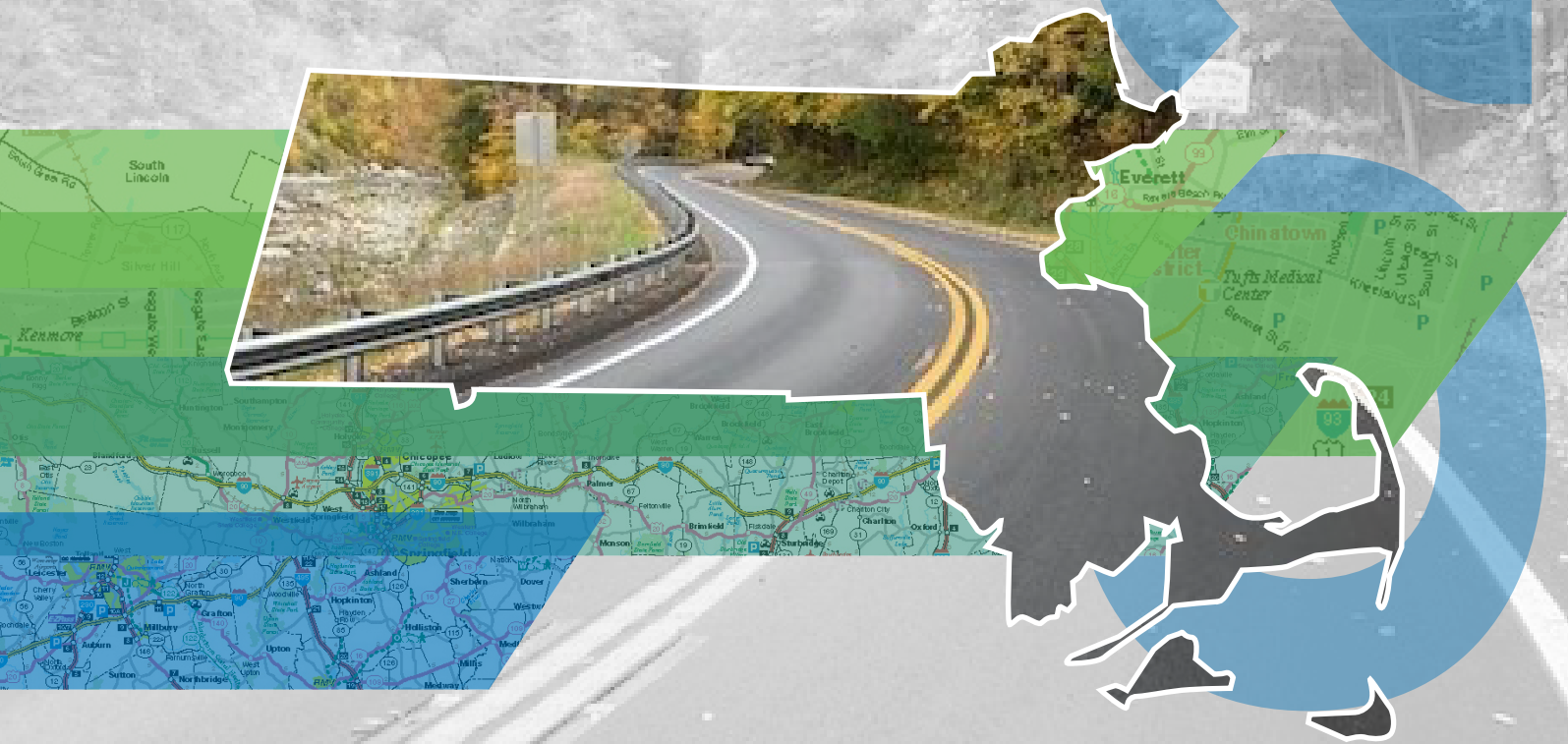


Performance & Asset Management Advisory Council Update



December 28, 2021

The Honorable Michael J. Rodrigues
Chair
Senate Committee on Ways and Means
State House, Room 212
Boston, MA 02133

The Honorable Aaron Michlewitz
Chair
House Committee on Ways and Means
State House, Room 243
Boston, MA, 02133

The Honorable John F. Keenan
Senate Vice Chair
Joint Committee on Transportation
State House, Room 413-F
Boston, MA 02133

The Honorable William M. Straus
House Chair
Joint Committee on Transportation
State House, Room 134
Boston, MA 02133

Members of the General Court,

This past year, MassDOT has been at work implementing the 2021 Transportation Bond Bill (TBB), which established new programs and increased funding for repair of Massachusetts Transportation Infrastructure. On November 15, 2021, President Biden signed the Bipartisan Infrastructure Legislation (BIL, also known as the Infrastructure Investment and Jobs Act (IIJA)), which reauthorizes Federal transportation apportionments through 2026 and beyond. MassDOT is better prepared to capitalize on these opportunities due to improvements in planning, asset management and project delivery processes, advancements supported and championed by the Legislature and Baker-Polito Administration. In compliance with Chapter 46, Section 12 of the Acts of 2013 and as referenced in Chapter 6C, I am pleased to report on Massachusetts Department of Transportation (MassDOT) integrated asset and performance management processes, and how they will inform implementation of the state and federal infrastructure legislation.

With respect to pavement, MassDOT has seen conditions improve on the non-interstate network through a focused, multi-year investment. To sustain these gains, we must continue this investment, and ensure our interstate network is sufficiently funded for the long term. Though each network functions differently within our communities, both are integral to overall mobility within the Commonwealth. At the local level, the state-funded municipal pavement program, created by the TBB, will begin work in 2022 and directly assist local government with improving the condition of municipally owned state numbered routes, roads that currently are nearly three times worse than state-owned non interstate pavements.

The condition of Massachusetts bridges remains a significant challenge. To make meaningful long-term progress in the repair of Massachusetts bridges, the 2019 MassDOT Transportation Asset Management Plan identified a need for a fifty percent increase to bridge program spending. The TBB created the Next Generation Bridge Program (NGB) which authorized \$1.25 Billion in new bridge spending, and the Federal Infrastructure Bill has made bridge condition a central priority. In preparation for a larger program, MassDOT has initiated nearly fifty new bridge projects, restarted deferred designs, and has recently completed numerous nationally recognized accelerated bridge replacement projects. In short, MassDOT is fully prepared to take advantage of additional bridge funding, and will continue to evaluate remaining needs for the network.

We are also prepared to pursue broader system goals as we modernize our infrastructure. We have been adapting our public right-of-way to provide safe and accessible space for bicycles and pedestrians, and this work will continue with improved prioritization for where it is most needed. We are also ensuring

that resiliency is a built-in feature for new infrastructure and are evaluating our existing systems for susceptibility to extreme weather and a changing climate. As we rebuild critical parts of our infrastructure, we will also make it more accessible and robust.

The combination of existing state investment through the TBB and future federal investment through BIL has created an opportunity for a significant investment in the Massachusetts transportation network. MassDOT has made considerable strides to understand infrastructure needs and strategies through asset and performance management, and with this knowledge we are prepared to maximize the utility of these new opportunities. As we begin integrating the new funding into our program this spring, we will be updating our Transportation Asset Management Plan to provide a longer-term view of Massachusetts infrastructure needs, which I will be happy to report back on next year.

We hope you find this report informative and appreciate your continued interest, support and oversight.

Respectfully Submitted,

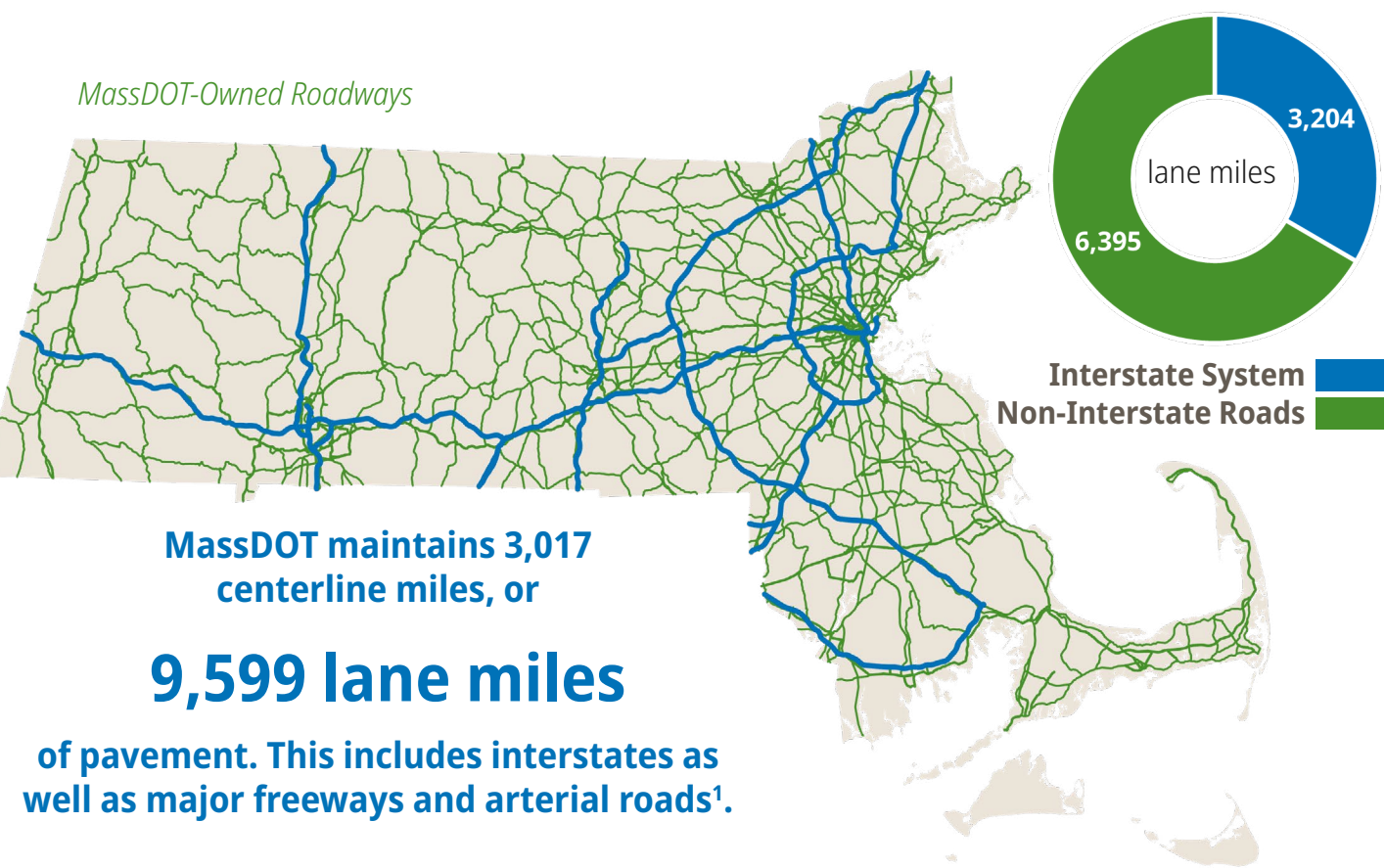


Carrie Lavallee, P.E.
Chief Engineer



MassDOT manages just 13 percent of the Commonwealth's roads (9,600/73,000 lane miles), yet processes more than half of Massachusetts vehicle miles traveled. The MassDOT road network includes the interstate system, freeways, and other major roadways that provide local, regional, and national connectivity. The MassDOT Pavement Management Section operates a state-of-the-art vehicle that automatically collects pavement distress data, and informs a data-driven process to choose the “right treatment” at the “right time”. Using current condition data, deterioration curves, and specialized software, MassDOT can interrogate various investment scenarios for consideration in the Capital Plan. MassDOT pavement is a significant commonwealth asset. Pavement science and sustained investment ensure that the network remains safe and reliable at the least cost to the commonwealth.

