

## Appendix E: Bridges

Over 5,000 miles of road is currently maintained by MassDOT and the 27 communities of the SMMPO. Considering the automobile is the primary source of transportation for most residents along with the volume of heavy freight traffic and transit vehicles, the infrastructure that provides the ability to traverse the region is under constant physical pressure. Efforts to maintain and expand this infrastructure continue to be a significant challenge to MassDOT and local departments of public works.

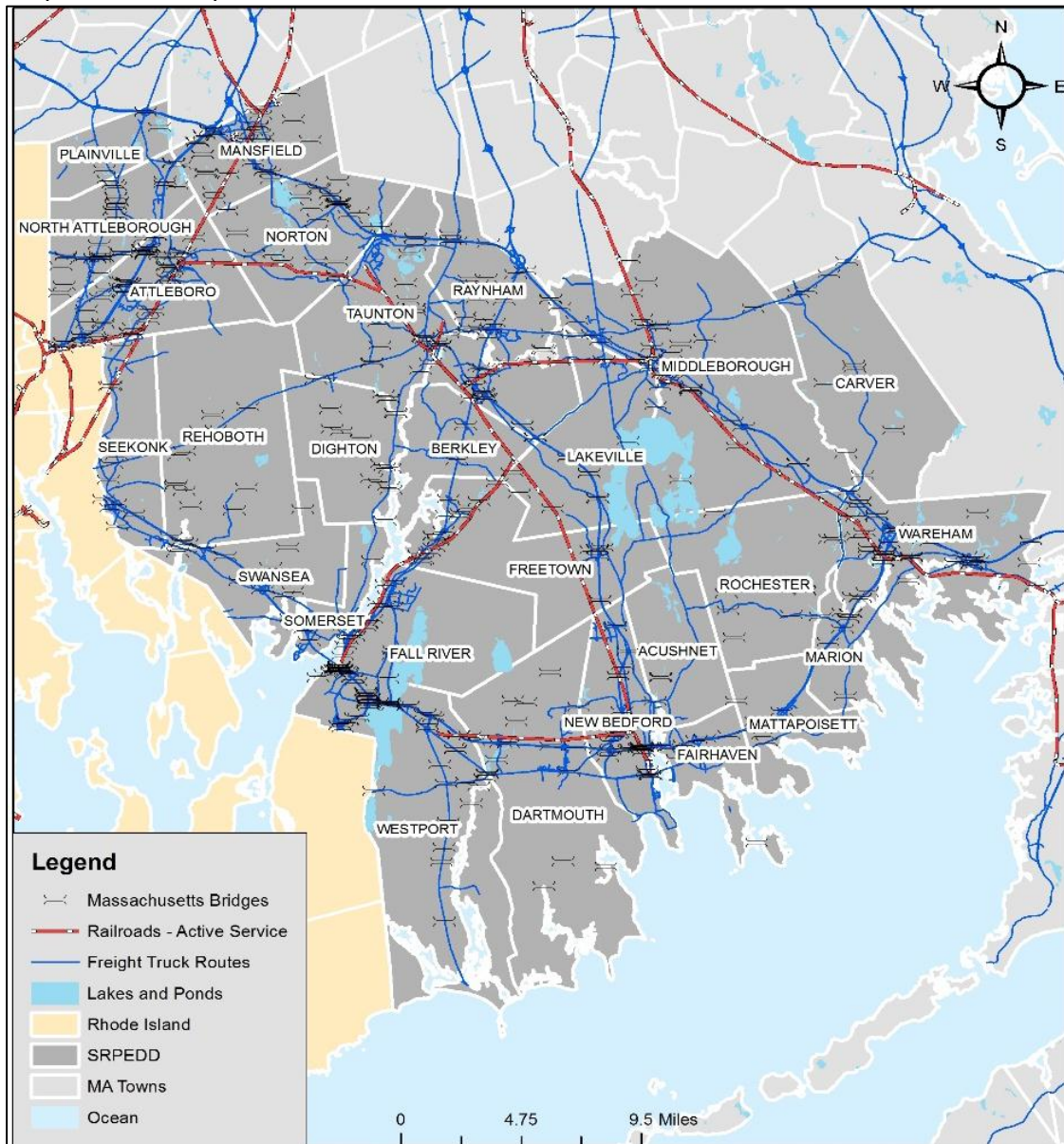
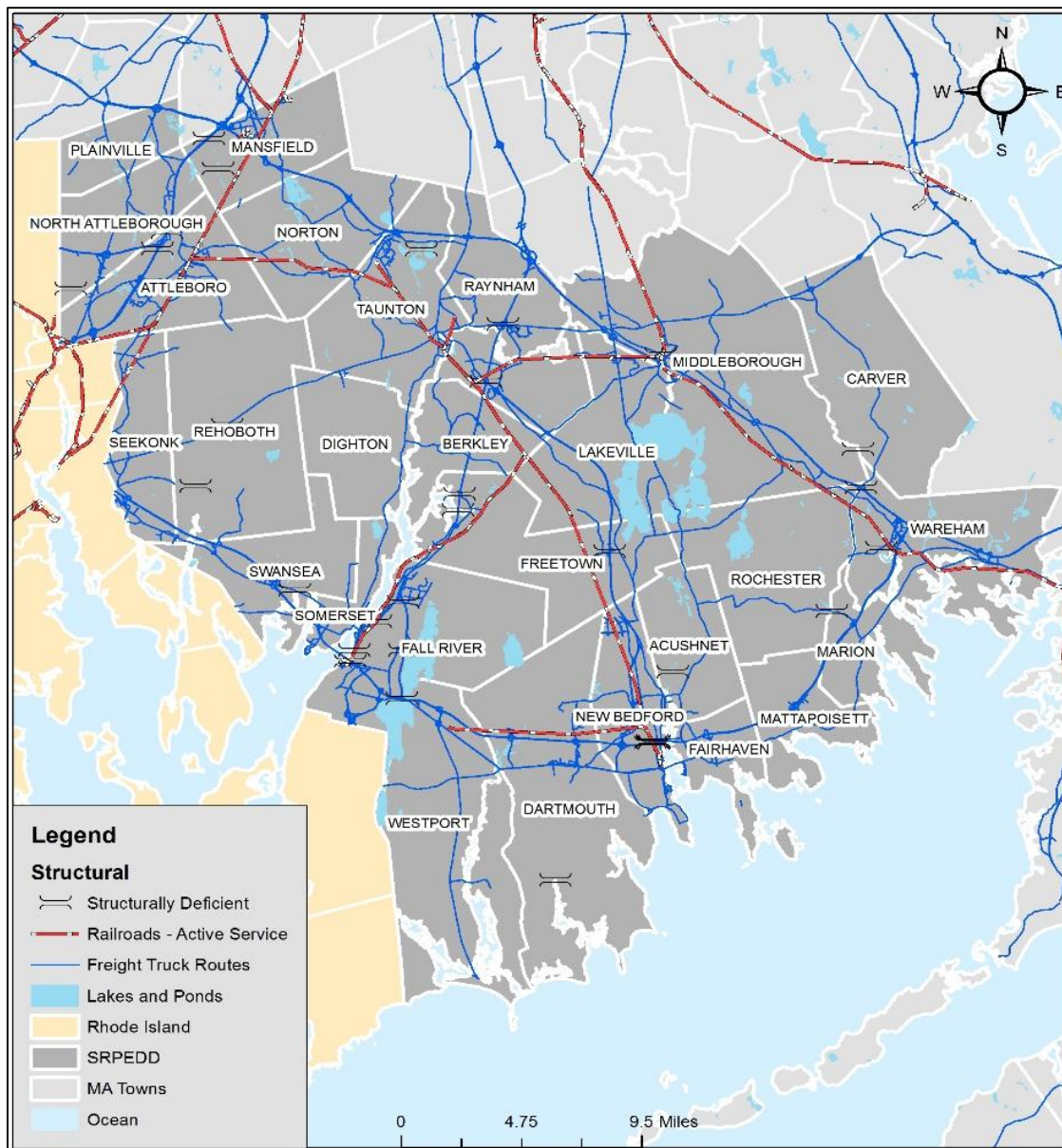


