training. While DEP documentation is limited, the establishment of Florida's Cybersecurity Advisory Council under HB 1297 (2021) underscores the state's broader commitment to cybersecurity across critical infrastructure sectors including utilities. However, many smaller, rural, or underfunded utilities struggle to allocate sufficient technical or financial resources to modernize or defend aging control systems which is a gap consistent with sector-wide findings about workforce skill shortages and underinvestment in cyber protections. A 2024 U.S. Government Accountability Office (GAO) report warned that although water sector cybersecurity risks are rising, oversight remains fragmented and many systems lag in adoption. Furthermore, a recent EPA Office of Inspector General assessment found that many drinking water systems have critical or high-risk cybersecurity vulnerabilities and noted that EPA lacks a dedicated incident reporting system for cyberattacks in water utilities. With federal scrutiny increasing and baseline cyber protections expected to evolve from voluntary best practices toward stronger oversight, the wastewater sector's cybersecurity posture will increasingly be integral to protecting public health, environmental quality, and system reliability.

When wastewater treatment systems underperform due to equipment failures or blockages and/or are overtaxed due to extreme weather events, sanitary sewer overflows (SSOs) can occur. Florida DEP defines an SSO as any overflow, spill, release, discharge, or diversion of untreated and/or partially treated wastewater due to an obstruction, system failure, or capacity exceedance at the wastewater facility or in the collection system. If the flow of wastewater in a pipe becomes blocked, it can cause the system to back up and discharge through manholes, cleanouts, or household fixtures such as toilets, sinks, and drains. The overflow may then enter nearby buildings or flow into the surrounding environment.

DEP requires all spills under 1,000 gallons to be reported to the local district office, while those over 1,000 gallons must be reported to the State Watch Office as a formal public notice of pollution, which is published online. Figure 2 illustrates both Florida's total annual sanitary sewer overflows (SSOs) from 2020 through 2024 and the monthly distribution of SSOs during 2024.

The annual totals reveal a steady increase in reported SSOs over the last five years, suggesting growing stress on aging infrastructure and more frequent extreme weather events. The accompanying monthly trend line for 2024 underscores this pattern: it shows a sharp spike in incidents between August and November, corresponding to Florida's peak hurricane season. During these months, heavy rainfall, storm surges, and power outages frequently disrupt wastewater collection systems, resulting in a surge of overflow events.
Following the hurricane season, the line graph indicates a gradual decline in incidents as weather conditions stabilize and emergency repairs are completed. This temporal clustering of SSOs highlights the direct link between seasonal climatic extremes and system vulnerabilities, reinforcing the need for targeted resilience planning, enhanced system capacity, and post-storm rapid response measures. Considering a statewide perspective, Figure 3 comes from a 2025 DEP report provided in March 2025 which shows the total volumes and number of SSOs that occurred by county between 2020 and 2024, the largest total volume being in Polk County (289.67 million gallons) and Pinellas County (193.15 million gallons) although Pinellas County had the most spills (1,342 incidents).

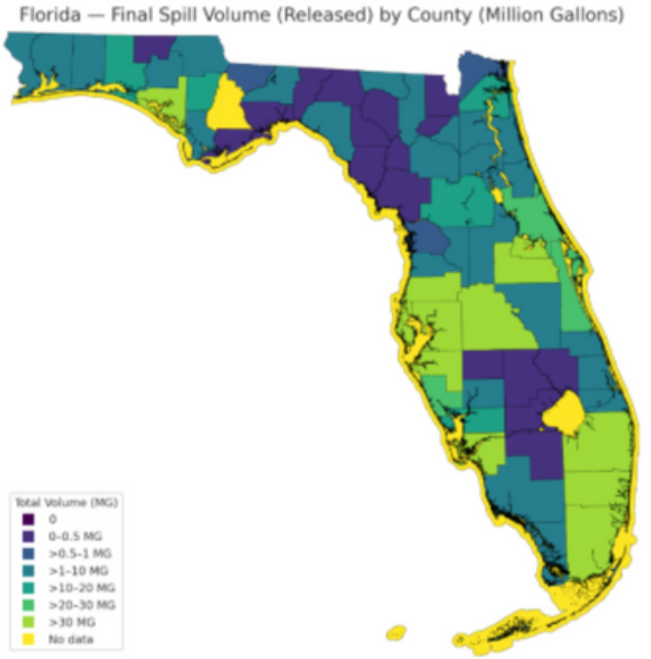
Total Number of Spills Per Year (2020-2024) and Number of Spills per Month (2024)



