



*Bay City, Michigan
Metropolitan Area*

BCATS 2045 METROPOLITAN TRANSPORTATION PLAN Executive Summary



FINAL Report

The Bay City Area Transportation Study

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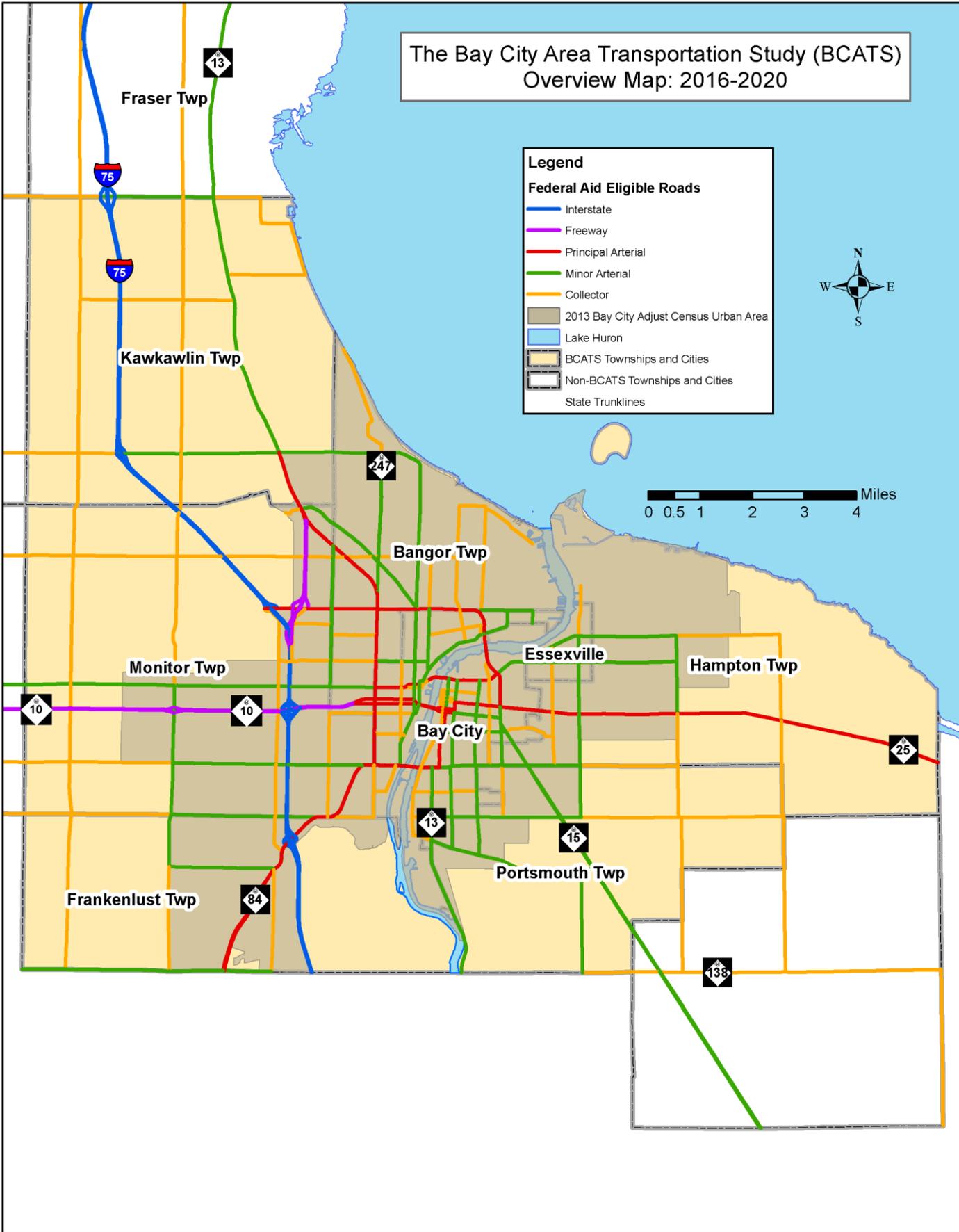
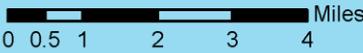
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The Bay City Area Transportation Study (BCATS) Overview Map: 2016-2020

