



Connecticut State Rail Plan (2022-2026)

Executive Summary

November 2022



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Disclaimer: In many sections of this Rail Plan, data from pre-COVID (2019 or earlier) is presented. CTDOT acknowledges that in many instances current data would differ from pre-COVID data. 2020 and 2021 data across many transportation modes was dramatically impacted by COVID and related economic/societal effects, and was characterized by continuous change up through the present. 2022 data, where available, generally does not yet provide clarity on trends or stability. Therefore, this Plan uses pre-COVID data in many sections unless otherwise indicated. CTDOT will continue to evaluate data in 2022 and beyond as part of ongoing planning, as well as for incorporation and analysis in the next Rail Plan revision in four years.



1. State Rail Plan Purpose and Approach

The Federal Railroad Administration asks all states to create and maintain a State Rail Plan to guide the future of rail infrastructure and services. The Connecticut Department of Transportation (CTDOT) is designated by the Connecticut Legislature as the department in charge of maintaining Connecticut's full transportation system, including its roads and rails. As part of this role, CTDOT prepares the State Rail Plan and this plan is Connecticut's State Rail Plan for the years 2022-2026. The State Rail Plan provides an overview of the existing systems, a vision and goals for future improvements, and near and long-term investment priorities for passenger and freight rail.

The state rail planning process tasks states to examine their rail systems holistically and prioritize infrastructure and service investments. The Connecticut State Rail Plan frames the state's role in developing a dynamic, interconnected rail system with adjoining states and advancing high-speed, intercity and freight investments in the region. The plan is comprised of the following chapters:



Chapter 1: The Role of Rail in Statewide Transportation

Describes the current and proposed role of rail in Connecticut's multimodal transportation system and discusses accomplishments since the last rail plan update.



Chapter 2: The State's Existing Rail System

Provides an overview and inventory of Connecticut's existing rail system, with a description of trends that impact the need for rail in the state.



Chapter 3: Proposed Passenger Rail Improvements and Investments

Describes proposed passenger rail improvements and investments in Connecticut.



Chapter 4: Proposed Freight Rail Improvements and Investments

Describes proposed freight rail improvements and investments in Connecticut.



Chapter 5: The State's Rail Service and Investment Program

Provides Connecticut's long-term vision for rail service and includes a discussion of specific projects and programs, as well as their financial and physical impacts.



Chapter 6: Coordination and Review

Describes how stakeholders' involvement with the development and coordination of the Rail Service and Investment Program (RSIP) is included in this plan.

This Executive Summary contains an overview of passenger and freight rail systems in the state; a discussion of Connecticut's vision, goals, and objectives; and a summary of key passenger and freight investments. It also touches on the impacts COVID-19 has had on passenger and freight rail in Connecticut.