C+

WASTEWATER

Total Volumes and Number of SSOs by County from 2020 to 2024



Resilience

Much of Florida's wastewater infrastructure is located along or near the state's extensive coastlines, making it particularly vulnerable to intensifying storms, sea-level rise, coastal flooding, and erosion. These hazards increase infiltration and inflow, hydraulic stress, and saltwater intrusion into wastewater system risks that are projected to intensify under future climate conditions. Recent studies have shown that coastal wastewater systems are already experiencing chronic flooding, reduced treatment efficiency, and corrosion caused by saline groundwater intrusion.

In response, the Southeast Florida Regional Climate Change Compact has continued to update its unified sea-level rise projections to guide climate-informed design for long-lived infrastructure. The Compact's 2019 projection was reassessed in 2022 to align with the NOAA Technical Report on Sea Level Rise Scenarios, providing a regional standard for integrating sea-level projections into planning, siting, and design of critical infrastructure such as wastewater systems. However, despite increasing awareness, the systematic application of these projections remains uneven across Florida's wastewater sector, primarily due to technical capacity gaps and limited financial resources among smaller utilities.

To strengthen resilience statewide, the Florida Legislature established the Resilient Florida Program in 2021, embedding new statutory requirements for evaluating sea-level rise impacts in state-funded projects. As of July 2024, all state-financed construction projects within coastal or flood-prone areas must complete Sea Level Impact Projection (SLIP) studies before construction begins. The program also directs the DEP to coordinate statewide resilience planning, provide funding to local governments, and maintain the Statewide Flooding and Sea Level Rise Resilience Plan, which identifies and ranks resilience projects eligible for funding.

Through this initiative, DEP supports local governments and utilities with technical assistance and grants to perform vulnerability assessments and integrate adaptation strategies into infrastructure planning. The Resilient Coastlines Program, administered by DEP, complements this effort by assisting coastal communities with data, tools, and project funding to address flooding and erosion hazards. Collectively, these programs promote a coordinated approach among state, regional, and local agencies to enhance resilience and adaptation in critical infrastructure systems.

Local governments have also taken proactive measures to safeguard public health and environmental quality. Miami-Dade County, for example, has incorporated sea-level rise and flood risk into all capital and utility planning decisions, prioritizing the conversion of vulnerable septic systems to centralized sewer systems and upgrading stormwater infrastructure to reduce contamination and service disruptions during extreme weather events. Other coastal counties have begun adopting similar strategies as part of their long-term resilience plans.

Despite this progress, the pace of implementation remains inconsistent across Florida, and ensuring system-wide resilience will require continued investment in data, design capacity, and intergovernmental coordination.

C+

Recommendations to Raise the Wastewater Grade

- Expand dedicated funding to close Florida's wastewater investment gap. Reopen or replace the Septic Upgrade Incentive Program and strengthen the Wastewater Grant Program to support conversions and resilience upgrades.
- Accelerate septic-to-sewer conversions in flood-prone and sensitive areas, prioritizing projects using groundwater vulnerability and nutrient-loading data. Promote advanced onsite treatment where centralization is not feasible.
- Integrate localized sea-level rise and climate projections into wastewater planning, permitting, and funding decisions.
- Expand vulnerability and resilience assessments beyond power-contingency requirements to address flood, climate, and system interdependency risks that threaten facility operations.
- Establish modern workforce training programs focused on digital asset management, cybersecurity, and reuse technologies to retain skilled talent.
- Create a statewide wastewater infrastructure database tracking age, condition, and rehabilitation progress for data-driven planning.
- Prioritize smaller and rural systems increasingly impacted by extreme weather through targeted rehabilitation, flood protection, and regional consolidation initiatives that enhance technical, financial, and operational capacity.