Legend

Federal Aid Eligible Roads

- Interstate
- Freeway
- Principal Arterial
- Minor Arterial
- Collector
- 2013 Bay City Adjust Census Urban Area
- Lake Huron
- BCATS Townships and Cities
- Non-BCATS Townships and Cities
- State Trunklines





BCATS and Transportation Planning

The Bay City Area Transportation Study (BCATS) is the principal public agency, as per Section 134 (a), conducting regional transportation studies for the Bay City Urbanized Area. BCATS, through an agreement with the Bay County Board of Commissioners, provides management and policy functions for the transportation planning programs as required by the **Fixing America's Surface Transportation Act (FAST Act)**. BCATS provides transportation planning services on behalf of the metropolitan planning organization (MPO) for the cities of Bay City and Essexville and the townships of Bangor, Monitor, Hampton, Portsmouth, Kawkawlin, and Frankenlust. The BCATS is governed by a policy committee that includes various elected and appointed officials from the transportation planning area plus other members from the Michigan Department of Transportation and the U.S. Department of Transportation.

One major function of BCATS under federal law is to produce a transportation plan for the area. The transportation plan is used as a basis to guide the decision of where federal transportation funds should be spent. The transportation plan identifies the area's transportation needs through the year 2045 as well as projects, both funded and unfunded and policies to meet those needs. The plan shall include both long-term and short-term strategies/actions.

The goal of the transportation planning process is to improve the entire regional transportation system by emphasizing the preservation of the existing system. Projects and strategies for the transportation system will look to improve the accessibility and mobility for people and goods, creating/enhancing connectivity between modes of transportation, increase the safety and security along the system for all users, promote an efficient manner of management and operation, encourage energy conservation, support economic vitality of the region and provide for consistency between transportation projects and the growth and development patterns.

There must be adequate opportunity for public officials (including elected officials) and citizen involvement in the development of the transportation plan before it is approved by BCATS. Such procedures shall include opportunities for interested parties to be involved in the early stages of the plan development/update process. The procedures shall include publication of the proposed plan or other methods to make it readily available for public review and comment. The procedures also shall include publication of the approved plan or other methods to make it readily available for information purposes.

FAST Act Planning Factors and Performance Measures

The development of goals and objectives for any planning effort reflect the values and principles of the people of an area. They are also a means of measuring the relative success of implementing the proposed plan. When applying these goals and objectives to any effort, the decision makers will need to make tradeoffs between different goals and objectives.

The following goals and objectives have been formulated by an integration of previous BCATS goals



and objectives along with the FAST Act nine planning factors that must be considered as part of the planning process for BCATS. Each goal has multiple Performance Measures as a way of determining whether implementation of the Metropolitan Transportation Plan (MTP) will bring BCATS closer to the adopted goals and objectives.

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase the accessibility and mobility of both people and freight.
5. Protect and enhance the environment, promote energy conservation, improve quality of life and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.
10. Enhance travel and tourism.

Travel Demand Modeling

Because of the interaction of traffic between Bay City, Saginaw and Midland it was decided that the travel patterns of the area could be better modeled if a regional model was built, the Great Lakes Bay Region (GLBR) Model. The result of the modeling effort is to provide an important decision making tool for the MPO Metropolitan Transportation Plan, identifying locations of road capacity deficiencies. The modeling process is a systems-level effort. Although individual segments of a road network can be analyzed, the results are intended for determination of system-wide impacts. At the systems level, impacts are assessed on a broader scale than the project level.

Although the GLBR Model did identify several capacity deficiencies in 2013 and expected for 2045, the major priority is roadway repair and preservation. Of the 34 road projects identified in the plan, 19 are for repair and preservation only. The three capacity projects are an addition of a center turn lane on an existing two-lane road.

Within BCATS, as of September 2016, approximate 14% of federal aid eligible roads are in Good to Excellent condition, 37% in Fair condition and 49% are in Poor condition.