Figure E-1: Bridge Network

There are 484 bridges within the SMMPO region including 373 bridges under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). The remaining 111 bridges are owned and maintained by SMMPO communities. Because MassDOT is responsible for a majority of the bridge maintenance throughout the Commonwealth, they established a proactive preservation program to reduce the long-term costs for maintaining these facilities. On a regular basis, MassDOT personnel inspect each bridge and compile ratings based on acceptable federal standards.

Each bridge is then classified as being within one of three categories: structurally deficient, functionally obsolete, or meeting standards. Figure E-1 illustrates the bridge network in the Southeastern region.

In 2018, the Commission on the Future of Transportation in the Commonwealth released its two-part report on transportation needs and challenges facing the Commonwealth between 2020 and 2040. The report considers complex factors affecting the future of transportation such as increasing electrification of the Commonwealth's transportation system, preparing transportation infrastructure for climate change and the intersection of land use, housing and transportation policies.



**Figure E-2: SMMPO Structurally Deficient Bridges**

One of the key areas of the Future of Transportation sets out to create a 21st century “mobility infrastructure” that will prepare the Commonwealth and its municipalities to capitalize on emerging changes in transportation technology and behavior. The commission recommended that while there will likely be new technologies to provide mobility in the future, many of them will have wheels or tires and travel on corridors that exist today. These corridors, or “rights of way,” will increasingly need to serve as shared assets for personal vehicles, transit, freight, mobility service providers, active transportation modes such as walking and biking, and micro-mobility devices such as scooters. Given that today’s roadways and travel corridors are difficult

to expand with right-of-way constraints, it is vital that they be re-purposed to support a truly multi-modal transportation future.<sup>1</sup>

In 2008, a recommendation for additional construction funds was implemented with the Accelerated Bridge Program (ABP) with the intent to address the structurally deficient bridges throughout Massachusetts. This program has provided approximately \$3 billion for design and construction, to significantly reduce the number of structurally deficient bridges by 2016.

Through September 1, 2018 the MassDOT Accelerated Bridge Program has advertised 200 construction contracts with a combined construction budget valued at \$2.43 billion.

As of September 2018, all bridge projects as a part of the Accelerated Bridge Program in the SRPEDD region have been advertised and construction is near completion. Figure E-2 illustrates the structurally deficient bridges in Massachusetts.

## Structurally Deficient Bridges

Bridges requiring immediate attention for repair are those classified as structurally deficient. The Federal Highway Administration (FHWA) classifies a bridge as Structurally Deficient if the deck, superstructure, substructure, or culvert is rated in "poor" condition.<sup>2</sup> In 2018, Massachusetts had a total of 470 bridges, 9.0% rated as structurally deficient with 33, of those bridges located in the SMMPO region, down from 44 in the 2016 Regional Transportation Plan.

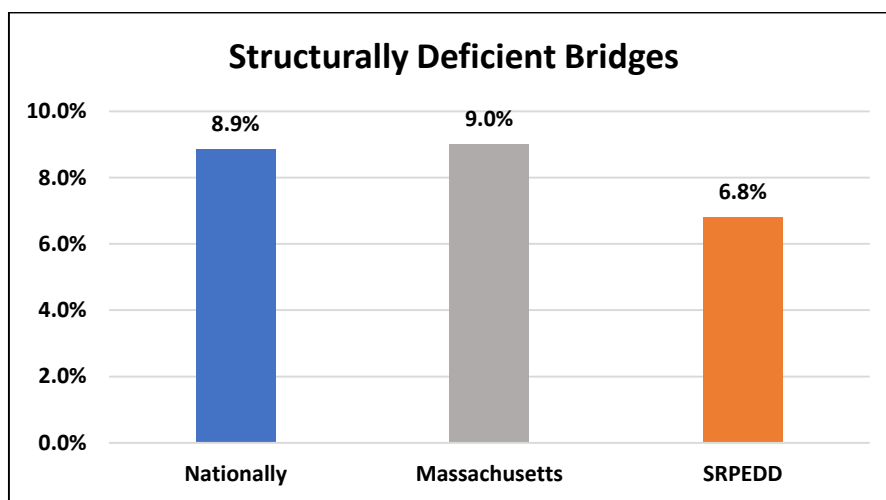


Figure E-3: Compared Structurally Deficient Bridges

<sup>1</sup> Commission of the Future of Transportation, MassDOT

<sup>2</sup> FHWA: Bridges and Structures

Nationally, the percentage of structurally deficient bridges was higher at 8.9%. The SMMPO percent of structurally deficient bridges was 6.8% as shown in Figure E-3. Table E-1 is a list of the structurally deficient bridges in the SMMPO region.