Sources

- American Society of Civil Engineers (ASCE), "Wastewater – 2021 Infrastructure Report Card," 2021.
- Dewberry Engineers Inc., "Cherry Hill Phase Three Direct Potable Reuse Feasibility and Pilot Study," 2024.
- Florida Department of Environmental Protection (FDEP), "2024 Agency Reuse Report," 2024.
- Florida Department of Environmental Protection (FDEP), "Certification and Restoration Program," 2024.
- Florida Department of Environmental Protection (FDEP), "Collection System Action Plans (Rule 62-600.705, F.A.C.)," 2023.
- Florida Department of Environmental Protection (FDEP), "CWSRF Intended Use Plan Base & Bipartisan Infrastructure Law Capitalization Grant FY 2024 (Draft 4-26-2024)," 2024.
- Florida Department of Environmental Protection (FDEP), "General Facts and Statistics About Wastewater in Florida," 2024.
- Florida Department of Environmental Protection (FDEP), "Information for Septic System Owners and Buyers," 2024.
- Florida Department of Environmental Protection (FDEP), "Onsite Sewage Program," 2024.
- Florida Department of Environmental Protection (FDEP), "Resilient Florida Program – Sea Level Impact Projection (SLIP) Studies," 2024.
- Florida Department of Environmental Protection (FDEP), "Sanitary Sewer Overflows Summary," 2024.
- Florida Department of Environmental Protection (FDEP), "Statewide Flooding and Sea-Level Rise Resilience Plan (2023–2024)," 2024.
- Florida Department of Environmental Protection (FDEP), "Uses of Reclaimed Water," 2024.
- Florida Department of Environmental Protection (FDEP), "Wastewater Grant Program – Clean Waterways Act (SB 712, 2020)," 2023.
- Florida Department of Environmental Protection (FDEP), "Wastewater Facility Inventory and Capacity Data," n.d.
- Florida Department of Environmental Protection (FDEP), "Water Compliance Assurance Program," 2024.
- Florida Department of Environmental Protection (FDEP), "Reuse Facts," 2024.
- Florida Department of Environmental Protection Miami-Dade County Water and Sewer Department (WASD), "Improvements Program," 2024.
- Florida Department of Environmental Protection (FDEP), "SSO_Incident Report_01.01.2020-12.31.2024," 2024.
- Florida Department of Health (FDOH), "Comparison of Sewer and Onsite Sewage Treatment and Disposal Systems," 2023.
- Florida Department of Health (FDOH), "Septic System Owner's Guide," 2023.
- Florida Department of Management Services (DMS), "Cybersecurity Advisory Council," 2024.
- Florida EDR, "2023 Annual Assessment of Infrastructure Investments, Chapter 5," 2023.
- Florida EDR, "Annual Assessment of Infrastructure Investments, Chapter 5," 2023.
- Florida EDR, "Infrastructure Investment Assessment (2023–2040)," 2023.
- Florida Engineering Society (FES), "It's Time for a Statewide Plan to Address Florida's Water Issues," 2023.
- Florida Legislature, "Clean Waterways Act (SB 712)," 2020.

C+

Sources

- Florida Legislature, "Clean Waterways Act (SB 712) – Enrolled Bill Text," 2020.
- Florida Legislature, Office of Economic and Demographic Research (EDR), "It's Time for a Statewide Plan to Address Florida's Water Issues," 2023.
- Florida Water Environment Association (FWEA), "Florida Water Resources Journal," 2024.
- Florida Water Resources Journal, "Utilizing Nondestructive Testing for Large Ductile Iron Force Main and Air Release Valve Evaluation," 2020.
- LandTech Inc., "Miami-Dade Water & Sewer Pilot Projects," 2024.
- Miami-Dade County, "Resilient305 Strategy – Sea-Level Rise Adaptation and Infrastructure Upgrades," 2023.
- Miami-Dade County Water and Sewer Department (WASD), "Connect 2 Protect: Septic-to-Sewer Program," 2024.
- Raftelis Consulting, "Florida Rate Survey 2024," 2025.
- ScienceDirect, "Impacts of Sea-Level Rise and Coastal Flooding on Wastewater Infrastructure," 2023.
- Southeast Florida Regional Climate Change Compact, "Unified Sea Level Rise Projection," 2022.
- Sustainable Sewer Initiative, "Relocation and Sustainability Projects," 2024.
- U.S. Environmental Protection Agency (EPA), "Clean Watersheds Needs Survey," 2023.
- U.S. Environmental Protection Agency (EPA), "Climate Change and Water Sector Cybersecurity," 2024.
- U.S. Environmental Protection Agency (EPA), "Cybersecurity for the Water Sector," 2024.
- U.S. Environmental Protection Agency (EPA), "Cybersecurity Planning Tools for Utilities," 2024.
- U.S. Environmental Protection Agency (EPA), "Miami-Dade County Consent Decree," 2013.
- U.S. Environmental Protection Agency (OIG), "Office of Inspector General Findings," 2024.
- U.S. Government Accountability Office (GAO), "Water Infrastructure Cybersecurity Report," 2024.
- University of Florida, Center for Water and the Environment (CWDE), "Water and Wastewater Research," 2024.
- WaterReuse Association, "Bridging the Data Gap: Digital and Physical Twins to Advance Water Reuse Operations," 2023.