PAVEMENT

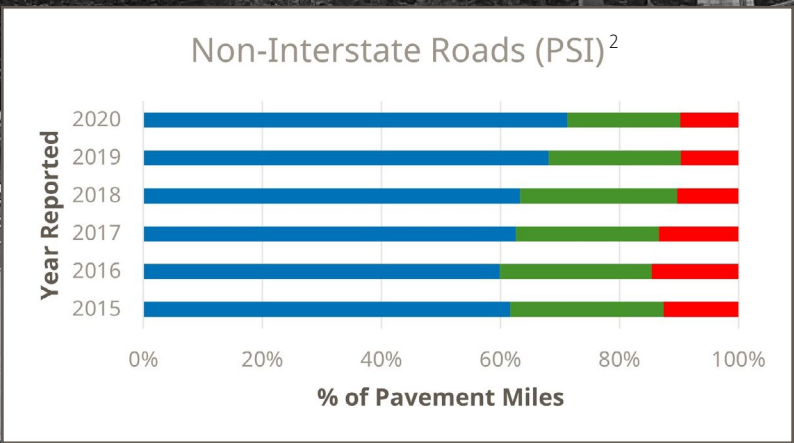
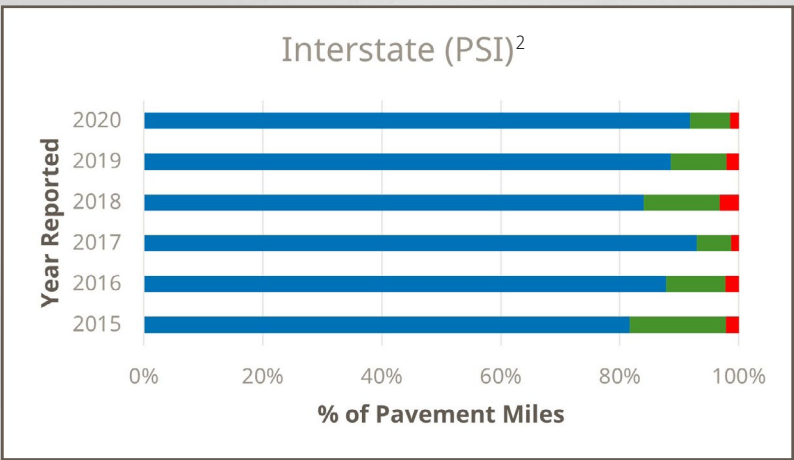


CURRENT STATE (2021)

The year 2020 showed continued improvement in the non-interstate system, which has been a priority for the department since the 2017-2021 Capital Improvement Plan (CIP). Through a combined federal and state

investment, non-interstate conditions have improved by nearly ten percent. Condition improvements are expected to level out as more complicated and expensive projects incorporating complete street elements reach construction.

1. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>



Interstate conditions have remained relatively consistent over the past five years, with some annual fluctuation. With the focus on the non-interstate network, MassDOT has been able to maintain conditions on the interstate through the use of lower-cost preservation treatments. When timed correctly, preservation treatments can arrest deterioration and extend service life, forestalling more costly interventions.

The pavement serviceability index (PSI) is the condition rating scale used by MassDOT. Each graph at left represents 100 percent of the lane mile network for interstates and non-interstate roads, separately. So, for example, the 1.5 percent of PSI-rated “poor” interstate lane miles is shown in the top graph.

For state-maintained roads, the percentage of “poor” pavement has been less than eight percent (or about 700 lane miles) since 2018.

The improvement over the past five years is also reflected in the table. This shows the increase in good/excellent pavement between 2015-2020 and 2019-2020. The positive increase is not always linear, but marks the continued focus on pavement quality.

	% Good & Excellent Condition			% Poor Condition		
	2020 target	Achieved	2022 target	2020 target	Achieved	2022 target
Interstate	88%	91.8% (Good)	88%	<4%	1.5% (Poor)	<4%
MassDOT	60%	71.2% (Good)	62%	<20%	9.8% (Poor)	12%

MassDOT has achieved all 2020 targets for interstate and state-maintained pavement. The DOT is also on track to achieve the 2022 targets if funding and direction remain constant.

2. Pavement Management System, MassDOT, 2020 Pavement Condition of the Interstate and State Maintained System - Including Massachusetts Turnpike

Example Project 1

Danvers to Rowley
Resurfacing and Related Work
(Interstate 95)

Status: Construction

Innovative preservation of 9 miles of interstate highway

Installation of safety systems to prevent crossover crashes

Example Project 2

Holyoke-West Springfield
Rehabilitation of Route 5

Status: Design

Rehabilitation of concrete pavement on urban arterial

Modernization of roadway cross section to accommodate all modes

LOOKING FORWARD (2022)

MassDOT will review planned investments and identify new projects in preparation for increased funding from the Infrastructure Investment and Jobs Act (IIJA - federal infrastructure bill). The objective is to **maintain the investment level to the non-interstate network while ensuring the interstate is seeing adequate funds to sustain current conditions** in the long term.

The MassDOT Pavement Management Section is researching environmentally-friendly modifications to pavement design, including increased use of recycled materials and warm mix technology, which reduce energy demand in asphalt production. These technologies are developed in concert with research universities, piloted, and heavily analyzed before larger industry adoption.

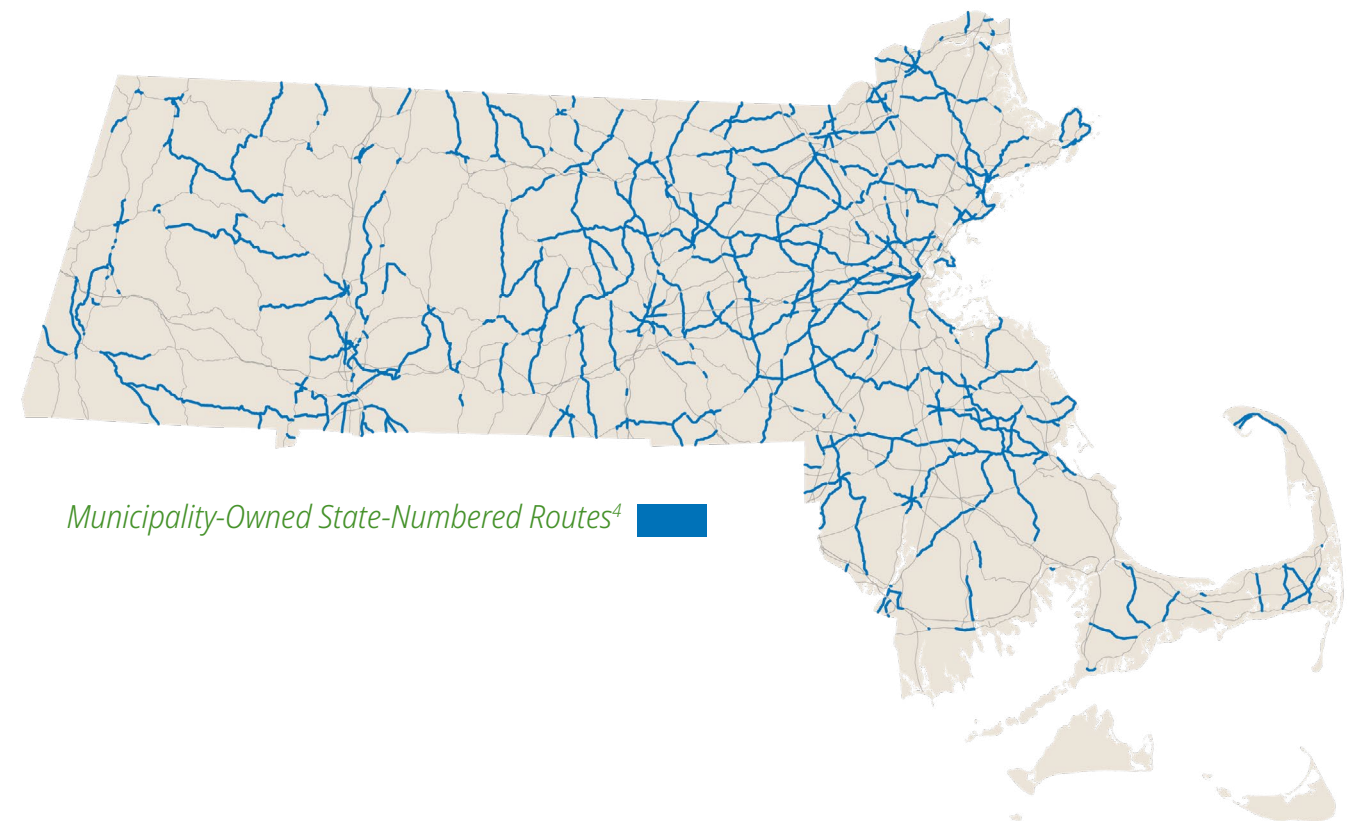
In 2022, Massachusetts will also see the first work performed through the Municipal Pavement Program, a multi-year initiative authorized by the Transportation Bond Bill. This program will provide MassDOT with funding to support municipalities in improving locally-owned roads, with an emphasis on state numbered routes. Municipally-owned state number routes have nearly three times the percentage of poor mileage than the MassDOT-owned non-interstate system. These projects will focus on pavement preservation and rehabilitation, while maintaining/repairing existing safety, bicycle and pedestrian infrastructure. This is a non-competitive program, and projects will be managed by MassDOT construction contracts in close coordination with each municipality.