**Table E-1: SRPEDD Structurally Deficient Bridges**

<b>Town Name</b>	<b>Over</b>	<b>Under</b>	<b>Owner</b>	<b>On NHS</b>
Acushnet	HWY HAMLIN RD	WATER ACUSHNET RIVER	Town Agency	N
Attleboro	I 95 SB	ST123 SOUTH AVE	State Highway Agency	Y
Attleboro	I 295 RAMP	WATER TEN MILE RIVER	State Highway Agency	Y
Carver	HWY ROCHESTER RD	WATER WEWEANTIC RIVER	Town Agency	N
Dartmouth	HWY BRIDGE ST	WATER APPONAGANSETT RIV	Town Agency	N
Fall River	HWY WEAVER ST	RR MACRR	State Highway Agency	N
Fall River	HWY WILSON RD	ST 24	State Highway Agency	N
Fall River	HWY MERIDIAN ST	ST 24	State Highway Agency	N
Fall River	I 195	ST 81 PLYMOUTH AVE	State Highway Agency	Y
Fall River	ST 24 SB RAMP	I 195 WB	State Highway Agency	Y
Fall River	ST 79	HWY RAMP K & L	State Highway Agency	Y
Freetown	ST 24	WATER ASSONET RIVER	State Highway Agency	Y
Freetown	HWY N MAIN ST	ST 24	State Highway Agency	N
Freetown	HWY CHASE RD	ST140	State Highway Agency	N
Mansfield	HWY WEST ST	WATER WADING RIVER	Town Agency	N
Mansfield	HWY BALCOM ST	WATER WADING RIVER	Town Agency	N

Marion	US 6 WAREHAM ST	WATER WEWEANTIC RIVER	State Highway Agency	N
Middleborough	ST 28 W GROVE ST	RR MBTA/CSX	State Highway Agency	N
New Bedford	I 195 WB RAMP C	OTHER RELIEF	State Highway Agency	Y
New Bedford	I 195 EB RAMP F	COMB WELD ST & RELIEF	State Highway Agency	Y
New Bedford	I 195	COMB MACRR/PURCHASE ST	State Highway Agency	Y
New Bedford	I 195	HWY COUNTY&STATE STS	State Highway Agency	Y
New Bedford	I 195	ST 18 ASHLEY BLVD	State Highway Agency	Y
North Attleboro	HWY MENDON RD	WATER ABBOTT RUN RIVER	Town Agency	N
Raynham	US 44 CAPE HWY	ST 24	State Highway Agency	Y
Rehoboth	US 44 WINTHROP ST	WATER PALMER RIVER	State Highway Agency	Y
Rehoboth	HWY REED ST	WATER PALMER RIVER	Town Agency	N
Swansea	US 6 GAR HWY	WATER COLE RIVER	State Highway Agency	Y
Taunton	HWY SCADDING ST	WATER SNAKE RIVER	City/Municipal Highway A	N
Taunton	ST 24	ST140 COUNTY ST	State Highway Agency	Y
Wareham	HWY FEARING HILL	WATER WEWEANTIC RIVER	Town Agency	N
Wareham	US 6 MARION RD	WATER WEWEANTIC RIVER	State Highway Agency	N
Wareham	ST 58 COUNTY RD	I 495	State Highway Agency	N

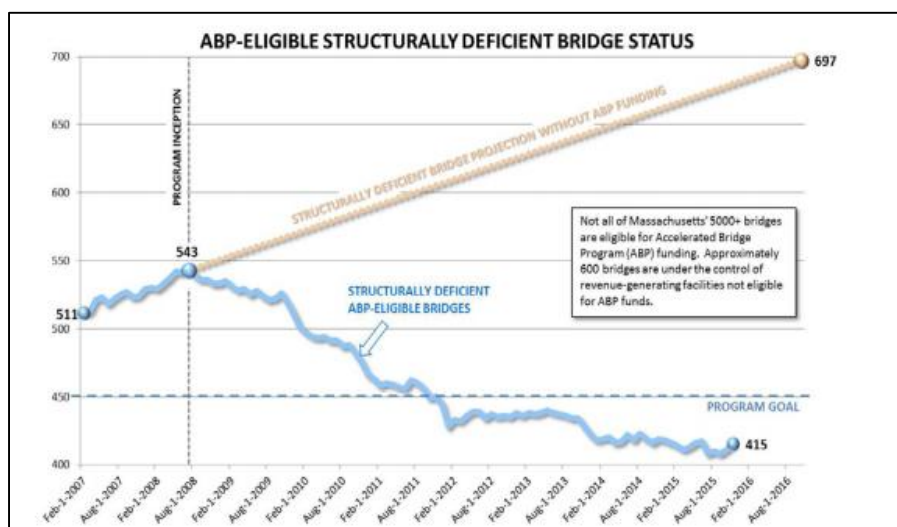
## Accelerated Bridge Program

The Accelerated Bridge Program (ABP) has reduced the number of bridges in need of repair. This program has also created thousands of construction jobs. To complete this program,

MassDOT and the Department of Conservation and Recreation (DCR) are using innovative techniques. More projects are completed on-time and on-budget, with minimum disruption to people and commerce.

The Accelerated Bridge Program has three construction projects currently underway that will replace three bridges by 2024 at an estimated total of \$287,272,500. Two of these bridges are currently under construction and the remaining bridge is in the preliminary design phase with construction to begin in 2021. As required as part of the Accelerated Bridge Program.

It is important to maintain bridges along freight corridors to continue movement of goods for business. Weight restrictions on these bridges can impede and negatively impact industry and the economy. Detours to avoid bridges that cannot accommodate freight trucks increases the delay and additional added cost in fuel consumption for the delivery of goods as well as deterioration to roadway pavements that are not designed to withstand the frequency of heavy freight vehicles.



**Figure E-4 Structurally Deficient Bridge Inventory**

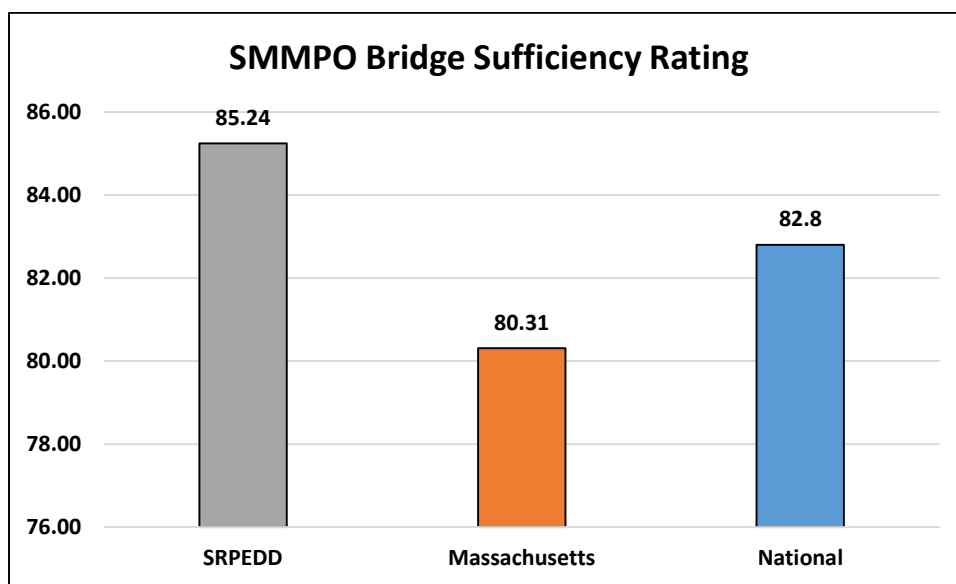
The total number of bridges rated as structurally deficient has fluctuated over the last 16 years, with the last five years remaining fairly stable. While repairs continue to be made to structurally deficient bridges, other bridges continue to deteriorate to a state of structural deficiency. Furthermore, the average time needed to replace or rehabilitate a bridge structure is approximately 2 to 3 years. Since the Accelerated Bridge Program was completed in 2016, continued funding is needed to preserve and maintain bridges in the SMMPO region to stay ahead of the deterioration curve and effectively prevent additional bridges from deteriorating to a structural deficient condition.