Florida's Infrastructure - Spotlight Chapter

SPACE

"Man must rise above Earth to the top of the atmosphere and beyond, for only then will he fully understand the world in which he lives" – Socrates (469-399 BC).

The mission of the National Aeronautics and Space Administration (NASA) is to drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.

ASCE and the Space Program

In response to the emerging field of space exploration and technology, the American Society of Civil Engineers (ASCE) Aerospace Division was established in 1971 to apply emerging and advanced aerospace technologies to civil engineering practice. The field of aerospace researches advanced and emerging technologies for civil engineering application in the space frontier and other extreme environments. Each year, thousands of civil engineering professionals participate in ASCE's activities by volunteering their technical and professional expertise in support of the Society's vision and mission to advance the practice of civil engineering.

Photo courtesy: NASA

Space Facilities

NASA operates a network of facilities across the United States, each dedicated to various aspects of space exploration, research, and technology development. NASA Headquarters in Washington, DC provides overall guidance and political leadership to the agency. There are 10 NASA field centers, which provide leadership for and execution of NASA's work. All other facilities fall under the leadership of at least one of these field centers. Some facilities serve more than one application for historic or administrative reasons. NASA has used or supported various observatories and telescopes, and an example of this is the NASA Infrared Telescope Facility.

The Apollo program and the Space Shuttle program are two of the most significant space exploration initiatives by NASA. The Apollo program aimed to land humans on the Moon and return them safely to Earth, with six successful missions from Apollo 11 in 1969 to Apollo 17 in 1972. The Space Shuttle program, born in 1968, was designed to provide a reusable method for carrying astronauts to and from a permanently manned space station.

Key Space Operations in Florida

NASA Vehicle Assembly Building (VAB)

The NASA Vehicle Assembly Building (VAB) was originally built to support the vertical assembly of the Saturn Launch vehicles used for the Apollo, Skylab, and the Apollo-Soyouz programs.

In 1963, NASA contracted the Morrison-Knudsen company to design and build the VAB. Construction began with driving the first steel foundation piles on Aug. 2, 1963. The building was completed in 1966. The VAB is 526 feet (160.3 m) tall, 716 feet (218.2 m) long and 518 feet (157.9 m) wide. It covers 8 acres (3 ha) and encloses 129,428,000 cubic feet (3,665,000 m3) of space. The building cost approximately $100 million to complete. $100 million in 1963 is equivalent in purchasing power to over $1 billion today. It was part of NASA's massive effort to send astronauts to the moon for the Apollo Program. The building was designed to accommodate a fully assembled Saturn V and housed the Saturn launch vehicles between 1966 and 1975 and in 1980, the Space Shuttle.

Located on Florida's Atlantic coast, the building was constructed to withstand hurricanes and tropical storms with a foundation consisting of 30,000 cubic yards of concrete and 4,225 steel rods driven 160 feet into limestone bedrock. It is made up of 65,000 cubic yards of concrete and its frame is constructed from 98,590 tons of steel.

In 1966, The American Society of Civil Engineers named Launch Complex 39, of which the VAB was an integral part, as the outstanding project of the year. The Florida Section of ASCE dedicated the VAB as a National Historic Civil Engineering Landmark on January 20, 2020.

NASA VEHICLE ASSEMBLY BUILDING (VAB)

Photo courtesy: NASA

NASA continues moving forward to launching and flying Artemis II, the first crewed mission under the Artemis campaign, planned in April 2026.

NASA's Orion spacecraft, complete with its launch abort system escape tower, is now integrated with the SLS (Space Launch System) rocket in the Vehicle Assembly Building (VAB) at the agency's Kennedy Space Center in Florida.