BCATS Federal Air Roads Surface Condition: 9/2016	Road Miles	Percent
Excellent/Good	43.26	14%
Fair	111.09	37%
Poor	150.05	49%
Total	304.30	100%

If the goal is to upgrade the pavement condition of these



roadways so that 75% are rated good or excellent by 2027, then funding levels for all agencies would need to be at least double what is currently being spent annually on capital improvement to reach that goal.

Also, included in the 2045 MTP are transit projects for Bay Metro Transit Authority (BMTA). These projects are mainly vehicle replacement and facility improvement, but also look at the regional connections with Saginaw and Midland transit operators.

Intermodal Inventory

The Bay City Urban Area is currently served by many forms of transportation (e.g. vehicle, bus, train, shipping, etc.). This provides accessibility which extends to connect both inside and outside the Metropolitan Area Boundary. Although the street and highway system is a very high priority with transportation planners, so are the other modes of transportation in the Bay City area. Including the 10 fixed-route public transit system, demand response service, two airports, three major rail operators with 69 miles of tracks, nine commercial water docks, more than 20 miles of non-motorized trails, over 200 miles of sidewalks and pedestrian walk ways.

Financial Analysis

The BCATS 2045 Metropolitan Transportation Plan is a composition of the significant transportation system improvements scheduled for implementation in the urbanized area during the next 28 year time frame and must be financially constrained. The table below shows the estimates of future revenue for the BCATS road agencies, excluding MDOT, for Act 51 funds dedicated for urban areas and the Surface Transportation Funds received by BCATS for local agency transportation projects.

Local Agencies Revenue Estimates

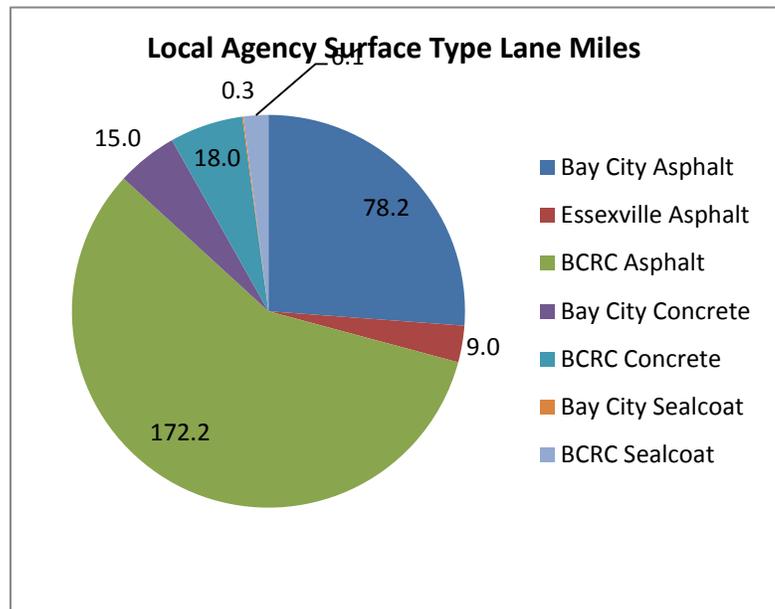
Estimates as of 12/20/2016	BCATS STUL Funds (Federal \$)	BCRC Urban Area (Bay City) Act 51 - Primary	Bay City Act 51 - Major	Essexville Act 51 - Major	Total \$ for Local Federal Aid Eligible Roads	Total Funds for Capital Improvement Projects*
2016	\$985,065	\$840,989	\$1,902,4	\$159,805	\$3,888,269	\$2,259,109
Lane miles	298	196	93	9	298	298
2017-2020	\$4,141,253	\$3,686,850	\$7,724,5	\$648,874	\$16,201,522	\$8,437,511
2021-2025	\$5,695,176	\$5,429,811	\$10,585,	\$889,172	\$22,599,332	\$11,706,567
2026-2030	\$6,375,943	\$6,331,749	\$12,032,	\$1,010,75	\$25,750,985	\$13,512,370
2031-2035	\$7,178,674	\$7,094,174	\$13,693,	\$1,150,28	\$29,116,724	\$15,584,777
2036-2040	\$8,082,468	\$7,948,406	\$15,583,	\$1,309,07	\$32,923,896	\$17,943,273
2041-2045	\$9,100,050	\$8,905,498	\$17,735,	\$1,489,79	\$37,230,595	\$20,627,351
Total	\$40,573,56	\$39,396,488	\$77,355,	\$6,497,94	\$163,823,054	\$87,811,850
<i>*Includes 30% of total Act 51 funds less \$1,000,000 for two Bay City Bascule Bridges</i>						
<i>Estimates are based on 2016 and increased annually for first 10 years by 2%, and remaining years by 2.4%</i>						