Figure E-4 represents the trends of structurally deficient bridges across the Commonwealth. It is important to note that at current funding levels, this model predicts that the number of structurally deficient bridges within the Commonwealth will increase over a ten-year horizon.

## Bridge Sufficiency Rating

The National Bridge Inventory is used for federal funding purposes. A "bridge sufficiency rating" is calculated, based 55% on the structural evaluation, 30% on the obsolescence of its design, and 15% on its importance to the public.

The national average age for bridges is 43 years old. Massachusetts makes the top three states with the oldest bridges with an average age of 57. Most bridges are designed to last 50 years before major overhaul or replacement, therefore MassDOT can expect a growing number of bridges to go on the repair list as fast as they are able to repair them.



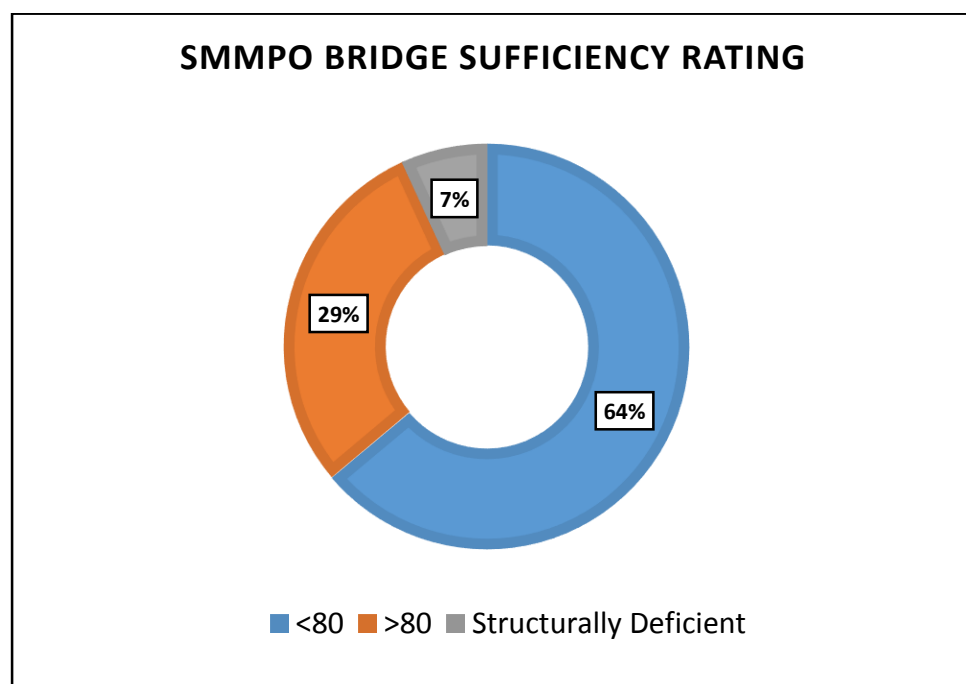
**Figure E-5 Compared Bridge Sufficiency Rating**

MassDOT's bridges also rank among the worst nationally when it comes to a measurement transportation officials use nationwide to help prioritize repair and replacement projects.

The measurement, called the sufficiency rating, is calculated for each bridge and provides a fairly comprehensive look at its overall status. The measure uses a detailed formula that considers the structure's condition, functionality, and importance, giving it a score from zero, the worst possible, to 100. On average, Massachusetts' bridges score 80.31 — the eighth-

lowest average rating of any state and several points below the national average of 82.8. As of 2008, a score of 80 or less is required for federal repair funding, and 50 or less for federal replacement funding.<sup>3</sup>

The sufficiency rating of an individual bridge on a scale of 0 to 100 is based on the structural adequacy and safety, essentiality for public use, and serviceability and functional obsolescence of the bridge. The sufficiency rating considers multiple aspects of a structure and its level of performance and is the basis for establishing eligibility and initial priority for replacement and rehabilitation of bridges under the Highway Bridge Replacement and Rehabilitation Program. In general, a low sufficiency rating for a structure will place that structure at a higher priority.



**Figure E-6: SMMPO Bridge Sufficiency Rating**

For the SMMPO Regional Transportation Plan, the sufficiency ratings of bridges on the NHS were combined and averaged to determine the overall status of all bridges on the NHS. The initial Average Sufficiency Rating of NHS bridges for the SMMPO region in 2006 was 82.8. Figure E-6 outlines the Bridge Sufficiency Rating of the bridges in the SMMPO region.

<sup>3</sup> Boston Globe: Structurally Deficient Bridges

## Bridges Funded by the TIP

The SMMPO TIP is a five-year programming document that commits funding to transportation needs. The TIP is developed annually and is subject to amendment and adjustment at any time. Each program year of the TIP coincides with the Federal Fiscal Year, October 1 through September 30. All projects are identified by fiscal year and federal funding category and include cost. The total cost of the projects programmed in the TIP must be constrained to available funding, be consistent with the long-range Regional Transportation Plan, and include an annual element, or listing, of projects to be advertised in the first year of the TIP. A further understanding of the TIP with a list of all TIP projects can be found in Appendix C. Table E-2 outlines all of the bridge projects funded on the TIP.