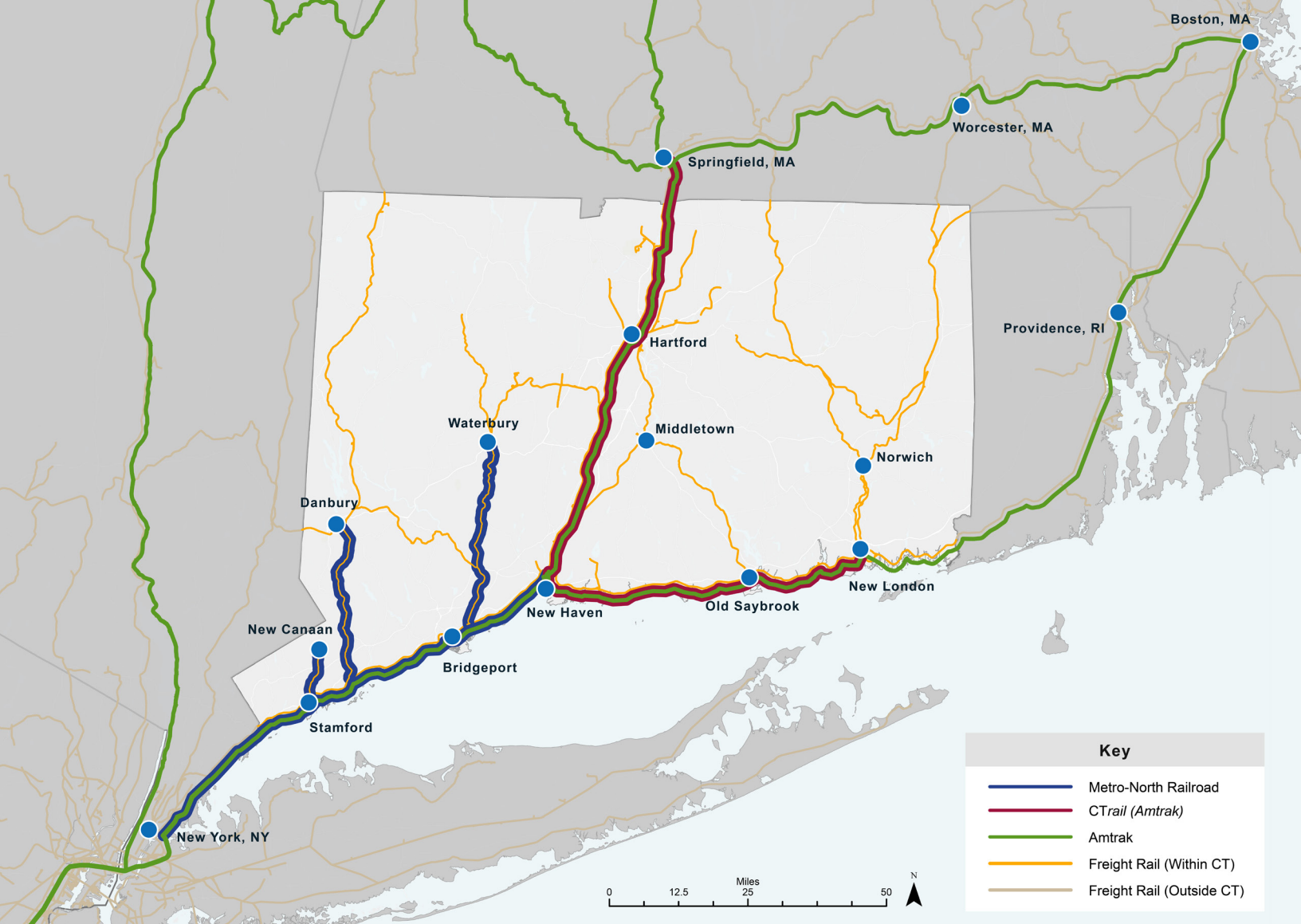


Figure ES-1: Passenger and Freight Rail in Connecticut

Source: AECOM

2. Rail in Connecticut

Connecticut’s rail system reflects the state’s position as a gateway to New England. It is a critical asset not only for Connecticut’s residents but also for its role as part of the busy Northeast Corridor. More than 43 million people¹ and 2.9 million tons of freight² move by rail within and through the state annually. Intrastate rail travel between dozens of the state’s cities and towns continues to grow as the state has enhanced and expanded its local commuter services over the past decade.³ Regional rail service has also grown. Amtrak, Metro-North Railroad (MNR), and *CTrail* services take passengers to points east towards Canada and west towards New York City and beyond.

¹ Connecticut Department of Transportation Fast Facts (2020) ridership data from 2019.

² Association of American Railroads (AAR) estimate.

³ These statistics are from just prior to the COVID-19 Pandemic. Current trends also show ridership growth.

Passenger Rail

Connecticut's busiest commuter rail service is the New Haven Line (NHL), between New Haven, Connecticut, and Grand Central Terminal in New York City. The line consists of the New Haven Main Line and three branch lines (New Canaan, Danbury, and Waterbury). The State of Connecticut owns the NHL tracks within Connecticut and service is operated by Metro-North Railroad. The system benefits from its proximity to the New York City metropolitan market and has been the most heavily traveled commuter rail line in the country. It is also a critical link along Amtrak's Northeast Corridor (NEC), allowing connections between Washington, D.C., Philadelphia, New York, Stamford, New Haven, and Boston. Connecticut also has a separate commuter service between New Haven and New London, the Shore Line East (SLE). SLE is operated for the state by Amtrak, on the Amtrak-owned portion of the NEC. Intercity service consists of four Amtrak-operated services (Acela, Northeast Regional, Hartford Line [formerly Springfield Shuttle], and Vermonter), as well as the *CTrail* Hartford Line, operated by the state's service provider Transit America Services, Inc. (TASI). Intercity services operate on corridors owned by Connecticut (NHL) and Amtrak (NEC and Hartford Line).