44% of state numbered routes are owned by municipalities (+/- 3,420 lane miles)³

Municipally-owned state numbered routes have

3X more poor pavement miles than the MassDOT-owned non-interstate system

3. Pavement Management System; MassDOT, 2020 Pavement Condition of the Interstate and State Maintained System - Including Massachusetts Turnpike



4. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

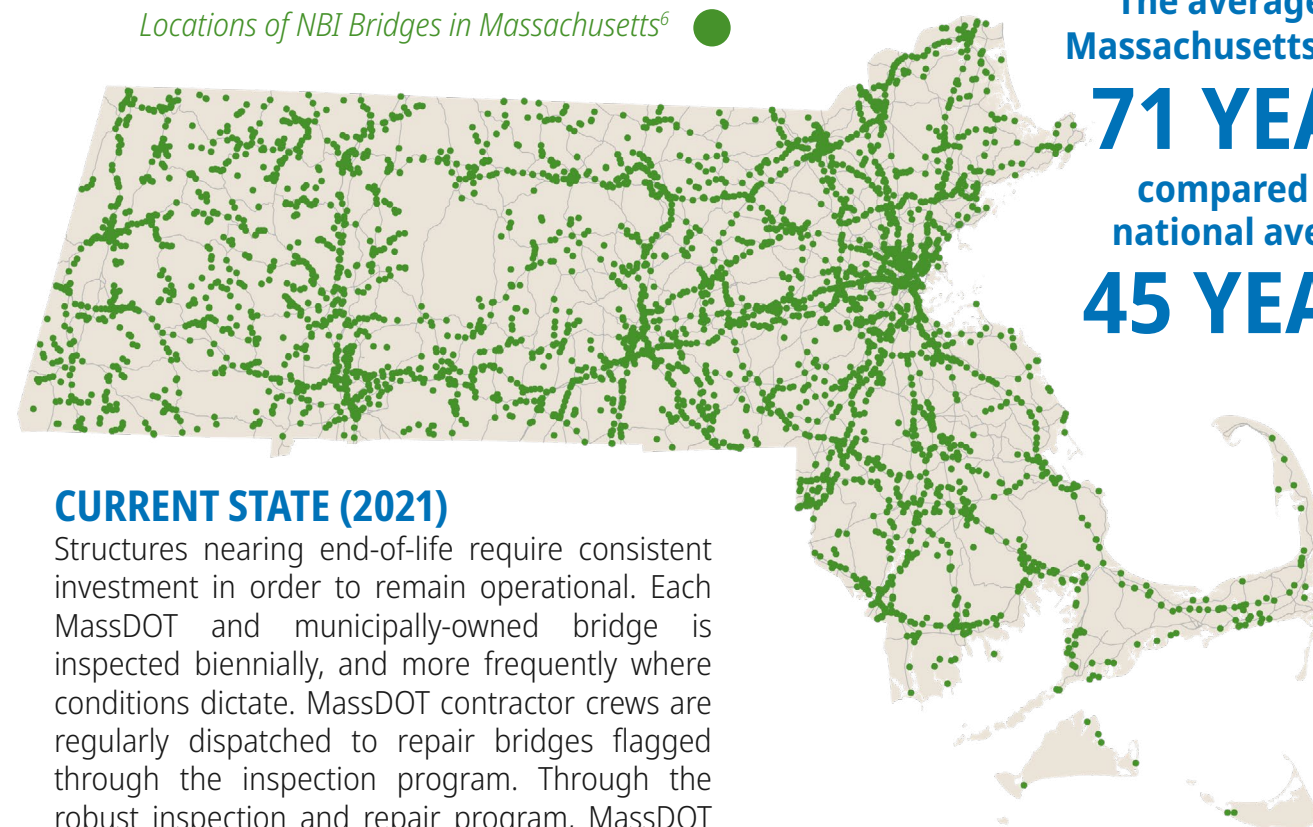
THE MASSACHUSETTS BRIDGE INVENTORY

A sustainable bridge inventory is key to the long-term viability of Massachusetts surface transportation. Beyond the movement of personal vehicles, bridges are integral to the transport of goods and services, public transit, active transportation, and the response of emergency services.

The definition of a bridge is a “structure of a span of 20 feet or greater”, and there are approximately 5,260 examples meeting this criterion in Massachusetts. These are known as National Bridge Inventory (NBI) structures. MassDOT owns 3,494 of these, and also inspects the 1,646 municipally-owned NBI structures. The sum of these two inventories, 5,140 structures, is the focus of the bridge program within the MassDOT Capital Plan. The remaining balance of Massachusetts NBI structures (120) are owned by the Massachusetts Bay Transportation Authority (MBTA), Massachusetts Port Authority, Department of Conservation and Recreation, or various federal agencies.

Massachusetts bridges are 25 years older than the national average, which combined with unforgiving winters and traffic from an active and growing state, has resulted in a considerable repair backlog. Based on National Bridge Inventory data, Massachusetts is 4th worst in the nation for bridge condition on the National Highway System (interstates and other nationally-significant roadways), and 13th worse overall (for all bridges in the commonwealth). Today's conditions reflect the \$3 billion investment of the Accelerated Bridge Program (2008-2018), which rehabilitated or replaced nearly 300 bridges and forestalled a further decline of condition. However, a significant investment is needed to rehabilitate or replace legacy infrastructure and sufficiently fund maintenance and preservation.

Locations of NBI Bridges in Massachusetts⁶



The average age of Massachusetts bridges is **71 YEARS**, compared to the national average of **45 YEARS⁶**.

CURRENT STATE (2021)

Structures nearing end-of-life require consistent investment in order to remain operational. Each MassDOT and municipally-owned bridge is inspected biennially, and more frequently where conditions dictate. MassDOT contractor crews are regularly dispatched to repair bridges flagged through the inspection program. Through the robust inspection and repair program, MassDOT bridges remain safe and dependable regardless of age, but this can come at the cost of preserving newer structures. Sustainable bridge infrastructure is only achievable through rehabilitation and replacement of legacy infrastructure and a dedicated preservation program.

6. National Bridge Inventory Submittal, 2021 Data, MassDOT, Submitted Spring 2021.

Example Project

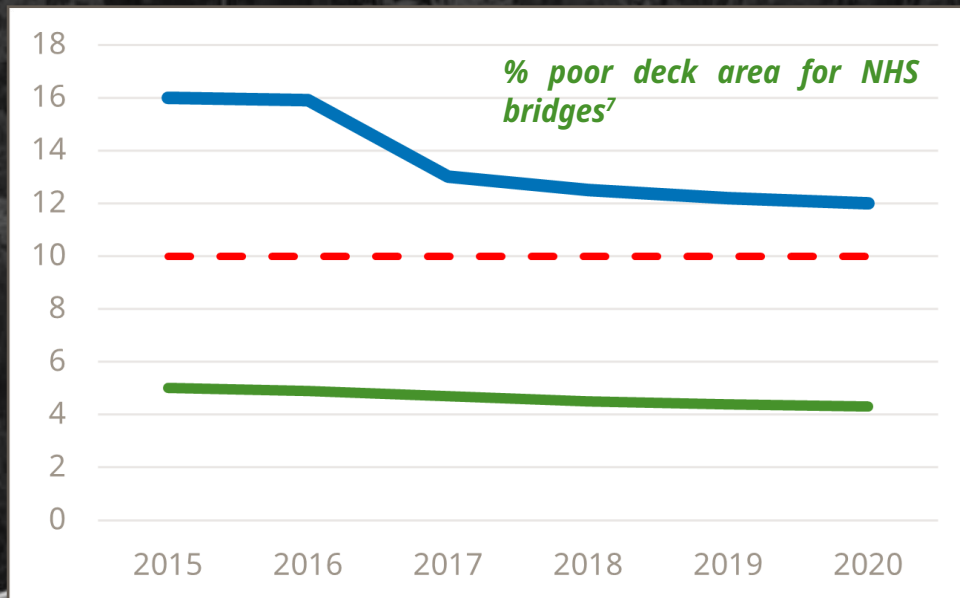
Southborough-Westborough I-90 Corridor Superstructure Replacements

Status: Substantially complete

Rehabilitation/replacement of legacy infrastructure

Accelerated bridge bundling reduces impact to roadway users





7. National Bridge Inventory Submittal, 2021 Data, MassDOT, Submitted Spring 2021.

The advanced deterioration also limits the State's flexibility in the application of federal funds. Federal regulations have instituted a minimum condition threshold of less than 10 percent poor for state National Highway System (NHS) bridge inventories. States in excess of this threshold (Massachusetts is at 12 percent), are required to expend a minimum amount of funds to bridge repairs.

For replacement of legacy infrastructure, Massachusetts became a national leader in accelerated bridge construction using innovations developed through the Accelerated Bridge Program. Through projects like Southborough Acceler 8 bridges and Commonwealth Ave. bridge over I-90 in Boston, pre-fabricated components and innovative traffic management systems now speed construction and reduce impacts to roadway users.