**Table E-2 Programmed Bridge TIP Projects**

2019-2023 TIP Projects			
Bridge Project on TIP	TIP Year	Funding Source	Total Funding
District 5 - Systematic Bridge Preservation along the I-95 Corridor	2020	NHPP - ON	\$2,724,908.00
Taunton - Bridge Replacement, T-01-024, Scadding Street Over Snake River	2021	STP-BR-OFF	\$942,500.00
Mansfield Bridge Replacement, M-03-003 & M-03-045, Balcom Street over the Wading River	2021	STP-BR-OFF	\$768,000.00
Rehoboth Bridge Replacement, R-04-004, Reed Street over Palmer River	2021	STP-BR-OFF	\$1,220,000.00
Fall River Bridge Replacement, F-02-019, Weaver Street over Massachusetts Coastal Railroad	2021	STP-BR-OFF	\$4,612,100.00

<b>2019-2023 TIP Projects</b>			
<b>Bridge Project on TIP</b>	<b>TIP Year</b>	<b>Funding Source</b>	<b>Total Funding</b>
District 5 - Systematic Bridge Preservation Along the Route 24 Corridor	2022	NHPP-ON	\$1,605,100.00
New Bedford - Superstructure Replacement, N-06-020, I-195 (EB & WB) Ramp C and F Over ST 18, County Street, State Street, Mass Coastal RR, Purchase Street, Weld Street, Includes Replacing N-06-046, I-195 (EB) Ramp F Over Weld Street	2023	NHPP-ON	\$3,450,768.00
Attleboro - Superstructure Replacement, A-16-062, I-295 Ramp Over 10 Mile River	2023	NHPP-ON	\$16,733,314.00
District 5 - Systematic Bridge Preservation Along the I-195 Corridor	2023	NHPP-ON	\$1,413,595.00
<b>TOTAL:</b>			<b>\$33,470,285.00</b>

## Regionally Significant Bridges

Although every bridge is important, there are 4 major facilities that regionally impact the SMMPO including the Brightman Street Bridge and Veterans Memorial Bridge, the New Bedford/Fairhaven Bridge, the Berkley/Dighton Bridge, and the Braga Bridge. These facilities are important to vehicular flow, the transport of goods, are key links to the region's two seaports, and are a vital part of regional evacuation routes. Failure to maintain and keep these bridges operational will have significant economic and public safety impacts to the region and throughout Massachusetts and Rhode Island.

## Brightman Street Bridge

The former Brightman Street Bridge was a double-leaf bascule drawbridge spanning the Taunton River between Fall River and Somerset that was replaced with the Veterans Memorial Bridge which opened in 2011. Between May 2018 and April 2019 the Veterans Memorial bridge opened 106 times.

The double bascule Veterans Memorial Bridge provides a 200-foot horizontal clearance and a 60-foot vertical clearance at the opening. Controversy exists with the removal of the remaining Brightman Street Bridge. In 2005, President Bush signed a Transportation Bill into law that prohibits the use of federal funds in the demolition of facilities such as the Brightman Street Bridge and forced MassDOT to continue to provide funding to maintain this bridge. It was anticipated that at least the abutments of the old Brightman Street Bridge could be used for recreational purposes and the drawbridge over the channel would be removed to provide unfettered passage of nautical vessels. Legislators are aware of the necessity to demolish the bridge, as the maintenance is becoming burdensome, however, funding has not yet been secured for this undertaking. Figure E-7 is a picture of the Veterans Memorial Bridge.



**Figure E-7: Veterans Memorial Bridge**



**Figure E-8: Brightman Street Bridge**

The Brightman Street Bridge which is now closed to vehicular traffic costs approximately \$1 million annually to maintain and operate. The 2005 legislation essentially blocked a proposal for a Liquid Natural Gas (LNG) facility to be located north of these bridges, in Whale's Tooth Cove, due to the narrow channel opening with the defunct Brightman Street Bridge. The narrow channel cannot accommodate LNG vessels. Since that time, the proposal for the LNG facility has been withdrawn, but the legislation still in place prevents MassDOT from removing the Brightman Street Bridge and necessitates its continued maintenance with related costs. Figure E-8 is a picture of the Brightman Street Bridge.

### **New Bedford/Fairhaven Bridge**

This is the oldest operating swing span bridge in the United State and carries 18,000 vehicles per day as part of Route 6 over the Acushnet River. It has horizontal clearance of 94 feet at the west span and 95 feet at the east span and vertical clearance, when the bridge is open to vehicular traffic, of 6 feet at mean high water. Bridge openings have increased considerably over the last 30 years, from 559 (1975) to 4,733 (2007) to 5,524 (2013). Since 2013, bridge

openings have remained relatively steady with openings from May 2018 through April 2019 totaling 5,212. Over 40% of the vessels passing through the bridge opening are fishing vessels.



**Figure E-9: New Bedford/Fairhaven Bridge**

Ocean going freight vessels are returning to the harbor due to maintenance dredging of the channel and turning basin south of Route 6. In addition, demand on the harbor docks continues to grow. The importance of the New Bedford/Fairhaven Bridge as a key component to the movement of freight is necessary to consider through project development. The potential expansion to the north harbor is inhibited primarily to the presence of the Route 6 Bridge. The existing horizontal clearance of only 95 feet limits the size of vessels that can serve the industries north of the bridge. Presently, the existing bridge is structurally adequate, but has a long history of mechanical problems that have required closing the bridge to vehicular traffic. The swing-span structure is also slow to open and close, sometimes stopping vehicular traffic on Route 6 for up to 20 minutes. In the early 1990's, the state considered replacing the aging bridge, but those plans were abandoned due to local opposition. Consequently, MassDOT rehabilitated the swing-span bridge in 1995 at a cost of over \$20 million.

The repair history for this particular bridge is as follows:

- 1903: Bridge construction completed
- 1931: First major overhaul
- 1961: Deck and deck framing of fixed spans and abutments replaced
- 1972: Western end of bridge replaced/Route18 ramp
- 1984: Major repair
- 1989: Major repair (closed 6 weeks)
- 1995: Major repair (closed for 11 months)

- 2012: Electrical repairs (closed for 3 weeks)
- 2014: Structural steel repairs (closed for 2 weeks)
- 2018: Structural, Substructure, and Mechanical Repairs (closed for 2 weeks)

In 2005, congress provided \$1,400,000 in earmarked funds to conduct a feasibility study, environmental impact studies and engineering design to relocate the New Bedford/Fairhaven Bridge. A study was completed in 2015 with recommendations for the Route 6 Bridge. The purpose of the New Bedford-Fairhaven Bridge Corridor Study was to evaluate multi-modal transportation and associated land use issues, develop potential solutions, and to recommend improvements along the Route 6 Corridor between County Street in New Bedford and Adams Street in the Town of Fairhaven. The focus of the study was to identify and analyze options to replace the swing span of the New Bedford-Fairhaven Bridge and comparing the impacts of these replacement build alternatives with a no build option. The issue of where the bridge should cross the Acushnet River has been studied before. A report was prepared in 1969 by Sverdrup and Parcel Associates under contract to the then, Mass. Department of Public Works. One of its recommendations was on the appropriate location of a harbor crossing. “The present location appears to be optimal. A bridge north of the existing one would either interfere with the North Terminal Renewal Area or would be too close to the I-195 crossing to be practical.”