Freight Rail

Connecticut's rail freight industry is operated by the private sector as a for-profit and public benefit service. The State of Connecticut owns 5 freight rail routes, and its 10 freight operators operate over 577 miles of right-of-way.



Figure ES-2: Cedar Hill Railyard

Source: CTDOT

⁴ Rail services owned/operated by CTDOT operated under contract with a third party service provider are referred to as *CTrail*, this includes TASI for Hartford Line and Amtrak for SLE.

⁵ Freight railroads operate under federal common carrier regulations.

⁶ Association of American Railroads, 2019 Freight Railroads in Connecticut fact sheet.

3. Vision

The Connecticut State Rail Plan establishes a long-term, 20-year vision for how Connecticut's passenger and freight rail systems can best serve the state and region.

Connecticut State Rail Plan Vision



A robust and vibrant rail system that:



Is Safe



Connects communities



Generates sustainable economic growth



Helps build energy independence



Provides links to travel corridors and markets within and beyond the region

4. Goals

The goals of the State Rail Plan reflect significant collaboration with stakeholders, including rail industry representatives, state and local officials, metropolitan planning organizations, rail passengers, disability rights advocates, various interest groups, and residents over the last several years.

The goals of the Rail Plan are organized under five categories:

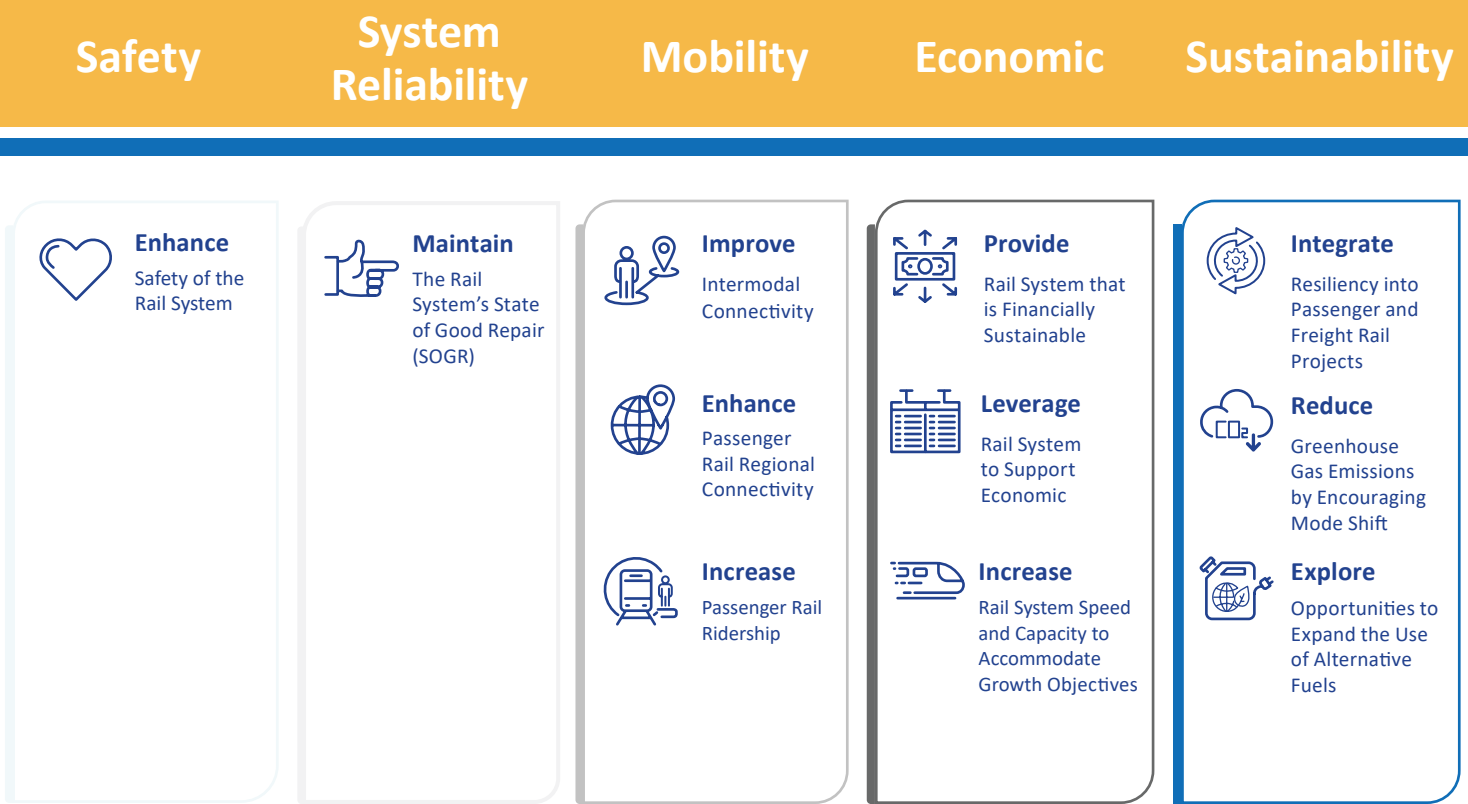


Figure ES-3: State Rail Plan Goals and Objectives

Source: CTDOT

Safety Goals

Safety is CTDOT's primary concern and is the foundation for all other goals. CTDOT plans to achieve this goal through a variety of actionable capital and operational objectives, including:

Capital

- Continuing to support grade crossing improvement projects to enhance safe conditions;
- Working towards achieving the goals established in the Highway-Rail Grade Crossing Action Plan to comply with new federal requirements under 49 CFR Part 234.11; and
- Enhancing signal and communications to promote safe operations.

Operations

- Continuing to support Connecticut Operation Lifesaver programs;
- Continuing to support disaster and hazard response planning in partnership with local, state, and federal authorities; and
- Continuing to support the development and/or retrofitting of fully ADA accessible facilities and services.

System Reliability Goals

Connecticut has an extensive passenger and freight railroad network. A variety of stakeholders depend on this network for employment and economic opportunity. Connecticut's State Rail Plan addresses these needs by outlining the state's current and long-term plan for ensuring system reliability. Connecticut seeks to maintain or improve system reliability to meet rider expectations by ensuring that trains arrive on time. To achieve this goal, CTDOT intends to maintain the Connecticut rail system in a state of good repair, upgrade outdated rolling stock where necessary, and renovate or improve operations facilities for both CTrail and MNR.