LOOKING FORWARD (2022)

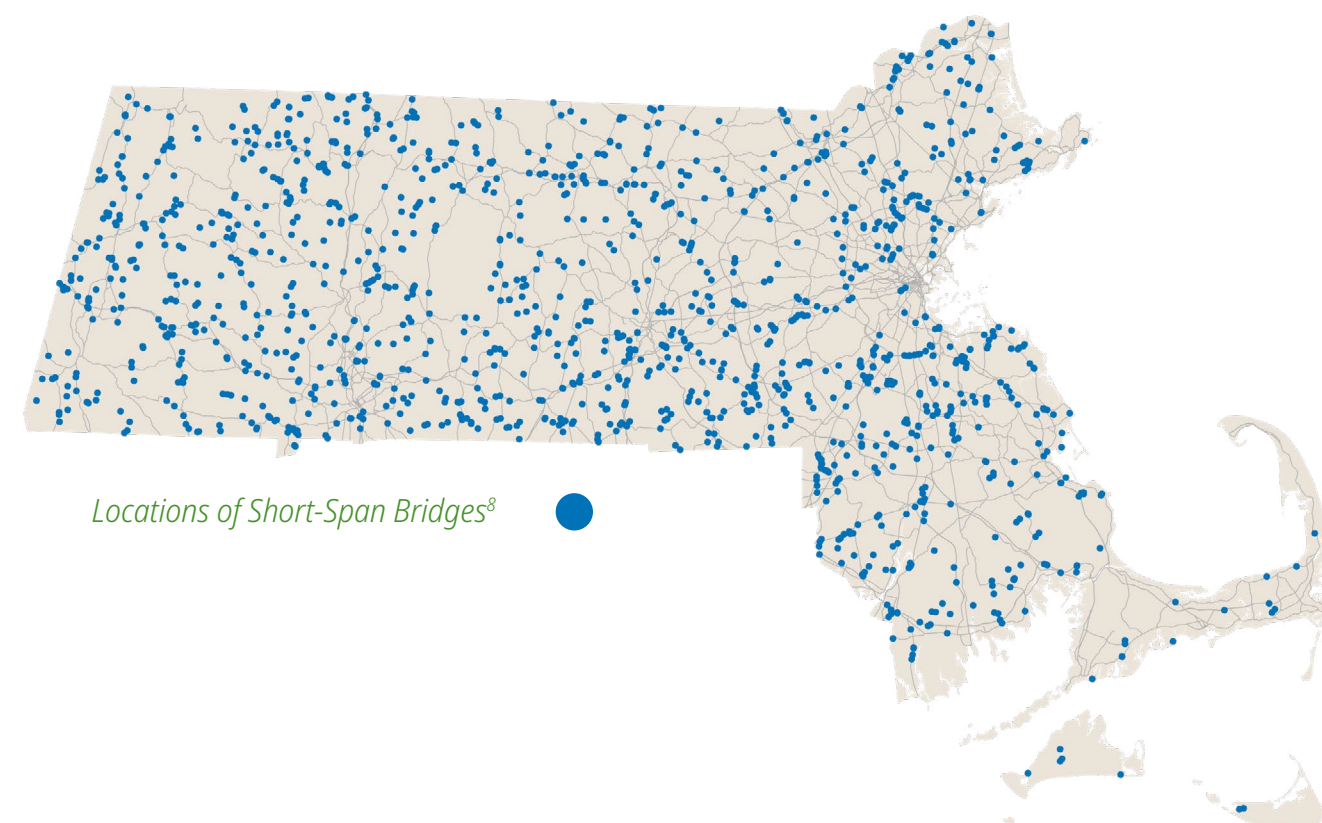
The MassDOT Transportation Asset Management Plan (TAMP) has called for a **50 percent increase** (approximately \$200 million increase per year) to bridge program spending in order to make meaningful progress to meet and maintain condition targets. The plan calls for doubling of maintenance and preservation, a focused investment to legacy NHS structures while ensuring bridge investments reach all corners of the Commonwealth.

In a major step toward implementing this strategy, the 2021 Transportation Bond Bill authorized the \$1.25 Billion Next Generation Bridge Program by, and in response MassDOT has initiated nearly 50 additional bridge projects and restarted work on dormant designs. Bridge projects are identified through a prioritization algorithm that ranks the entire bridge inventory based on current condition, projected future condition, susceptibility to scour (water crossings only), and significance to the roadway network. The emphasis on bridge condition by the Bipartisan Infrastructure

Legislation will enable additional investment, and the larger bridge program will begin taking shape this spring through the 2023-2027 State Transportation Investment Plan (STIP).

The successful Massachusetts Small Bridge Program will also see a reboot in 2022. Initially authorized for \$50 million through the 2016 TBB, the program provides funding to municipalities for the replacement, preservation, and rehabilitation of municipally-owned bridges with spans between 10 and 20 feet (non-NBI structures). Continuing the commonwealth's commitment to local infrastructure, the program was reauthorized in the 2021 Transportation Bond Bill for \$70 million. MassDOT will manage the design process for new awards to help speed projects to construction.

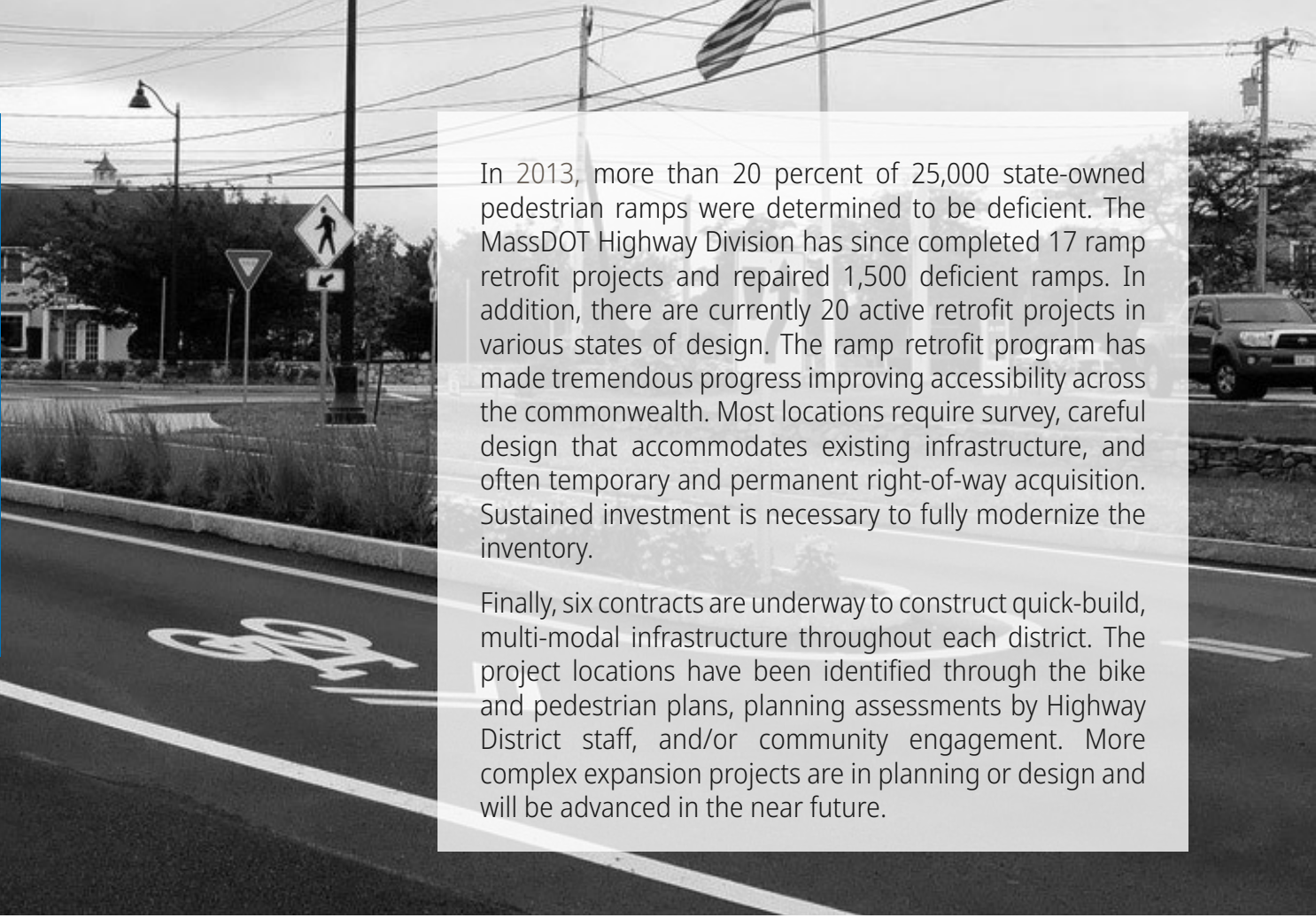
Significant investment in the inventory is still needed. Based on the percentage of poor structures, Municipally-owned small bridges are nearly twice as bad as the state-owned inventory.



8. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

As the commonwealth adapted to COVID-19, the versatility of complete street design to commuting, economic vitality and civic engagement has been on full display. Commuters changed their travel patterns and modes of transportation, while cities and towns made quick-build modifications to the public way to support commerce amidst social distancing requirements. MassDOT was well suited for this moment due to the updates to the bicycle and pedestrian modal plans in 2019, and updates to roadway design criteria. This section looks at active transportation from the perspective of asset management.