The relocation option for this bridge is still part of New Bedford’s master plan. SRPEDD completed a Corridor Planning Study Report for the Bridge in 1977. A relocation of the bridge to the north of its present location was not one of the alternatives considered in the study. However, the study did conclude that “the existing swing-span drawbridge should be replaced because of its age and condition and because of its constraining influence on the development of the New Bedford-Fairhaven Harbor.” Rather than study a relocation of the bridge and Route 6, the 2007 Regional Transportation Plan recommended that the earmarked funds be used to study the replacement of the bridge on the same alignment. A double leaf bascule bridge would significantly increase the horizontal clearance in the channel, operate quicker than the swing-span bridge and could be higher than the existing span to increase the vertical clearance. Furthermore, this new configuration would nearly double the existing clearance to the channel which presently limits larger nautical vessels to access the North Terminal. MassDOT contracted with HDR, Inc. and began a feasibility study in 2014 to replace the swing span bridge with a new modern and more reliable structure. This effort developed a working group task force of Federal, State and Local elected officials as well as officials of various municipal departments from Fairhaven and New Bedford.

As of December 2014, the proposed solutions to replace this bridge include a single-bascule, double-bascule or a vertical lift bridge. The goal of a new facility is to maximize the channel as much as possible, but no less than 150 feet. This would match the current opening width of the

hurricane barrier in the southern portion of the harbor. The other factor is to maintain an unlimited vertical clearance at the bridge to allow all vessels to access the north harbor area. Preliminary estimates for the replacement of this bridge range from as low as \$50 million to as much as \$160 million, depending on the bridge type.

The bridge was last inspected on April 30, 2019 and the report of findings is currently in progress. The previous inspection performed on May 17, 2017 rates the deck, superstructure and substructure in good, fair and satisfactory condition, respectively. SRPEDD will continue to participate and support the improvements to this facility with this current transportation plan. Figure E-9 is a picture of the New Bedford/Fairhaven Bridge.

### **Berkley/Dighton Bridge**

This original bridge over the Taunton River was built in 1896. This swing span, structurally deficient bridge had a weight limit of 3 tons and only one lane for vehicular traffic with signal control on either end. The bridge had a vertical clearance of 7 feet in the closed position. The bridge was closed many times over the years due to its poor condition. Even with these restrictions the bridge carried an average of 6,700 vehicles per day as its approach routes are a primary connector between Route 138 and Route 24. The nearest river crossings are the Weir Bridge in Taunton, 4.5 miles to the north, and the Brightman Street Bridge, 6.5 miles to the south. MassDOT began planning the replacement of the bridge in 1984.



**Figure E-10: Berkley/Dighton Bridge**

In 1989 MassDOT hired a consultant to prepare the environmental documentation and 25% design. A major rehabilitation of the bridge was completed in 1995 to keep the bridge open to traffic until it could be replaced. The plans for this bridge replacement were stalled for many

years over questions of the environmental impacts of a new bridge, and contractual delays between MassDOT and the consultant. While the draft EIS was expected in early 2007, MassDOT investigated the possibility of replacing the bridge on the existing alignment due in part to a local citizen's group "Save Our Bridge", who desired to preserve residential properties and the environment on either side of the Taunton River.

In February 2007, MassDOT presented a new plan to replace the bridge on the existing alignment and eliminated the requirement for the EIS. Construction for a new bridge began in 2012. Before the existing bridge was removed, a temporary bridge was constructed immediately to the south of the old span. Once the one lane, stop light controlled temporary span was opened to traffic, the existing bridge was removed from the abutments. The new bridge follows the original alignment with 2 travel lanes in either direction and separate bicycle and pedestrian accommodations. The new facility opened to traffic in 2015. Removal of the temporary span was completed shortly after the completion of the new bridge (2015/2016). Figure E-10 is a picture of the old Berkley/Dighton Bridge. Figure E-11 is a picture of the new Berkley/Dighton Bridge which was completed in 2015.



**Figure E-11: Berkley/Dighton Bridge**

## **Charles M. Braga, Jr. Bridge**

As part of Interstate 195 and shown in Figure E-12 this high level fixed span bridge was opened in 1965 and named in honor of a Fall River Veteran, Charles M. Braga, Jr., who perished in the line of duty on the U.S.S. Pennsylvania during the attack on Pearl Harbor on December 7, 1941. The bridge crosses the Taunton River and provides a clearance of 135 feet over mean high water for the 400-foot-wide shipping channel located in the center of the river. While other river crossings have moveable bridges for nautical traffic, it was not desirable to have a similar facility on an interstate highway. The Braga Bridge is over 1 mile in length and carries over 80,000 vehicles per day. An important east/west link for southeastern Massachusetts, the Braga connects the city of Fall River to the town of Somerset. It is also an important crossing for commuters, commercial vehicles and vacationers traveling between Cape Cod and the Islands to Rhode Island and destinations further west.



**Figure E-12: Charles M. Braga Jr. Bridge**

The bridge was rehabilitated in 1989 with the replacement of the original concrete deck with a lighter concrete material and bituminous asphalt road surface and jersey barriers. In more recent years, MassDOT completed a \$9 million replacement of the bridge deck that included painting the bridge the color blue due to a citizen's action group that petitioned MassDOT for a new bridge color. However, despite these repairs, the Braga Bridge is still listed as structurally deficient.

As mentioned earlier in this chapter, a project was completed that replaced the interchange ramp system, known as the "Spaghetti Ramps", with numerous elevated connections to the nearby highway and local road network. As part of this project, bridge decking repairs to the

Braga Bridge were being implemented to preserve and protect this important river crossing. Figure E-12 is a picture of the Charles M. Braga Bridge.

## Municipal Bridge Program

MassDOT manages and funds rehabilitation and replacement of municipally-owned bridges, and as of 2019 has allocated \$56.2 million in general obligation bonds for municipal structures over the next five years.

MassDOT currently tracks the condition of its highway pavement, bridges, tunnels, and signage through inspections and FHWA reporting. Furthermore, MassDOT has significant records of the condition of rail track, right-of-way and bridges. From this data, MassDOT reported in 2016 that 444 of its roughly 5,200 highway bridges (9%), 2% of its lane-miles of Interstate pavement, and 13% of its non-Interstate pavement are in “poor” condition. It considers truck traffic when developing investments. Continued investment to improve the state-of-good repair of these assets – to inspect them, inventory them, and ensure that a minimal number of them are in “poor” condition – aligns with MassDOT’s first investment priority. While MassDOT places its first priority on reliability when making capital investments, it is always important to strive to do more and to do better.

## Completed Bridge Projects

Table E-3 illustrates the Funded Bridge Projects over the Past 10 years.