Figure ES-4: Walk Bridge in Norwalk, CT. Plans include replacing the bridge to improve speeds and reliability.

Source: CTDOT

Mobility Goals

The state’s extensive passenger and freight railroad network supports cost-effective and sustainable travel throughout the state and the region. Rail assets in the state are likewise critical for businesses to access workers and to move goods. The Connecticut State Rail Plan outlines statewide mobility goals, as explained below, that focus on improving inter- and intra- Connecticut travel. The actions to achieve these goals will result in a Connecticut rail network that is more convenient, faster, and better connected to support statewide economic, environmental, and equity objectives.

Mobility Goal 1: Improving Intermodal Connectivity

Railroads are very effective at moving large volumes of people and goods over long distances, but their effectiveness is dependent on having fully accessible facilities that connect with other last-mile modes and transportation facilities. Recognizing this symbiotic relationship between rail and other transportation modes, Connecticut’s first mobility goal focuses on improving existing connectivity between modes, creating new connections, and ensuring all connections are fully accessible.

Improving Intermodal Connectivity



Improve

CTfastrack and CTtransit connections



Expand

Non-automotive access to Bradley International Airport



Enhance

Last-mile bicycle connections



Provide

Fully accessible fleet and facilities



Increase

Steps towards electrification



Broaden

Freight connections with Ports



Figure ES-5: Bicycle Parking Facilities at New Haven Union Station

Source: CTDOT

Mobility Goal 2: Enhancing Passenger Rail's Regional Connectivity

System compatibility between rail networks allows the easy movement of people and goods throughout Connecticut and the Northeast region. Several passenger rail services operate in states neighboring Connecticut. Additionally, many of Connecticut's freight operators run service across Connecticut to and from other states. Given the transit opportunities created for Connecticut residents by offering connections with other regional rail networks, Connecticut seeks to improve this connectivity and reduce the need for single-occupant vehicle traffic between states. In turn, these improvements will allow Connecticut and its neighbors to advance towards improved mobility and climate sustainability.