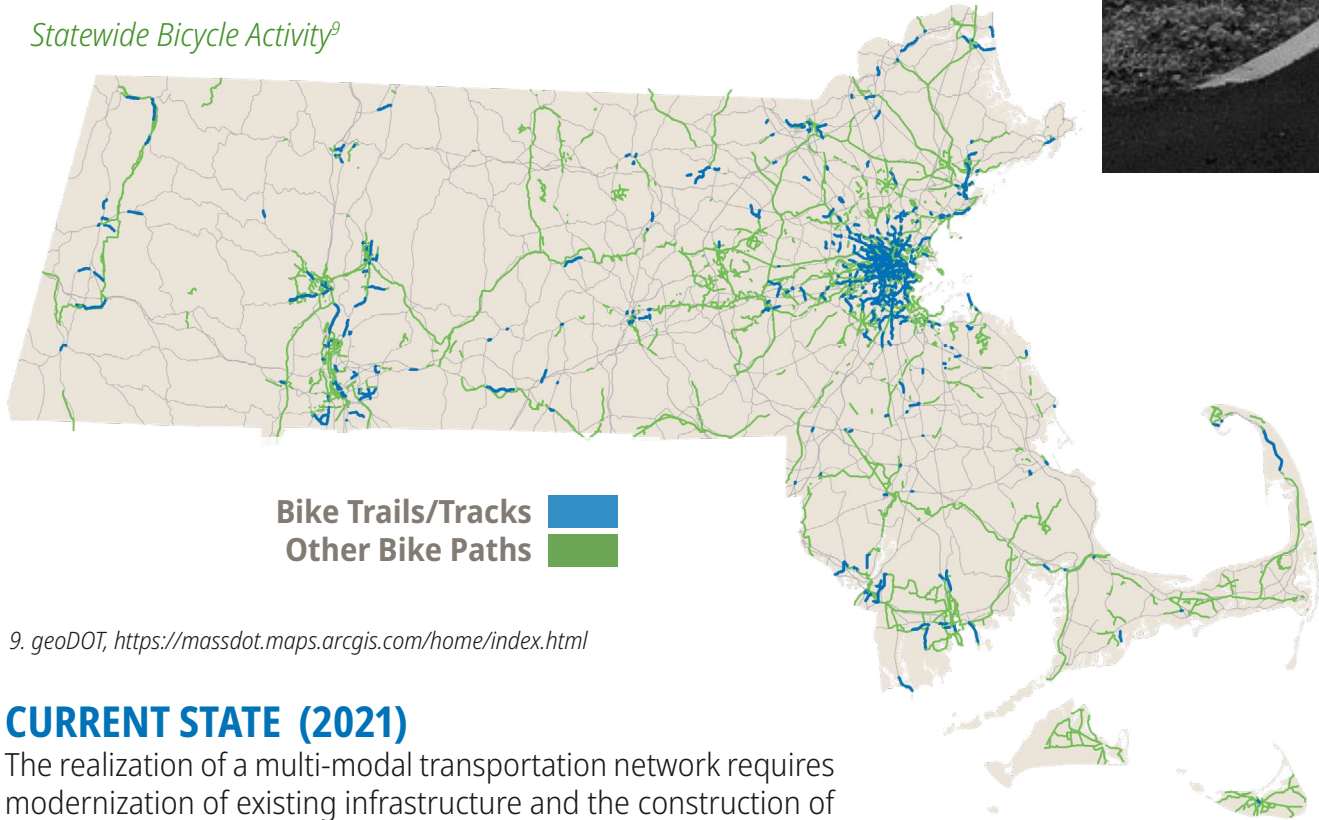
ACTIVE TRANSPORTATION



In 2013, more than 20 percent of 25,000 state-owned pedestrian ramps were determined to be deficient. The MassDOT Highway Division has since completed 17 ramp retrofit projects and repaired 1,500 deficient ramps. In addition, there are currently 20 active retrofit projects in various states of design. The ramp retrofit program has made tremendous progress improving accessibility across the commonwealth. Most locations require survey, careful design that accommodates existing infrastructure, and often temporary and permanent right-of-way acquisition. Sustained investment is necessary to fully modernize the inventory.

Finally, six contracts are underway to construct quick-build, multi-modal infrastructure throughout each district. The project locations have been identified through the bike and pedestrian plans, planning assessments by Highway District staff, and/or community engagement. More complex expansion projects are in planning or design and will be advanced in the near future.

Statewide Bicycle Activity⁹



Bike Trails/Tracks
Other Bike Paths

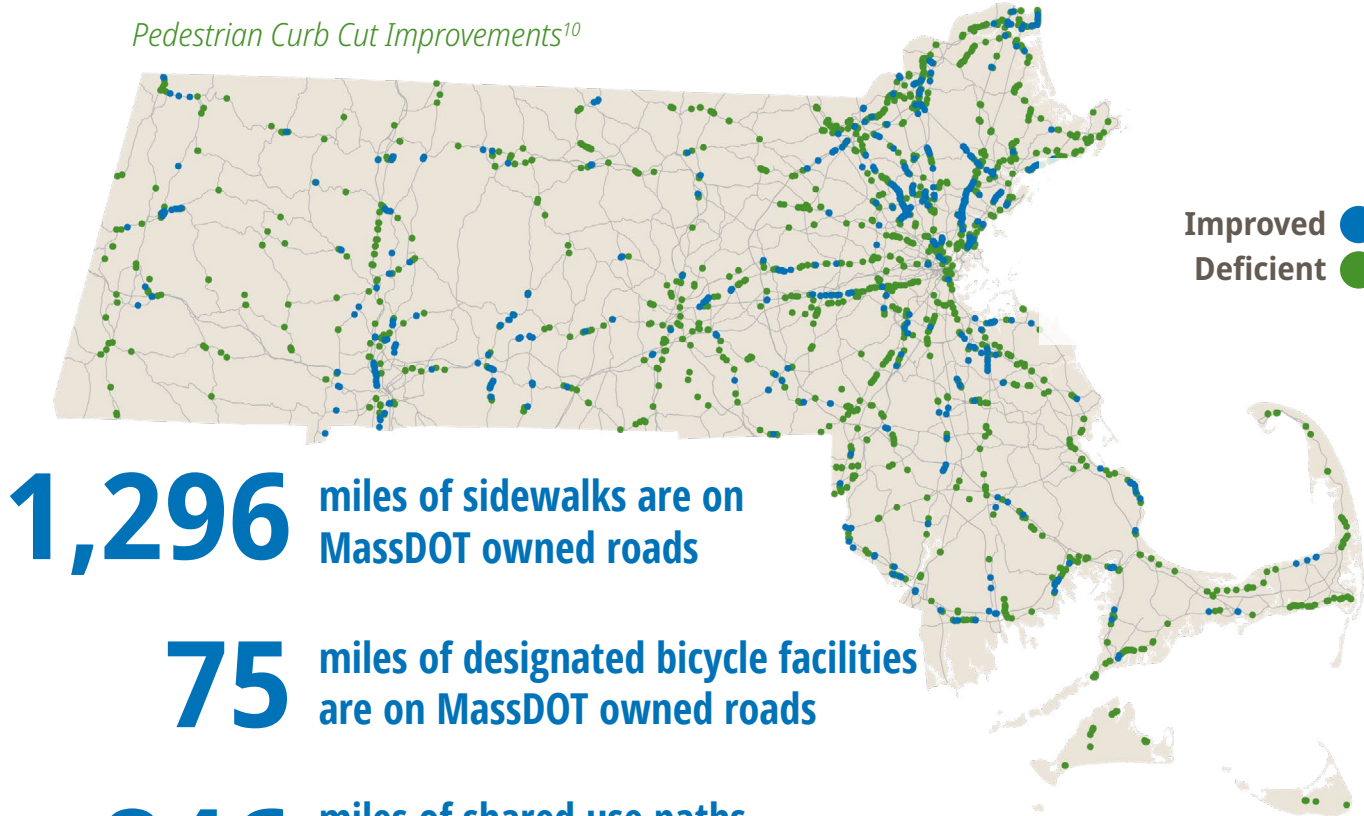
9. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

CURRENT STATE (2021)

The realization of a multi-modal transportation network requires modernization of existing infrastructure and the construction of new facilities.

MassDOT has revised design criteria to consider and include complete street elements on the majority of MassDOT projects. These guidelines have resulted in expansion of pedestrian and bicycle infrastructure in the course of typical road and bridge projects.

Pedestrian Curb Cut Improvements¹⁰



Improved
Deficient

1,296 miles of sidewalks are on MassDOT owned roads

75 miles of designated bicycle facilities are on MassDOT owned roads

846 miles of shared use paths are in Massachusetts

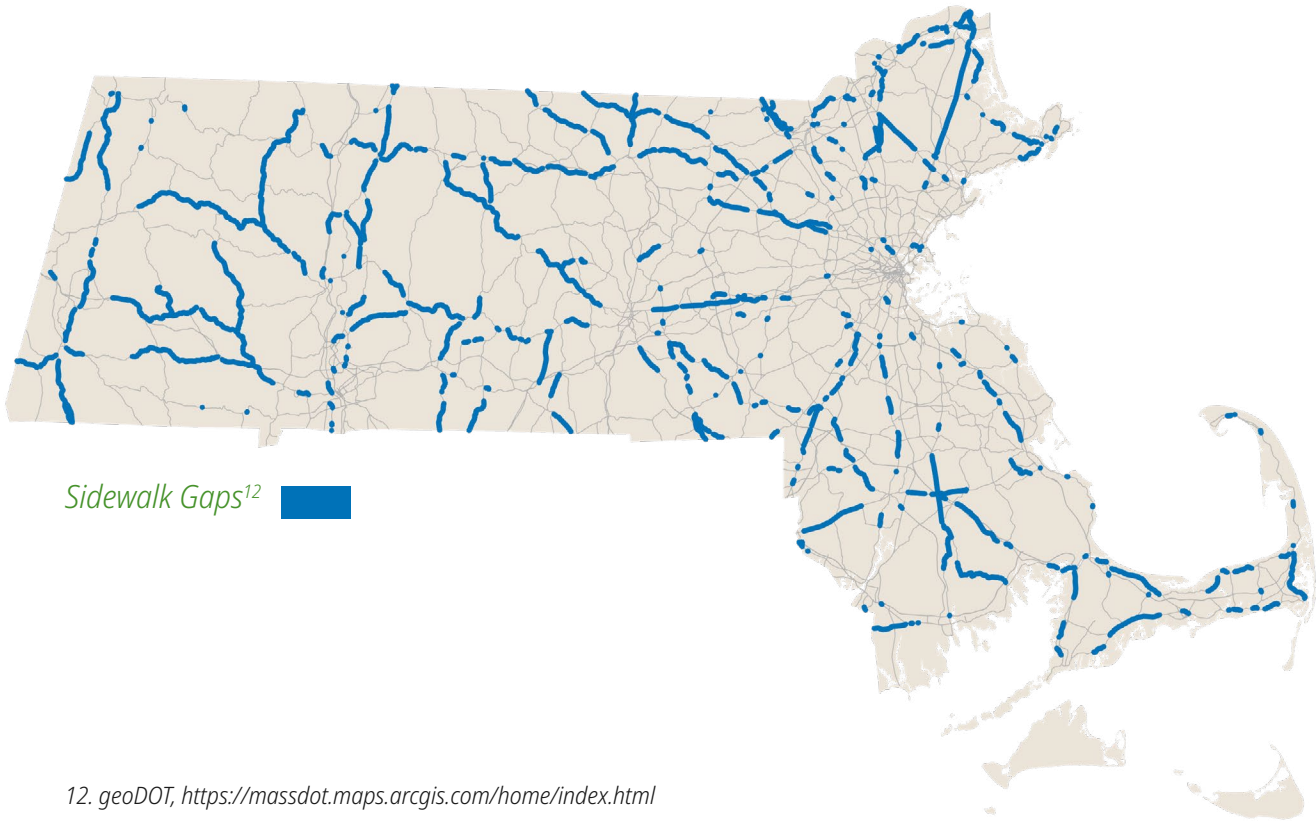
10. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

LOOKING FORWARD (2022)

The roads of today reflect a century of planning, design and construction. In designing the roads of tomorrow, MassDOT is using data to guide where re-imagined roadway cross sections can bring the most benefit. This approach is both performance-driven and fiscally responsible. The MassDOT Office of Transportation Planning (OTP) and Office of Performance Management and Innovation (OPM&I) have developed data layers which estimate the potential for walking and biking along the state-owned network. These data sets help determine priority and ensure investments are made for the best possible outcome.