**Table E-3: Funded Bridge Projects over the Past 10 years**

Project Number	Description	Project Type	Project Status	Funding Source	Contract Price or Project Estimate (future Projects)
604571	FALL RIVER- FREETOWN- INTERCHANGE CONSTRUCTION ON ROUTE 24 (DESIGN-BUILD)	Highway Construction	Complete	American Recovery & Reinvestment Act	\$34,739,805.00
604642	BERKLEY- BRIDGE REPLACEMENT, B-08-003, PADEFORD STREET OVER STATE ROUTE 24 (DESIGN-BUILD)	Bridge Replacement	Complete	BRR OFF SYSTEM	\$5,657,460.00

Project Number	Description	Project Type	Project Status	Funding Source	Contract Price or Project Estimate (future Projects)
54400	ATTLEBORO – BRIDGE REPLACEMENT A-16-025, OLIVE STREET OVER MBTA/AMTRAK	Bridge Replacement	Complete	Non Federal Aid	\$7,134,159.00
601447	FALL RIVER- SOMERSET- BRIDGE PAINTING, F-02-058=S-16-008, ROUTE I-195 OVER THE TAUNTON RIVER (BRAGA BRIDGE - PHASE I)	Bridge Rehabilitation	Complete	BRR OFF SYSTEM	\$13,265,875.00
603252	TAUNTON- SUPERSTRUCTURE REPLACEMENT, T-01-051, HOLLOWAY STREET OVER ROUTE 140 (NB) INCLUDES RAILING & CURB RETROFITTING ON T-01-057	Bridge Replacement	Complete	Non Federal Aid	\$ 2,294,819.00
603576	TAUNTON- BRIDGE REPLACEMENT, T-01-021, BAY STREET OVER THE MILL RIVER & REPLACEMENT OF DAM MA00923	Bridge Replacement	Complete	Non Federal Aid	\$ 4,308,286.00
603595	ATTLEBORO- BRIDGE PRESERVATION, A-16-042, I-95 (NB & SB) OVER WASHINGTON ST (US 1); BR# A-16-043, I-95 NB & SB OVER NEWPORT AVE (RTE 1A); BR# A-16-061 I-295 NB & SB OVER I-95.	Bridge Preservation	Complete	Non Federal Aid	\$ 603,595.00
603983	ATTLEBORO- BRIDGE REHABILITATION, A-16-018, NORTH MAIN STREET OVER BUNGAY RIVER	Bridge Rehabilitation	Complete	Non Federal Aid	\$ 1,576,593.00

Project Number	Description	Project Type	Project Status	Funding Source	Contract Price or Project Estimate (future Projects)
604329	FAIRHAVEN- NEW BEDFORD-BRIDGE PRESERVATION, F-01-002=N-06-001 (EAST & WEST BRIDGES) ROUTE 6 OVER ACUSHNET RIVER & N-06-025, HATHAWAY ROAD OVER ROUTE I-195	Bridge Preservation	Complete	Non Federal Aid	\$17,661,712.00
604703	FALL RIVER- BRIDGE BETTERMENT, F-02-041, HIGHLAND AVENUE OVER ROUTE 24 (SB)	Bridge Betterment	Complete	Non Federal Aid	\$1,741,965.00
604704	MIDDLEBOROUGH- RAYNHAM- BRIDGE BETTERMENT, M-18-041=R-02-017, I-495 (NB) OVER THE TAUNTON RIVER	Bridge Betterment	Complete	Non Federal Aid	\$ 1,997,799.00
605223	FALL RIVER- INTERCHANGE IMPROVEMENTS AT ROUTE I-195/ROUTE 79/ROUTE 138 INCLUDING BRAGA BRIDGE PHASE 2 CLEANING/PAINTING AND STRUCTURAL REPAIRS	Bridge Repairs	Complete	NHPP-ON-Systems	\$127,764,100.00
605327	RAYNHAM- TAUNTON- BRIDGE REPLACEMENT, R-02-012=T-01-049 (3MR), SR 24 OVER THE TAUNTON RIVER	Bridge Replacement	Complete	Non Federal Aid	\$14,243,274.00
605343	SWANSEA- SUPERSTRUCTURE REPLACEMENT, S-35-018, I-195 (EB/WB) OVER THE COLE RIVER	Superstructure Replacement	Complete	Non Federal Aid	\$10,501,275.00
605344	TAUNTON- BRIDGE REPLACEMENT, T-01-015,	Bridge Replacement	Complete	Non Federal Aid	\$ 4,127,079.00

Project Number	Description	Project Type	Project Status	Funding Source	Contract Price or Project Estimate (future Projects)
	WASHINGTON STREET (SR 140) OVER THE MILL RIVER				
605493	DISTRICT 5- INTERSTATE SUBSTRUCTURE REPAIRS AT VARIOUS LOCATIONS (ABP-PR29)	Substructure Repairs	Complete	Non Federal Aid	\$763,490.00
605494	DISTRICT 5- INTERSTATE DECK REPAIRS AT VARIOUS LOCATIONS (ABP-PR28)	Interstate Deck Repairs	Complete	Non Federal Aid	\$664,177.00
605495	DISTRICT 5- INTERSTATE SUBSTRUCTURE REPAIRS (ABP-PR14)	Interstate Substructure Repairs	Complete	Non Federal Aid	\$1,237,641.00
605496	DISTRICT 5- INTERSTATE SUBSTRUCTURE REPAIRS AT VARIOUS LOCATIONS (ABP-PR29)	Interstate Substructure Repairs	Complete	Non Federal Aid	\$1,466,780.00
605795	FALL RIVER- SCHEDULED & EMERGENCY DECK & STEEL REPAIRS ON ROUTE 79 VIADUCT & I-195 RAMPS	Bridge Repairs	Complete	Non Federal Aid	\$5,359,355.00
606139	FAIRHAVEN- BRIDGE SUPERSTRUCTURE REPLACEMENT, F-01-014, I-195 OVER RIVER AVENUE	Bridge Superstructure Replacement	Complete	Non Federal Aid	\$4,186,550.00
				<b>Total:</b>	<b>\$271,741,289.00</b>