Space X

Founded by Elon Musk in 2002, SpaceX was born from the goal of making humanity multi-planetary, requiring fundamental rewriting of spaceflight economics. In 2021, NASA awarded a contract to SpaceX now worth $4.4 billion to develop a lander capable of transporting humans to the lunar surface. Starship, the approximately 400-foot megarocket that SpaceX is testing for future spaceflight, is due to play a vital role during the Artemis 3 lunar landing. In addition to the moon landing mission, Starship is also being developed for future human spaceflights to Mars.

Blue Origin

Founded by Amazon's Jeff Bezos in 2000, Blue Origin's key innovations include:

- New Shepard: A fully reusable suborbital rocket for space tourism, serving as crucial testbed for vertical landing technologies.
- BE-4 Engine: A powerful, liquid natural gas-fueled engine critical not only for Blue Origin's New Glenn rocket but also for ULA's Vulcan Centaur, making Blue Origin a vital supplier to a primary government launch provider.
- New Glenn: A heavy-lift, reusable orbital rocket in development, designed to compete with SpaceX's Falcon Heavy and Starship.
- Blue Moon Lander: The centerpiece of its NASA partnership, a human landing system providing a second, independent way for Artemis astronauts to reach the lunar surface.

Blue Origin's future facility, code-named Project Alpha, will be used to repair and reuse rocket components for its New Glenn rockets. This expansion is part of Blue Origin's growing presence on Florida's Space Coast, where it now employs nearly 4,000 people.

The company was also recently awarded a contract to build a new payload processing facility for national security launches.

Both Blue Origin and SpaceX are utilizing NASA's launch pads at Cape Canaveral Space Force Station and Kennedy Space Center for their launch operations. SpaceX is constructing a Starship launch site on NASA property at Kennedy Space Center within the confines of Launch Complex-39A, where SpaceX also launches its Falcon 9 rocket. This collaboration allows both companies to access the necessary infrastructure and resources to conduct their missions.

SPACEX'S AXIOM-1 IS IN THE FOREGROUND ON LAUNCH PAD 39A WITH NASA'S ARTEMIS I IN THE BACKGROUND ON LAUNCH PAD 39B ON APRIL 6, 2022

Photo courtesy: NASA

Space Force

The U.S. Space Force (USSF) was established on Dec. 20, 2019, creating the first new branch of the armed services since 1947. The establishment of the USSF resulted from widespread recognition that space is a national security imperative. When combined with the growing threat posed by strategic competitors in space, it became clear that there was a need for a military service focused solely on pursuing superiority in the space domain.

Patrick U. S. Space Force Base is located between Satellite Beach and Cocoa Beach in Brevard County, Florida. Following the establishment of the United States Space Force, the base was transferred from the Air Force. It is home to Space Launch Delta 45 (SLD 45), which controls and operates Cape Canaveral Space Force Station (CCSFS) and the Eastern Range. Additionally, SLD 45 deploys resources for flight safety, infrastructure, range instrumentation and launch support.

Space Florida

In 2006, Florida Space Authority, the Florida Space Research Institute, and the Florida Aerospace Finance Corporation combined to form Space Florida as a public corporation and innovation connector via the Space Florida Act. Space Florida's mission is to increase investment activity in Florida's aerospace ecosystem, maximize capacity and capability of Florida's spaceport system, and accelerate innovation.

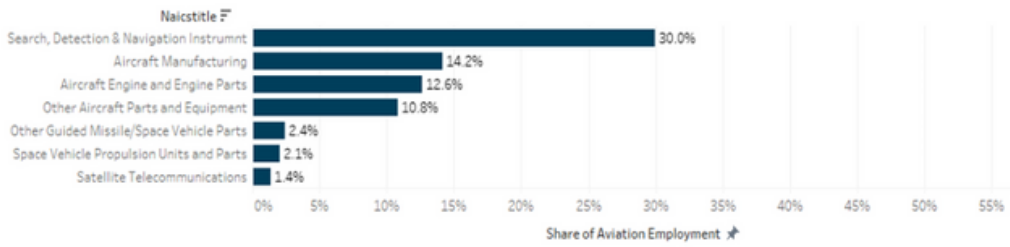
Today, Space Florida offers leading aerospace companies unrivaled experience, unmatched financial tools, and an unbeatable location for their new initiatives. World-class companies ranging from Northrop Grumman to Blue Origin to EVE Air Mobility have all built long-term relationships with Space Florida.