MassDOT has also recently completed a sidewalk gap assessment, which when used with the walkability layer, will help inform a long-term sidewalk expansion plan.

Although MassDOT makes every effort to include bike and pedestrian infrastructure in existing projects, the construction of an ideal roadway cross section is often in opposition to the time and budget constraints of pre-existing projects. In these cases, a separate, full reconstruction of the roadway is needed, with more complex design and a higher budget. With the prospect for increased funding through the IIJA, MassDOT is prioritizing roadways where reconstruction is necessary to realize a complete street.



12. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

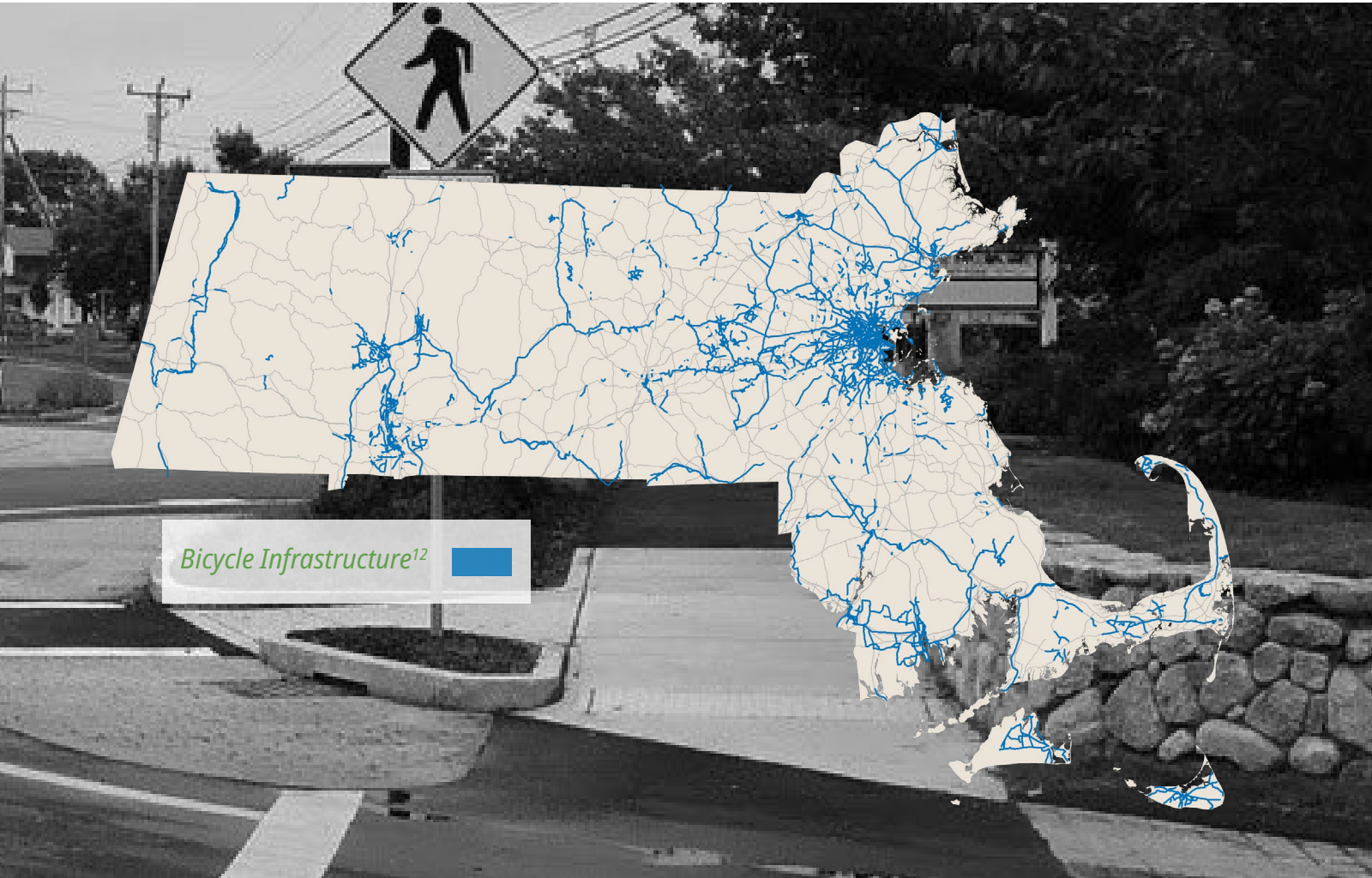
95%

of statewide trips between 0 and 1/2 mile are made by pedestrians¹¹

1.2%

of statewide trips between 0 and 3 miles are made by bicycle¹¹

11. Bicycle and Pedestrian Update - 2021, MassDOT, <https://storymaps.arcgis.com/stories/446e35bc40614e5aaced4a62ff7343b2>



Massachusetts has the third-largest tunnel inventory (by length) in the country. The majority of these facilities can be found within the Metropolitan Highway System (MHS), the toll-financed network of surface transportation within the city of Boston.

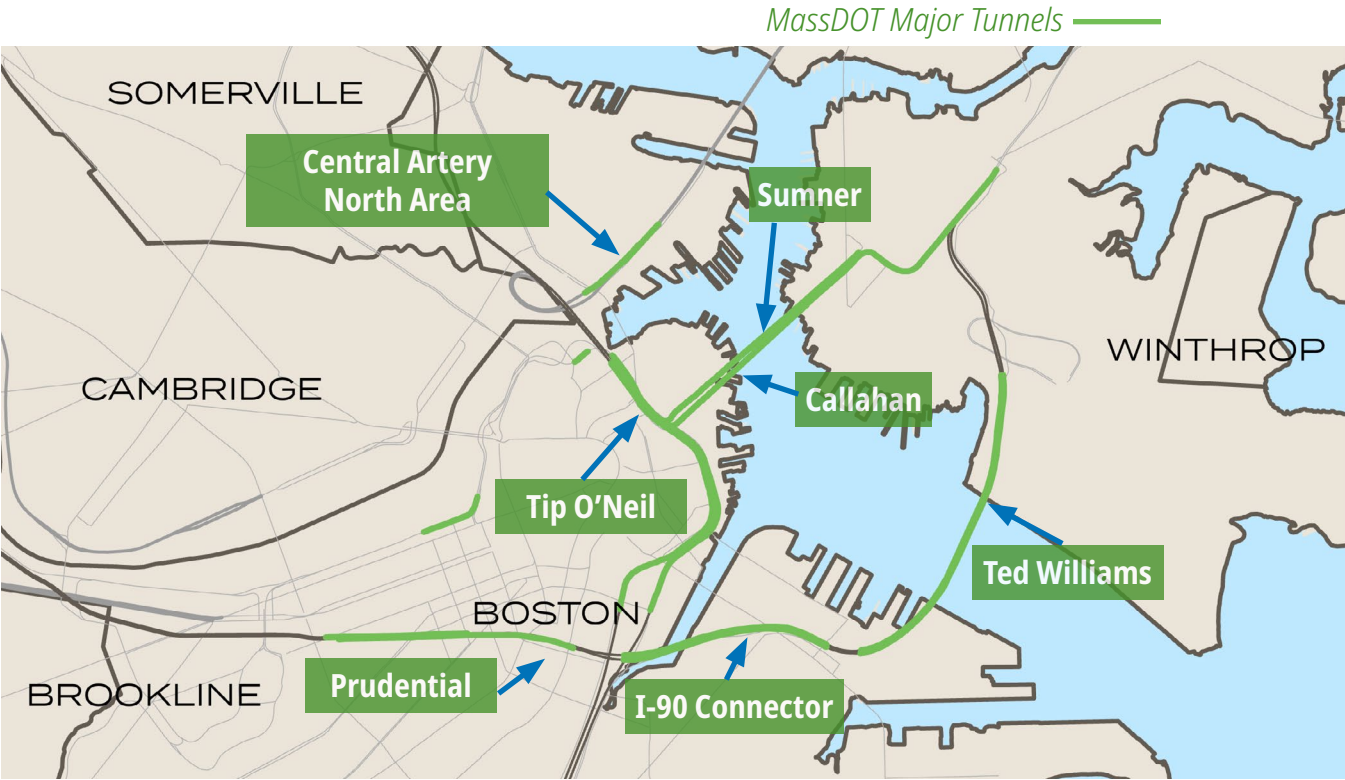
The MHS tunnel inventory spans 70 years of construction, beginning with the Sumner Tunnel (1934) and ending with Tip O'Neil Tunnel (2003).

TUNNELS

MassDOT tunnels are inspected every two years to evaluate the condition of structural, mechanical, electrical and fire/life safety systems. All overhead elements are inspected annually, with additional inspections performed in response to damage, fire, deterioration, and as needed. In addition to the extensive inspections performed by MassDOT forces, every three years the department commissions a third-party assessment of the entire MHS. The latest report was filed in October of 2021.

CURRENT STATE (2021)

Beginning with the Ted Williams Tunnel in 2019, lighting system replacement is underway within the "Big Dig" tunnels. This program is primarily financed through a settlement fund from the mega-project, and addresses flaws in the design and construction of the tunnel lights. Replacement is staged over five separate projects, with two currently in construction.



According to the Federal Highway Administration, Massachusetts tunnels rank¹³

2nd in total length
with 85,992 ft (or ~16 miles)

2nd in total lane miles
with 206,123 ft (or ~39 miles)

3rd in total count
among U.S. tunnels.

13. <https://www.fhwa.dot.gov/bridge/inspection/tunnel/inventory/tunnelsbystate2020.cfm>

Two other major tunnel projects, Sumner Tunnel rehabilitation and Prudential Tunnel lighting, were procured in 2021, and will begin the construction phase in the coming months.