Mobility Goal 3: Expanding Passenger Rail Ridership

Connecticut has one of the busiest rail systems in the country, providing safe travel that saves time and reduces environmental impact. While the network is currently used by many, barriers still exist that prevent riders from fully utilizing rail and transit. These include both physical barriers (such as outdated stations that prevent disabled or wheelchair bound passengers from access) to economic barriers (such as a lack of bus connections that keep low income residents from accessing stations). CTDOT is committed to a fully accessible rail network for all passengers regardless of physical or economic ability. This commitment includes enhancing customer convenience with improvements to the rail fleet, stations, and customer information.



Figure ES-6: Arrival/Departure Screens at Waterbury Station

Source: CTDOT

Economic Goals

Connecticut’s economy can be strengthened by continuing to invest in reliable, fast, effective passenger and freight railroad transportation. A recent state-wide Rail Improvements Economic Impact Study (2021) undertaken by the Capitol Region Council of Governments and the Pioneer Valley Planning Commission, noted that a disinvestment in rail connectivity had occurred over three decades (beginning in the 1980s), which correlated to a loss of “20,000 to 40,000 jobs in information technology, finance, and professional services” from Metro Hartford-Springfield because of the region’s lack of regional and intercity rail connectivity. The report further noted that, in similar northeastern areas where rail was well supported, the availability of such jobs had fueled regional economic growth, and that employees in these fields were particularly attracted to rail transit availability. Finally, the study further revealed that investment in regional rail between Massachusetts and Connecticut could lead to a 10:1 return on investment over a 30-year period.

As Connecticut continues to invest in and expand its rail system, economic development benefits will continue to accrue. The following economic goals, explained in depth in the State Rail Plan, seek to meet this plan for improvement.

Economic Goal 1: Providing a Rail System that is Financially Sustainable

To achieve financial sustainability for Connecticut’s passenger and freight rail, CTDOT plans to efficiently manage its budget through investments in cost-saving infrastructure that support existing systems.



Figure ES-7: Stamford Construction Site

Source: CTDOT

Economic Goal 2: Leveraging the Rail System to Support Economic Competitiveness

Connecticut's existing railroad system gives it an economic advantage, as it allows people and businesses to efficiently move throughout the Northeast region. CTDOT plans to work with its freight and municipal partners to invest in rail and rail-adjacent improvements. These include infrastructure improvements that support enhanced and more efficient freight service and intermodal operations as well as transit-oriented development to encourage sustainable land use.

Economic Goal 3: Increasing Rail System Speed and Growth Capacity

The rail system inventory identified in Chapter 2 of the State Rail Plan demonstrates the limitations of Connecticut's current rail infrastructure to accommodate growth in service. To address this concern, CTDOT intends to invest in rail infrastructure and develop service plans that will increase system capacity and accommodate future growth. To achieve this goal, CTDOT will pursue projects that allow for faster, more dynamic services that align with the current and post-COVID travel patterns.

Sustainability Goals

Rail transportation in Connecticut supports sustainability goals by integrating resiliency into project planning and construction, reducing greenhouse gas emissions by encouraging mode shift, and incorporating the use of alternative fuels.

Sustainability Goal 1: Integrate Resiliency into Passenger and Freight Rail Projects

Connecticut is integrating resiliency into its project planning, design, and construction efforts. In particular, CTDOT plans to modify and invest in new tracks that can handle higher speeds and are more resilient to the impacts of climate change. When the state's transportation investments are hardened against more frequent and severe weather events, disruptions to the overall state economy are reduced.

Sustainability Goal 2: Reduce Greenhouse Gas (GHG) Emissions by Encouraging Mode Shift

Freight railroads are on average three to four times more fuel-efficient than trucks. Due to fuel efficiency, moving freight by rail lowers GHG emissions by 75% compared with trucking. Fuel efficiency is also higher for passenger rail compared with automobile travel. On average, passenger rail can achieve fuel efficiencies averaging 51.6 passenger miles per gallon (pmpg) compared with passenger vehicles operating on highways with pmpg of 36.0.