Of the \$163 million, nearly 70% is used for routine maintenance and operations which includes snow and ice removal, administration, mowing, road patching, and equipment. The amount that is left available for capital improvement from 2017 to 2045 totals \$87 million, averaging \$2.8 million per year between the Bay County Road Commission (BCRC), Bay City and Essexville to maintain 298 lane miles of roads. Although the local agency program is fiscally constrained with the cost of the listed projects being less than the estimated revenue for the local agencies, numerous preservation and maintenance transportation projects are not currently identified by the BCATS implementing agencies. These agencies will fully utilize any and all existing dollars in attempts to maintain the existing transportation system. It is reasonably expected for local agencies to need more than \$180 million for capital projects over the life of this plan to adequately maintain the existing federal aid road system based on the existing costs for road repairs and expected levels of inflation.

To determine the amount of funding needed to maintain the existing transportation system, BCATS has utilized the asset management software; along with road treatment cost estimates and existing surface conditions on the Bay City Federal Aid Asphalt Roads (approximately 26% of the BCATS local agencies roads) and ran several scenarios.

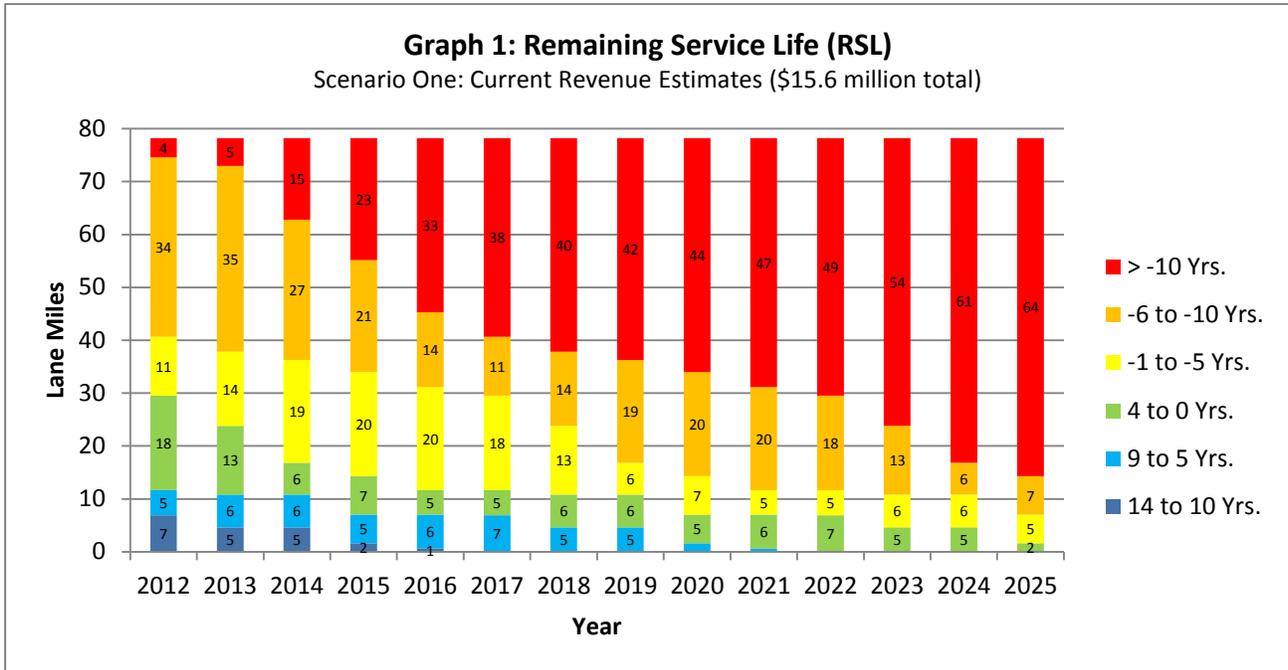
Scenario One uses the existing revenues estimates. Scenario Two identifies a cost-effective route to improve the transportation system by 2025. This scenario more than doubles the year expenditures on the Bay City asphalt road system. Both scenarios utilize the same “mix of fixes” approach to road treatment by providing the right fix at the right time to maximize the funds with the improvement to the Remaining Service Life (RSL) of the road.