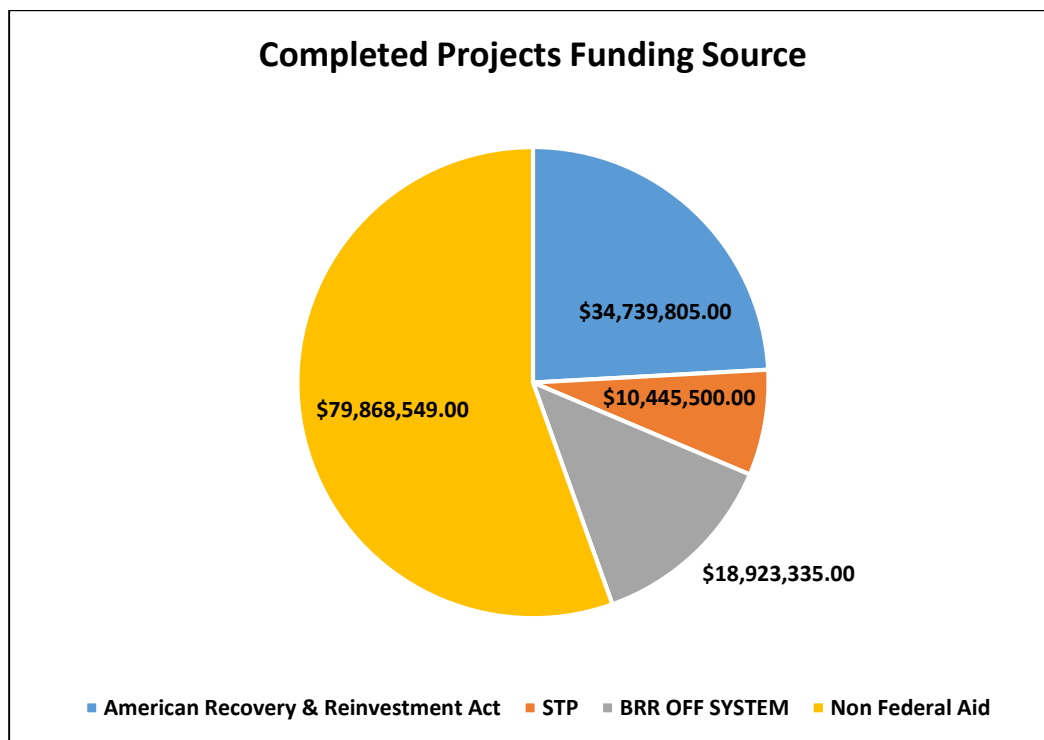
## Funding

The Federal Highway Administration (FHWA) provides funding for the replacement or rehabilitation of all bridges, regardless of an adjacent road's eligibility for federal aid. FHWA divides the funds into the following categories.

- **STP-NHS-Other** – Federal Funding Categories for the Surface Transportation Program, National Highway System and other Federal Funds;
- **On-Systems** – (BRON) bridges on the federal aid network;
- **Off-Systems** – (BROFF) bridges off the federal aid network; and,
- **BR Replacement** – Applied to on or off systems bridges at the discretion of MassDOT.

The Federal share is 80% of the total cost of the project with the State funding the remaining 20%. MassDOT also funds bridge replacement and the rehabilitation projects through the Non-Federal Aid (NFA) category as well as the aforementioned Accelerated Bridge Program (ABP). Figures E-13 and E-14 is a graphical representation of Project Funding Sources.

Total funding for Bridges completed or currently under construction in the SRPEDD region:



**Figure E-13: Completed Projects Funding Source**

Total funding for Bridges funded on the 2020-2024 TIP:

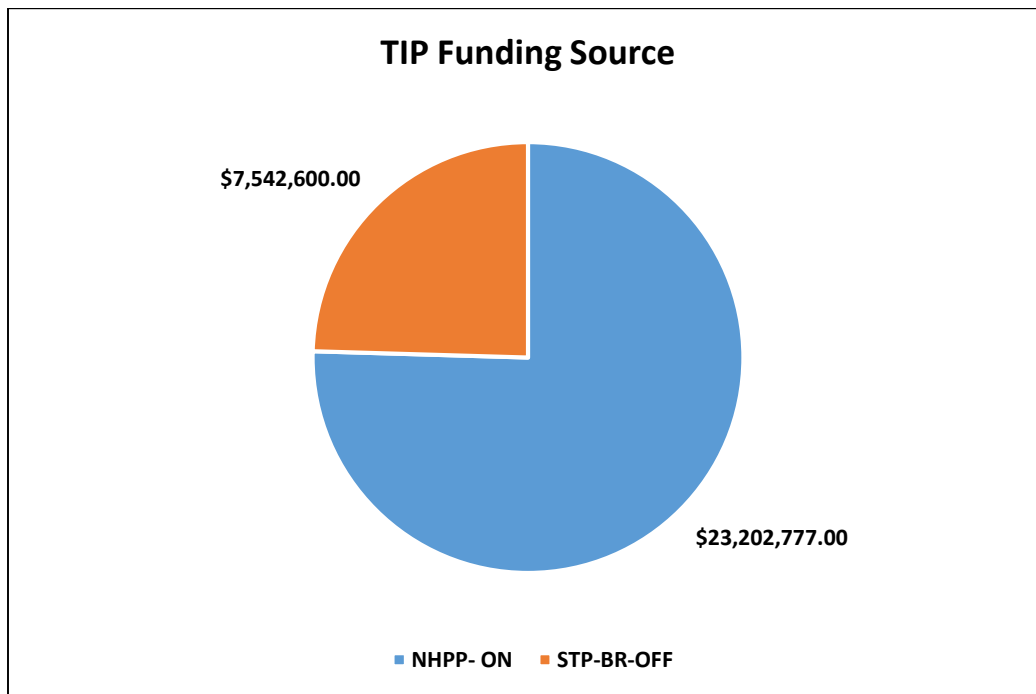


Figure E-14: TIP Bridge Funding Sources

## Recommendations

In difficult economic times, it is commendable that the Massachusetts Department of Transportation managed to design and reconstruct numerous bridges deemed structurally deficient within the SMMPO region and throughout the Commonwealth. Although it took time to complete many of these projects, the program significantly reduced the number of structurally deficient bridges. The implementation of the Accelerated Bridge Program insured safe travel throughout Southeastern Massachusetts and the entire Commonwealth. This measure also improves mobility and safety for freight movement with the removal of weight restrictions on bridges throughout the region. It also removes potential problems in the event of regional emergency.

Unfortunately, the Accelerated Bridge Program did not address all the problems with structurally deficient and functionally obsolete bridges in the future. As the bridges are repaired, additional bridges will continue to deteriorate, falling into the category of structural deficiency. Therefore, continued financial support is necessary to maintain and prevent other bridges from falling into disrepair.

The SMMPO recommends the following:

- Continued support of the replacement of the New Bedford/Fairhaven Bridge with the preferred alternative resulting from the feasibility study and working group;
- Continue repairs to all structurally deficient bridges throughout the SMMPO region. Priority should be given to the bridges that are part of major highway corridors, freight routes, and evacuation routes;
- Evaluate and improve the bridges with a low sufficiency rating on major highway corridors and evacuation routes that may inhibit normal daily traffic flow or during regional emergencies.

MassDOT should consider the implementation of a bridge maintenance program where annual maintenance is completed for all bridges in the commonwealth to prevent them from deteriorating into a state of structural deficiency. The implementation of such a program would require MassDOT and its district offices to develop a capital improvement plan to repair and maintain all bridges in good to excellent condition. Similar to the concepts of Pavement Management, maintaining these structures in a state of good condition will be less expensive over time than the option of waiting for these structures to fail when more expensive repairs are necessary.