Sustainability Goal 3: Explore Opportunities to Expand the Use of Alternative Fuels

As Connecticut passenger and freight rail operations continue to expand, incorporating environmentally sustainable practices, including the use of alternative fuels, is important. CTDOT plans to study the feasibility of electrifying all commuter rail lines.



Figure ES-8: Railroad electrification infrastructure at Old Saybrook Station

Source: CTDOT

5. Record of Achievement

Over the past decade Connecticut has made significant new investments in the state's passenger and freight rail networks including the launch of new rail service, M8 operation on the Shore Line East, and improvements to the Waterbury Line. These investments reflect Connecticut's state of good repair concerns and seek to make sure that riders are able to continue to benefit from the state's six passenger rail systems in addition to Amtrak's regional and Acela services.

Major Highlights



CTrail Hartford Line service launch in 2018



New Component Change-Out building at **New Haven Yard**



CTrail eTix app for Hartford Line, Shore Line East, and CTtransit tickets



Second platform at **New Haven State Street Station**



Positive Train Control installed successfully on all passenger rail lines



New passing sidings and signalization on the Waterbury Line



M8 equipment operating on Shore Line East



Figure ES-9: Hartford Line Train crossing the Connecticut River in Windsor Locks

Source: CTDOT

Hartford Line

The cornerstone of Connecticut's last decade of rail investment is the creation of the Hartford Line rail service, a new passenger line that connects Springfield, MA, Hartford, and New Haven and connects to Amtrak intercity service. The service provides up to 17 round trips per day along the 62-mile route, servicing 9 stations of which 7 are new or rebuilt. Additionally, CTDOT replaced approximately 27 miles of double track and installed 2 miles of new passing sidings to accommodate increased service.

During 2018, the first year of operation, ridership exceeded pre-operation projections with 50,000 average monthly riders. The following year (2019) averaged 60,882 riders per month and around 730,000 for the year. Moreover, January 2020 saw the highest single-month ridership with more than 73,000 riders. In addition to its significant growth in ridership during its first years of operation, the system has fostered \$430 million in new transit oriented development investment.

6. Impact of the COVID-19 Pandemic

The COVID-19 pandemic touched virtually every aspect of life across the nation. The pandemic significantly impacted Connecticut in mid-March 2020, and by April, Connecticut rail ridership was down nearly 95 percent. Since spring 2020, the New Haven and Hartford Lines have recovered approximately 61 and 78 percent of their pre-pandemic ridership, respectively, while the Shore Line East is only 30 percent recovered. As of summer 2022, revenue service has resumed close to pre-pandemic levels along the New Haven and Hartford Lines, while Shore Line East service continues to operate on a greatly reduced schedule.

While the pandemic-induced reduction in fare revenue was initially offset by federal COVID relief funding, future federal financial support for transit

RECOVERING RIDERSHIP!

Hartford Line Back 78%

New Haven Line Back 61%

and rail operations remains uncertain. Additionally, a shift away from full-time in-person work and daily commuting could permanently change ridership. Sustained loss of fare revenue and ridership could potentially necessitate changes in passenger rail service levels.



Figure ES-10: Passenger train at Hartford's Union Station
Source: CTDOT



Figure ES-11: Passengers waiting to board an MNR train in New Haven
Source: CTDOT

The pandemic's impact on freight rail has been very different compared to its impact on passenger rail. In fact, freight rail in Connecticut may benefit from pandemic-driven market impacts. Supply chain issues and increased consumer demand have driven up commodity prices, which has benefited freight companies. While the market usually adjusts for such price hikes over the long term (by providing less expensive substitutes, driving increased production, and/or motivating decreased consumption), the current outlook for freight is quite strong. Recent Association of American Railroads data indicated that 2021 freight carloads in the U.S. were already approaching 2019 pre-pandemic volumes.

Though the long-term impacts of COVID-19 on rail in Connecticut remain unknown at this time, CTDOT continues to monitor and respond to trends. Aside from reduced ridership levels, some early observations suggest that *CTrail* passengers are changing trip purpose patterns, from predominantly commute-oriented to more discretionary trips along

their regional rail network. As CTDOT continues to plan for future investments in its rail system, it anticipates using scenario planning tools to project and assess the impact of different variables affected by the pandemic on the long-term outlook of rail in Connecticut.