LOOKING FORWARD (2022)

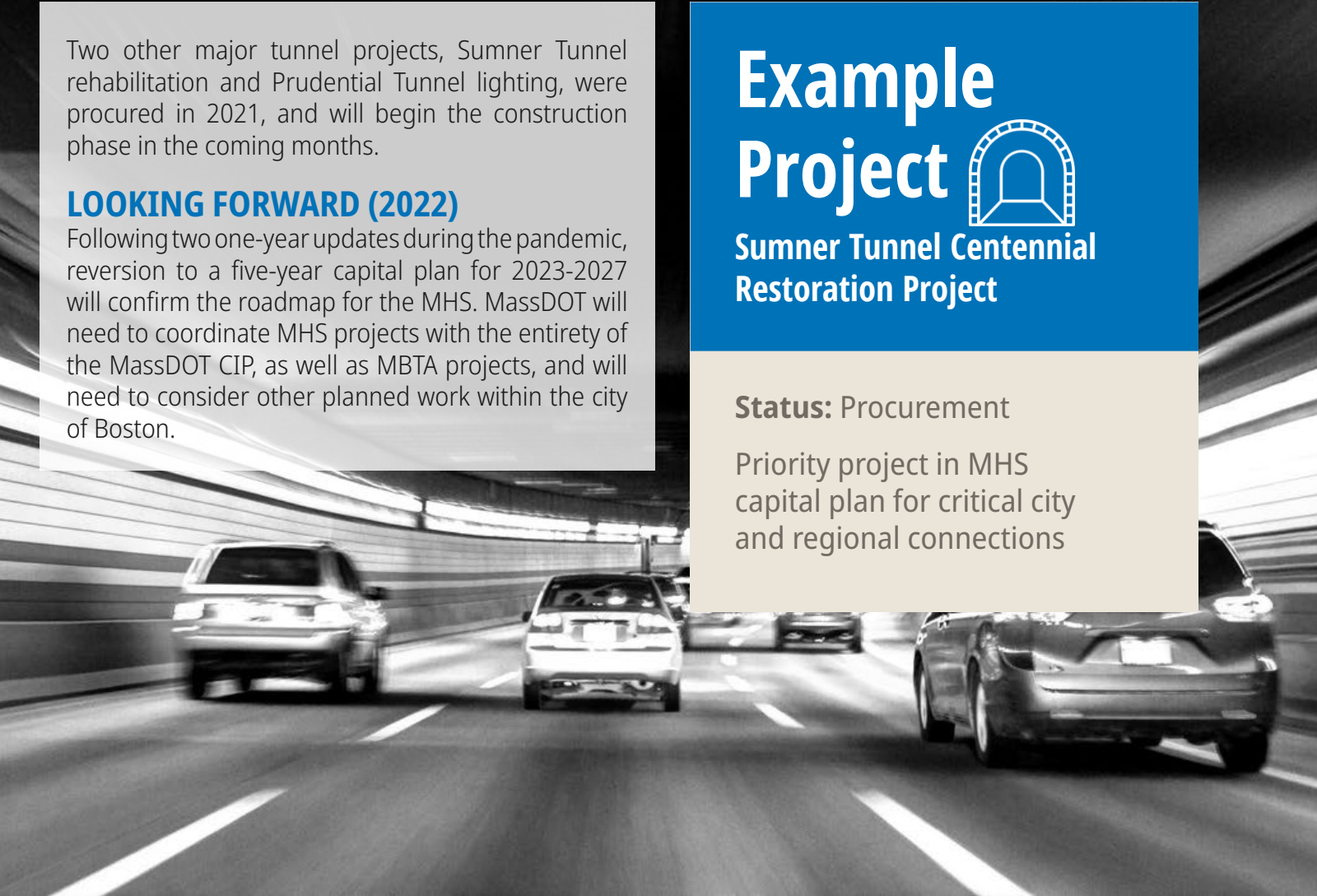
Following two one-year updates during the pandemic, reversion to a five-year capital plan for 2023-2027 will confirm the roadmap for the MHS. MassDOT will need to coordinate MHS projects with the entirety of the MassDOT CIP, as well as MBTA projects, and will need to consider other planned work within the city of Boston.

Example Project

Sumner Tunnel Centennial Restoration Project

Status: Procurement

Priority project in MHS capital plan for critical city and regional connections



Climate change has the potential for significant impact on the economy, public health, water resources, infrastructure, coastal resources, energy demand, natural features, and recreation. The Commonwealth of Massachusetts is committed to doing its part to mitigate and adapt to this challenge. The ability to prepare for, recover from, and adapt to these impacts is called resilience.

BUILDING A RESILIENT FUTURE



Legacy infrastructure built to contemporaneous design standards could now be vulnerable to sea level rise and extreme weather events including high winds, waves, storm surge, and unusually high/low temperatures. Determining which assets are vulnerable, where they are, and when MassDOT should be concerned is a challenge MassDOT must embrace in order to ensure the transportation network continues to support mobility interests of the commonwealth. Potential strategies will inform asset management decision making.

CURRENT STATE (2021)

MassDOT supports the goals of reducing transportation vulnerabilities and adapting infrastructure for current and future climate change impacts. The statewide flood risk assessment (CAVA) project is an example of work being done to target future resilience. The goals of this project are to gain an understanding of future threats to MassDOT transportation assets to future flooding and then use that understanding to inform capital investment decision making.

Other current initiatives include electric vehicle charging stations (see p. 18), as well as various solar projects planned to be implemented in the near future. The Central Massachusetts Transportation Facility has replaced the outdated District 3 Headquarters and also serves as a backup Highway Operations Center. It is expected to be one of the largest Net Zero Energy buildings (NZEB) east of the Mississippi River and includes other features such as electric vehicle charging stations, efficient heating and cooling systems, and solar canopies.

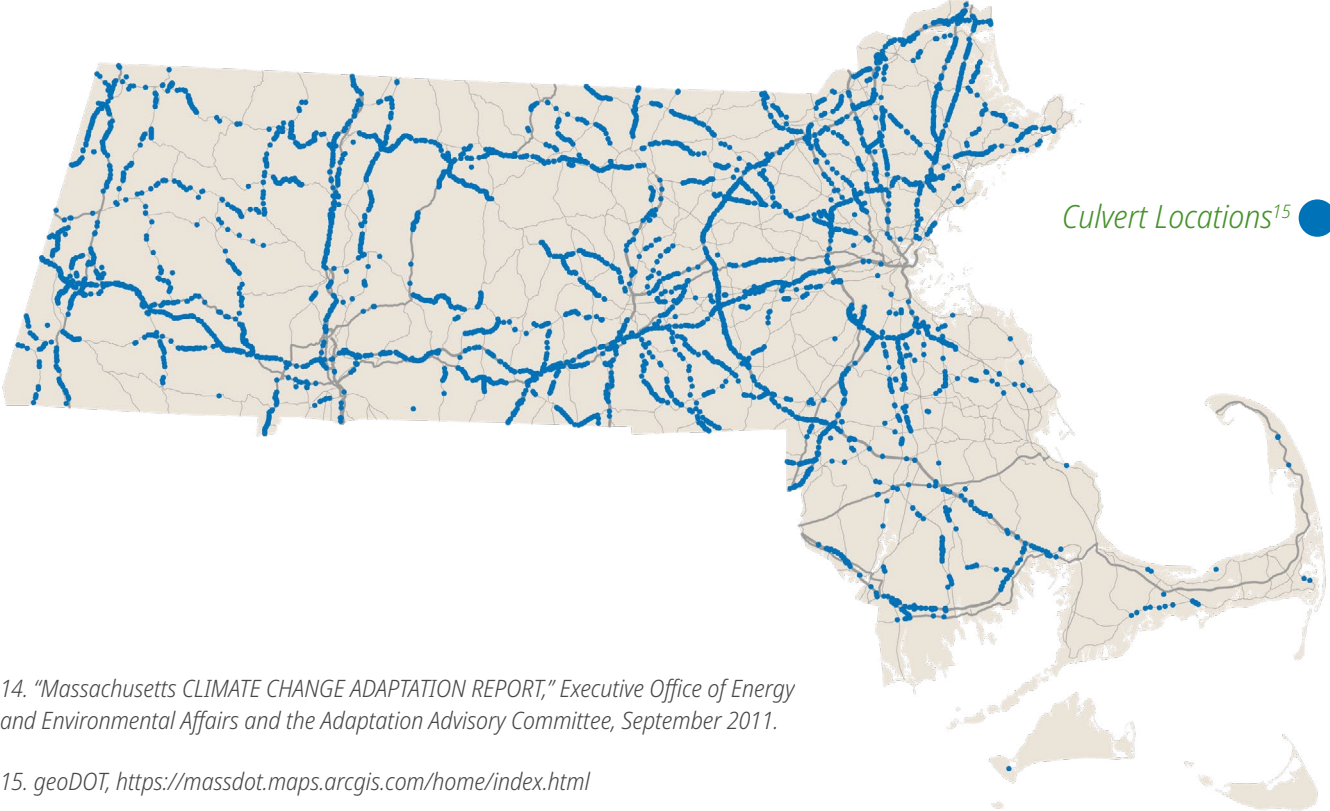
Undersized culverts can also cause failure to the infrastructure it carries, meaning increased road washouts. MassDOT studies have determined that 1,100 department-owned culverts and 2,700 bridges are potentially vulnerable to river flooding or storm surge¹⁴.

LOOKING FORWARD (2022)

MassDOT will continue to work with internal and external partners to better understand existing vulnerabilities while ensuring new infrastructure is built to a sustainable standard.



MassDOT District 3 Administration Building | The construction of a new 78,000 sf four-story steel framed structure on a 6.5 acre sloped site. The new facility is designed to be an NZEB. (Photo courtesy of CTA Construction Managers)



14. "Massachusetts CLIMATE CHANGE ADAPTATION REPORT," Executive Office of Energy and Environmental Affairs and the Adaptation Advisory Committee, September 2011.
15. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