Aerospace Workforce Experience in Florida

Florida's Aviation and Aerospace industry cluster is comprised of the aviation and the aerospace industries as outlined in the Florida Department of Economic Opportunity, Bureau of Workforce Statistics and Economic Research's Labor Market Industry Profile in 2021. Florida is known as the premier location in the world for space technologies. Virtually every major aerospace company and defense contractor in the U.S. and abroad has operations in Florida. The state has been a center for aerospace research and testing since 1946.

There were 559 aerospace industry establishments in 2020 that accounted for 39,249 jobs, which was up 1,571 jobs (+4.2%) from 2019. Total jobs for all industries decreased by 4.9% during this same period. Employment in the aerospace industry is concentrated in coastal areas of south, central, northeastern and northwestern Florida with the largest number of jobs found in Brevard, Orange, Palm Beach, Pinellas, Broward, Miami-Dade, and Okaloosa counties. Florida's universities are among the nation's top producers of STEM graduates, including many specializing in Aviation and Aerospace.

Share of Florida Aerospace Employment by Industry 2020 Annual Averages



Note: Some industries not displayed due to confidentiality.

1. *Florida Department of Economic Opportunity, Bureau of Workforce Statistics & Economic Research, Quarterly Census of Employment and Wages Program (QCEW).*

Funding

Recent legislation in Florida, combined with recent provisions in the federal budget, promotes Florida's reputation and role as a welcoming environment for the space industry. Federal lawmakers from Florida, the Florida Legislature and Gov. Ron DeSantis favor the creation of opportunities for infrastructure improvements and developments that will prompt growth in the space and commercial shipbuilding industries in Florida.

Senate Bill (SB) 1516 creates the International Aerospace Innovation Fund, which will provide further grants that Space Florida will disseminate. In addition, SB 1662 will enable the provision of state grant money for spaceports and other "space industry-related planning or construction." The legislation also renders commercial shipbuilders in Florida as eligible for benefits. Both statutes took effect on July 1, 2025.

The federal government has also recently taken action to prompt spaceport development. Upon signing H.R. 1, the One Big Beautiful Bill Act, on July 4, 2025, President Donald Trump enacted a tax exemption for spaceport facility bonds. The legislation includes a straightforward amendment to the Internal Revenue Code, such that the Code now includes spaceports as eligible for "exempt facility bond" status. Sen. Ashley Moody (R-Fla.) sponsored the amendment, titled Secure U.S. Leadership in Space Act, to ensure tax-exempt status will apply to bonds that will assist in funding spaceport development and improvements. The new provision defines "spaceport" broadly to include not only a facility located at or in close proximity to a launch or reentry site for flight control operations and launch services, but also the use of such sites for manufacturing, assembling or repairing spacecraft, space cargo or other facilities and transferring crew, participants or cargo. Commentators have speculated the availability of funding via tax-exempt bonds will prompt public-private investments for major projects.

Both the state budget, which the governor signed on June 30, 2025, and recent legislation show Florida's investment in spaceports and seaports. The state's fiscal year (FY) 2025-2026 budget includes a total of $13.7 billion for the Florida Department of Transportation's (FDOT) State Transportation Work Program to support, in part, $90.5 million for spaceport investments.

Space Florida's 2024 Annual Operations Report shows that Space Florida had 161 projects in development with an estimated value of $5.6 billion in capital investment. The report further showed that Space Florida provided $101.9 million in funding for 30 research projects, partnerships or grants. Given the effects of SB 1516, the 2025 Annual Operations Report will likely contain even larger figures.

Photo courtesy: NASA

Outlook on Florida's Space Exploration

Florida's future in space exploration is poised for significant growth and innovation. The state's commitment to aerospace development, coupled with major investments from companies like SpaceX and Blue Origin is set to create a robust space economy.