7. Key Projects and Programs (2022-2026)

Achieving the state's rail network goals will require advancing many passenger and freight rail projects in coordination with stakeholders, railroads, regional leaders, and the public. This next round of investment will build upon CTDOT's previous rail investments.

Passenger Rail Projects & Programs--TIME FOR CT

The state’s principal passenger rail improvement program is called “TIME FOR CT.” TIME FOR CT recognizes that the success of the state, its attractiveness as a place to do business, and the quality of life of its residents all depend on safe, reliable, and fast rail transit service. In recent decades, travel time on the New Haven Line—which in the pre-pandemic era served approximately 43 million people annually—has increased, a source of frustration for many.

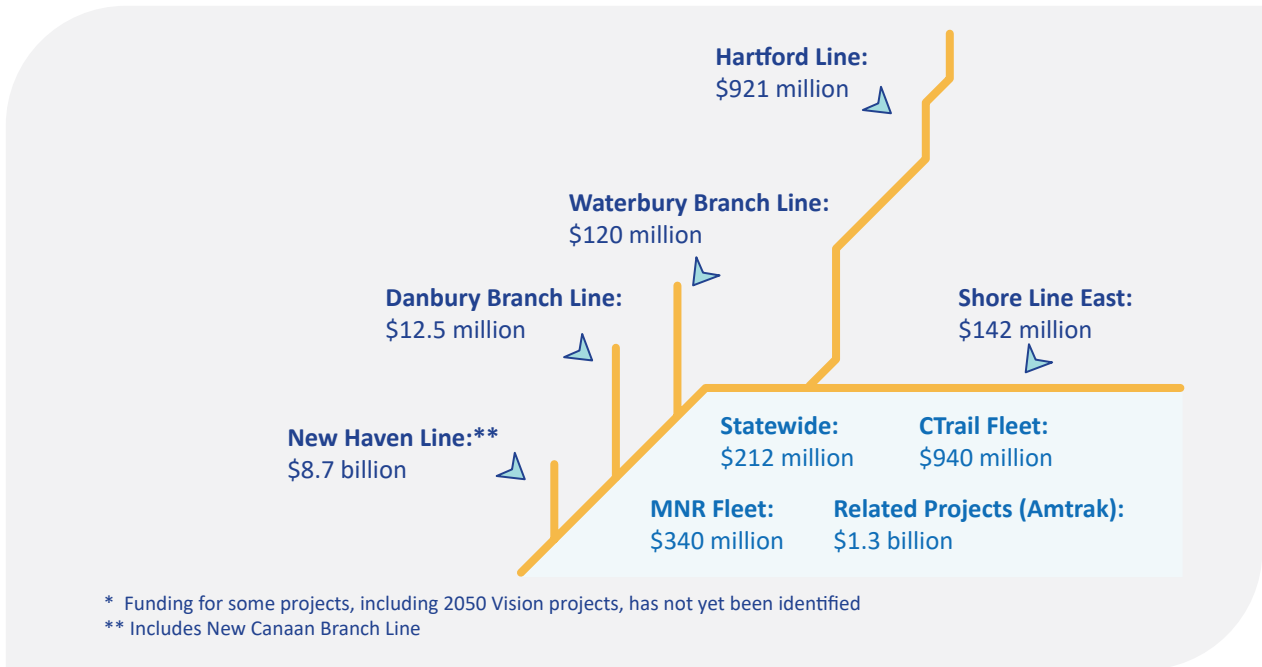


Figure ES-12: Planned Passenger Rail Improvements in Connecticut

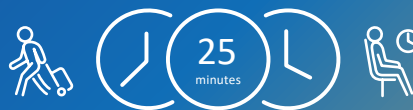
Source: CTDOT

As shown below, TIME FOR CT calls for investments that will reduce travel time between New Haven and New York by a projected 25 minutes by 2035, with initial travel time savings beginning in 2022.

What is TIME for CT?