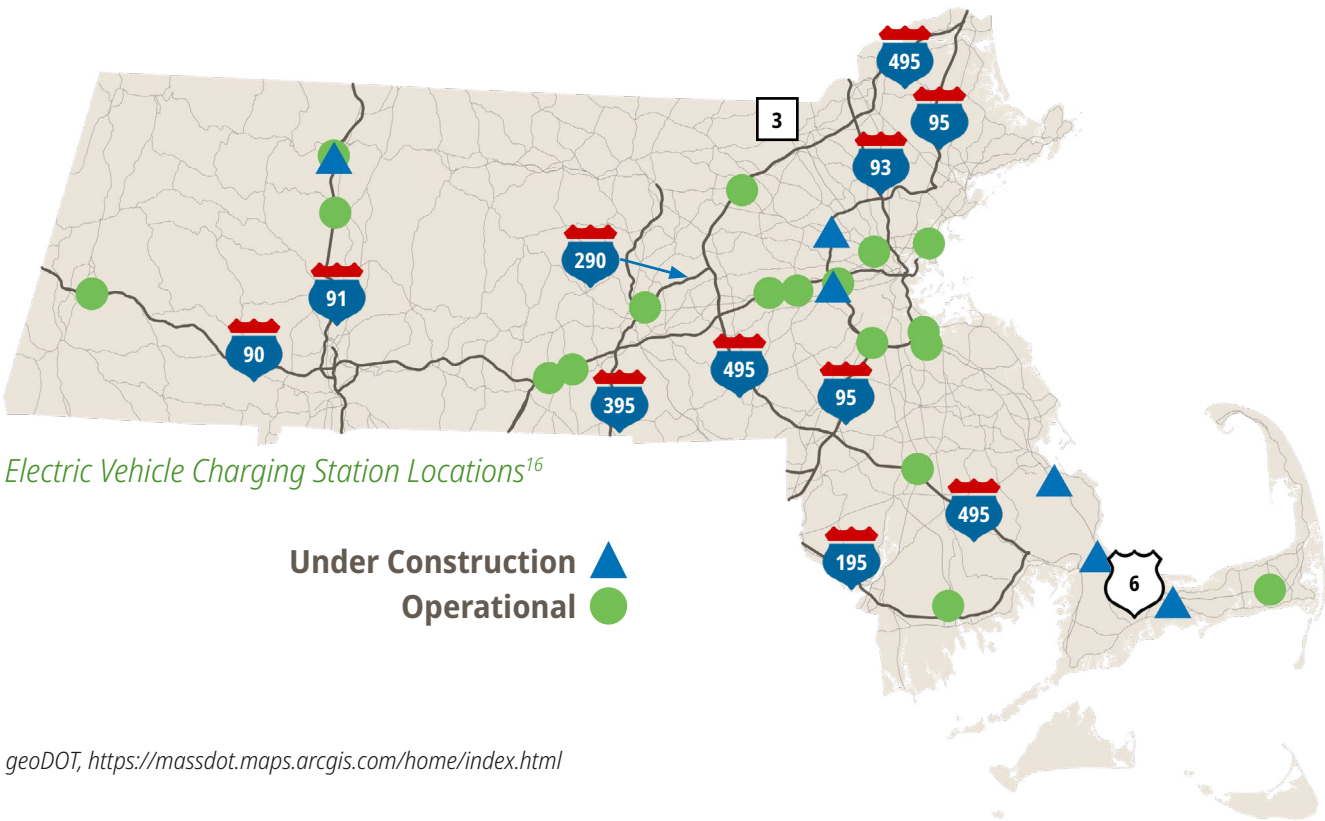
In July 2016, the FHWA, through the FAST Act, called on states to nominate fueling corridors along major national roadways that support plug-in electric vehicle charging, hydrogen, propane, and natural gas refueling as part of existing or planned infrastructure. These fueling corridors are now known as the national Alternative Fuels Corridors (AFC). Transportation agencies continue to research and plan for the deployment of alternative vehicle fueling and charging facilities along interstate corridors across the nation. The goal of this effort is to connect designated corridors, per the criteria established under FHWA's AFC program.

ALTERNATIVE FUEL STATIONS

The AFC network is a series of alternative fuel distribution sites conveniently located for the traveling public to meet the emerging need for such services. State agencies, utilities, alternative fuel providers, car manufacturers, and many advocacy groups are working on this environmentally-friendly transportation initiative. MassDOT's focus is to identify and manage the station locations as developing assets.

CURRENT STATE (2021)
Currently, through the FHWA initiative, Massachusetts has AFC routes as designated on the map below.

LOOKING FORWARD (2022)
With the signing of the new federal infrastructure bill, IIJA, there will be increased funding for the build-out of alternative fuel infrastructure.



16. geoDOT, <https://massdot.maps.arcgis.com/home/index.html>

INCIDENT RESPONSE



Medford I-93 Southbound at Roosevelt Circle

A truck carrying a large wastewater tank struck an overpass on I-93 southbound on Monday afternoon on July 19, 2021. The resulting damage necessitated closure of half the southbound travel lanes in order to remove the damaged structure and keep roadway users safe. The repairs were completed quickly to allow all lanes on I-93 southbound to be reopened for travel on the following Thursday night. Travel on Roosevelt Circle bridge opened for travel on the following Friday morning. There are some lane restrictions in place until permanent repairs are complete, which could take six to eight months.

In this emergency, MassDOT's quick response, team work, and contractor team limited the potential impact to commuters and the movement of freight. The coordination across Transportation Systems Management & Operations and Operations & Maintenance is important. Since MassDOT is not expanding the network, it is important to maintain and optimize what exists, and be prepared to manage incidents as they occur.



LOOKING FORWARD



The following are take-aways from each chapter:



PAVEMENT

1. MassDOT has made significant progress in improving pavement condition on non-interstate MassDOT-owned roadways. Sustained investment is needed to maintain the network into the future.
2. MassDOT is looking to utilize environmentally-friendly approaches in pavement design by using warm mix technology and utilizing recycled materials.
3. The MassDOT Municipal Pavement Program will kick-off work in 2022, improving locally-owned state numbered routes, with initial projects in central and western Massachusetts.



BRIDGE

1. Design has started on 50 new bridge projects with programming anticipated to begin in spring of 2022.
2. MassDOT is establishing a streamlined maintenance and preservation process for bridges, led by the Bridge Preservation Engineer. Findings from this activity will help inform the 2023-2027 STIP.
3. The Massachusetts Small Bridge Reprogram will see a “reboot” in 2022, with an authorized budget of \$50 million. This program was reauthorized in the 2021 bond bill for \$70 million and will be managed by MassDOT.



ACTIVE TRANSPORTATION

1. MassDOT will continue to incorporate complete street elements into all roadway projects where feasible.
2. MassDOT will leverage data and modeling to identify high-value opportunities for bike/pedestrian infrastructure expansion.
3. Roadways needing full reconstruction to better accommodate bike/pedestrian ways will be prioritized, in anticipation of increased funding from the IIJA.



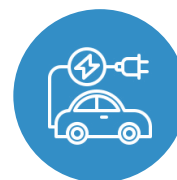
TUNNELS

1. Lighting system replacement is underway, staged over five separate projects, with two currently in construction. Two other major tunnel projects will begin the construction phase in the coming months.



BUILDING A RESILIENT FUTURE

1. Legacy infrastructure could now be vulnerable to sea level rise and extreme weather events. Determining which assets are vulnerable, where they are, and when MassDOT should be concerned is a challenge MassDOT must embrace.
2. MassDOT will continue to work with internal and external partners to better understand existing vulnerabilities while ensuring new infrastructure is built to a sustainable standard.



ALTERNATIVE FUEL CORRIDORS

1. MassDOT will need to expand their workforce/skill sets within asset management to address the O&M of the assets along the AFCs.
2. An increase in funding with the IIJA will be used for the build-out and initial maintenance of AFC assets.

MassDOT will introduce the first update to the inaugural TAMP in 2022. Per FHWA, the TAMP will be updated every 4 years. Currently, the TAMP focuses on highways and bridges on the NHS.

Infrastructure Investment and Jobs Act (IIJA)

Congress passed a \$1.2 trillion infrastructure package November 5th, 2021. It will deliver \$550 billion of new federal investments in America’s infrastructure over five years. Specifically:

- Investing \$110 billion for roads, bridges and major infrastructure projects
- \$40 billion for bridge repair, replacement and rehabilitation
- \$16 billion for major projects that would be too large or complex for traditional funding programs
- \$11 billion for transportation safety
- \$7.5 billion would go to building a nationwide network of plug-in electric vehicle chargers

STRATEGIC FUNDING

After two, single-year updates through the pandemic, the MassDOT Capital Investment Plan will return to a five year horizon for 2023-2027. The reversion to a longer planning horizon coincides with the increased funding through the IIJA. Together these developments will provide stability and resources for meaningful investment in MassDOT infrastructure through the middle of the decade.

LOOKING FORWARD (2022)

MassDOT is committed to rehabilitating or replacing infrastructure at end of life cycle while keeping up with maintenance and preservation of newer more viable assets. The upcoming STIP/ CIP cycle will articulate this strategy through program sizing and project selection.

Though there is limited expansion of the roadway network, the proliferation of bicycle and pedestrian infrastructure presents new opportunities for active transportation, and a need to manage the lifecycle of additional systems into the future.

And as MassDOT addresses state of good repair, and adapts roadways to a multimodal future, the reality of a changing climate will all also require that resiliency be incorporated into system management and design.

Though there are no shortage of challenges. MassDOT is focused on ensuring the right planning, investment and operating processes are in place to maintain Commonwealth transportation assets for future generations

DEFINITIONS

AFC	Alternative fuel corridor. FHWA initiative for network of plug-in electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure along national highway system corridors.
CANA	Central Artery North Area tunnel in Boston.
Centerline Miles	Miles of roadway not accounting for direction or lanes. Measured according to the center of the roadway.
CIP	Capital Investment Plan. Usually, a five-year plan that is updated annually, but programs state and federal funds to pay for long-term improvements.
DOT	Department of Transportation
FHWA	The U.S. Department of Transportation Federal Highway Administration
IIJA	Infrastructure Investment and Jobs Act. Federal transportation and infrastructure bill.
Lane Miles	Centerline miles multiplied by the number of lanes. Example: 10 miles of 4-lane interstate would be 40 lane miles.
MassDOT Roads	This includes interstates as well as major freeways and arterial roads maintained by MassDOT.
MBTA	Massachusetts Bay Transportation Authority
MHS	Metropolitan Highway System. Legislatively defined to include the tolled highway system that consists of the Boston Extension, the Callahan Tunnel, the Central Artery, the Central Artery North Area of the Massachusetts Turnpike, the Sumner Tunnel, and the Ted Williams Tunnel, as defined in M.G.L. c. 6C, § 1.
NBI	National Bridge Inventory. Any bridge with a span of more than 20 feet.
NHS	National Highway System. Interstates and other roadways that are important to the nation’s economy, defense, and mobility.
O&M	Operations and maintenance
OPM&I	MassDOT Office of Performance Management and Innovation
OTP	MassDOT Office of Transportation Planning
PSI	Pavement serviceability index. A scale from 0 to 100 that rates the pavement condition.
RUC	Road user cost. A user-based alternative revenue mechanism for surface transportation.
STIP	State Transportation Improvement Program. A combined effort between MassDOT and many state agencies that work together to design and build highways and transit projects. Updated annually.
TAMP	Transportation Asset Management Plan.

MassDOT Mission

Our mission is to deliver excellent customer service to people traveling in the Commonwealth by providing transportation infrastructure which is safe, reliable, robust and resilient. We work to provide a transportation system which can strengthen the state's economy and improve the quality of life for all.