- Expansion of Spaceports: Florida is investing in spaceport facility bonds tax-exempt to leverage financial markets for space infrastructure development.
- Job Creation: SpaceX's expansion in Florida is expected to create at least 600 new jobs by 2030, benefiting local businesses and enhancing Florida's reputation as a prime aerospace hub.
- Technological Advancements: The state is investing in new launch systems, space tourism, and orbital manufacturing, with a focus on next-generation space technology.
- Educational Programs: Charlotte County is expanding its educational aerospace program to prepare students for careers in the aerospace industry.
- Launch Schedule: The Florida Launch Schedule for 2025 promises groundbreaking developments, including satellite deployments, crewed missions to the ISS, scientific explorations, and interplanetary missions.

Sources

- Cleared for Takeoff, "How SpaceX's Expansion is Strengthening Florida's Aerospace Future," 2025.
- Florida Department of Economic Opportunity Bureau of Workforce Statistics and Economic Research, "Labor Market Industry Profile," 2021.
- Holland and Knight, "Spaceports in Florida: New Federal and State Provisions Will Create Development Opportunities," 2025.
- NASA, "Cape Canaveral Air Force Station, Launch Complex 39, Crawlerway, (John F. Kennedy Space Center)," 2012.
- NASA.gov, "Apollo Missions," 2025.
- Robert G. Ferguson, "NASA's First A, Aeronautics from 1958 to 2008," 2013.
- Schedule 2025, "Unveiling the Florida Launch Schedule 2025: A Glimpse into the Future of Space Exploration," 2024.
- Select Florida, "Aviation-Aerospace Industry Profile," 2024.
- Space Coast Daily, "Florida's Space Industry Expands: How New Investments Are Shaping the Future," 2025.
- Space Florida, "About Space Florida," 2025.
- Space Florida, "From Earth to Orbit: Florida Setting the Standard for Aerospace Commerce in 2024 and the Future," 2024.
- Space Force, "Patrick SFB," 2025.
- Space Insider, "SpaceX vs Blue Origin – A Detailed Comparison in 2025," 2025.
- The Florida Oracle, "Florida's role in the future of space exploration," 2025.
- USA Spending, "National Aeronautics and Space Administration," 2025.
- USA Today, "SpaceX to work on simplified starship after NASA reopens lunar lander contract," 2025.
- WGCU News, "Florida's aerospace future arrives," 2025.

2025 REPORT CARD FOR FLORIDA'S INFRASTRUCTURE

ASCE FLORIDA SECTION REPORT CARD COMMITTEE

Chair - Kathi Ruvarac

Aviation
Heath Jenkins, Greg Lee
Bridges
Dr. Carol Hays
Coastal Areas
Katie George, Sam Chiu
Dams
Elizabeth Landowski
Drinking Water
Jessica Diaz
Energy
Doug Holdener,
Levees
Elizabeth Landowski
Ports
Sivakumar Munuswamy,
Roads
Angel De Jesus, Arnaldo Lopez, Jose Santiago
Schools
Sarah Matin
Solid Waste
Tzufit Boyle
Stormwater
Dayna Duffy, Yairen Sotolongo-Gabeiras, Mike Finch
Transit
Kathi Ruvarac, Lorenzo Fuchs
Wastewater
Julie Karleskint, Alessandra Monetti
Public Parks
Rob Best, Jennifer Artiles, Tanya McCormick, Jennifer Cook
Rail
Alfredo Cely
Space
Kathi Ruvarac

ASCE Florida Section Communications & Publications Chair
Alexis Baugh

ASCE National Support
Josh Shumaker, Director, Policy Research and Industry Relations, ASCE

TatjanaKunz, Senior Manager, Policy Research, ASCE

Kevin Longley, Director, Public Affairs & Media Relations, ASCE

Rob Marmet, Manager, Public Affairs & Media Relations, ASCE

Caroline Sevier, Managing Director, Government Relations & Infrastructure Initiatives, ASCE

Questions?

ASCE Florida Section Executive Director
Judy Nichols
judy@fla-asce.org
561-215-4311

ASCE

FLORIDA SECTION

The Florida Section of the American Society of Civil Engineers is the third largest ASCE Section in the County. The Florida Section, consisting of 13 Branches, 18 technical institute chapters and technical groups, 11 Student Chapters and over 7,000 members, was founded in 1929 and is one of the most active Sections within the Society. The South Florida Section is no longer, but is not forgotten; founded in 1926, it was merged with the Florida Section in 1999, and continues on with us at the Palm Beach, Broward, Miami-Dade, and Southwest Branches.

https://www.fla-asce.org/

infrastructurereportcard.org/florida