A bold vision for a fast, modern, connected Connecticut rail network



Passengers save up to 25 minutes between New Haven and NYC by 2035

New Haven to Bridgeport

Service today 26 minutes

by 2035
20 minutes

time savings
6 minutes

Bridgeport to Stamford

Service today 34 minutes

by 2035
22 minutes

time savings
12 minutes

Stamford to New York City

Service today 52 minutes

by 2035
45 minutes

time savings
7 minutes

TIME FOR CT GOALS



economic development

Estimated to generate more than 45,000 new construction jobs over 15 years



climate resiliency

The New Haven Line generates 80% less CO² emissions per passenger mile than cars.



access and opportunity

Supports social equity for all residents by providing improved access to jobs, education opportunities, and civic life



replace and repair bridges

Repair and rehabilitate major movable bridges as well as undergrade bridges

Freight Rail Projects & Programs

It is important that Connecticut and its freight rail partners continue to update and invest in critical infrastructure. Similar to passenger projects, freight investments largely focus on increasing speeds and capacity. This is achieved through yard construction and improvements at intermodal facilities. The figures below provide an overview of the types of short and long-term freight projects that are included in the Connecticut State Rail Plan.

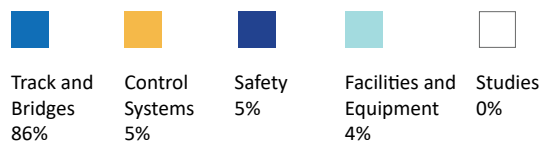
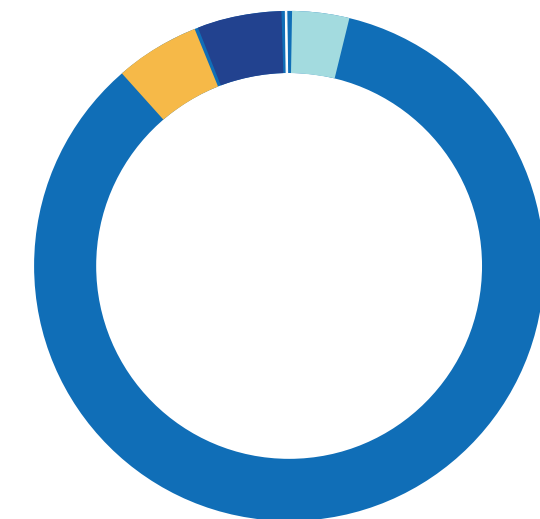


Figure: ES-13: Freight Rail Investment by Type (Short-term)

Source: CTDOT

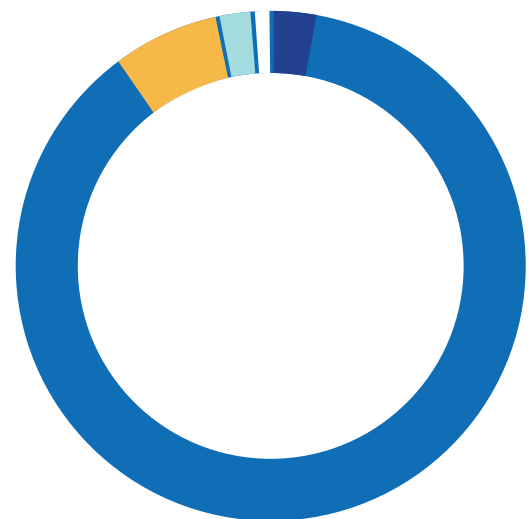


Figure: ES-14: Freight Rail Investment by Type (Long-term and Vision)

Source: CTDOT

Note: For some long-term and vision projects, funding has not yet been identified. These projects are therefore not included in this figure.

Plan Development

CTDOT recognizes the importance of developing the State Rail Plan in coordination with regional and local planning activities in a manner that addresses the comprehensive rail transportation needs of Connecticut. The State Rail Plan was updated with input from and in coordination with a variety of stakeholders, including passenger and freight rail operators, metropolitan planning organizations (MPOs), neighboring state DOTs, the Connecticut Commuter Rail Council, and the general public.

The plan was developed throughout 2021 and 2022, with an initial round of virtual public kickoff meetings in summer 2021 and a public hearing in front of the Connecticut legislature in September 2022. Additionally, in 2021, CTDOT established a virtual public meeting room to serve as an interactive space providing information on the State Rail Plan update. During the entire rail plan process, CTDOT received input at meetings, via email, and through the virtual meeting room. This feedback was incorporated and is reflected in the Final State Rail Plan.



Figure ES-15: Snapshot of the virtual public meeting room created for State Rail Plan engagement