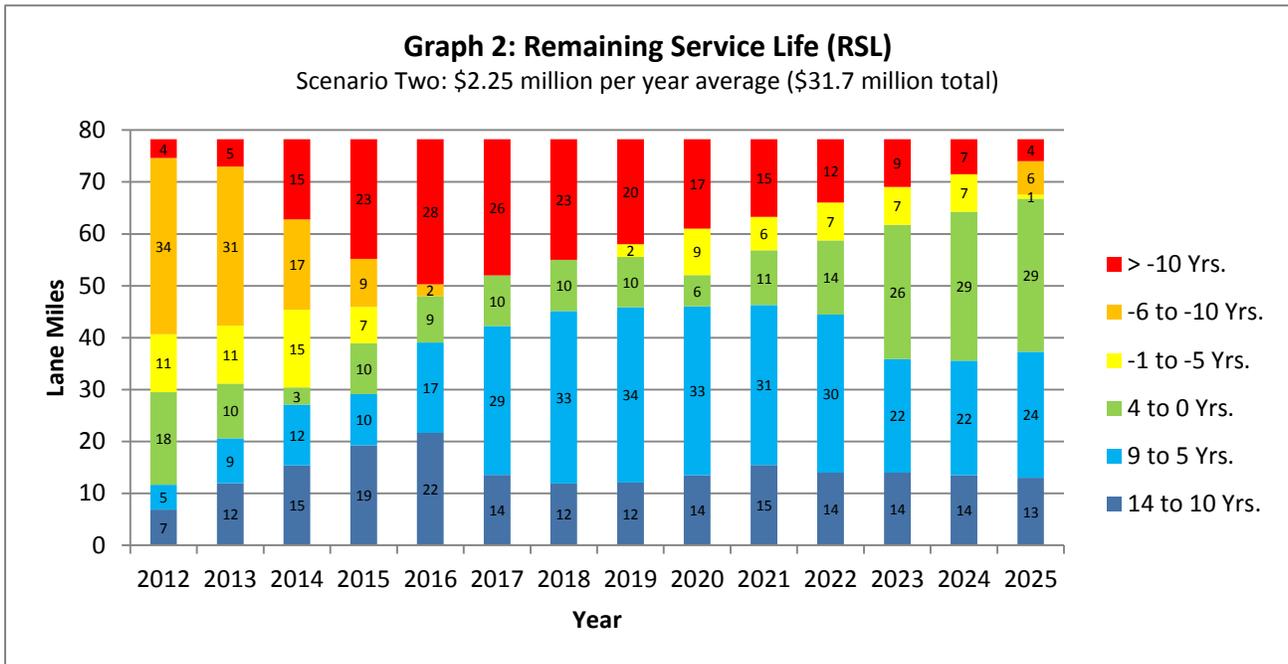
[Graph 1](#) on the following page shows the result of the annual RSL of the Bay City asphalt Federal Aid roads if the City utilizes their entire estimated Act 51 revenue only on the asphalt roads plus half of BCATS surface transportation funds. By 2025, the condition of the of those roads will continue to deteriorate to the point where 82% of those lane miles will be at least 10 years past their remaining service life (RSL) and only 2% will have a positive RSL. This would also put most, if not all, the 15.3 lane miles of concrete and sealcoat roads in poor condition as they would be neglected during this time frame.



Graph 2, also on the next page, highlights the scenario of Bay City spending approximately \$2.25 million per year on asphalt roads. The result would produce only 15% of lane miles with a negative RSL all while costing \$31.7 million through 2025. However, between the years of 2015 and 2019, there are more than 20 lane miles (25% of asphalt roads) with an RSL at negative 10 or older, much higher than the 5% it is in 2012.

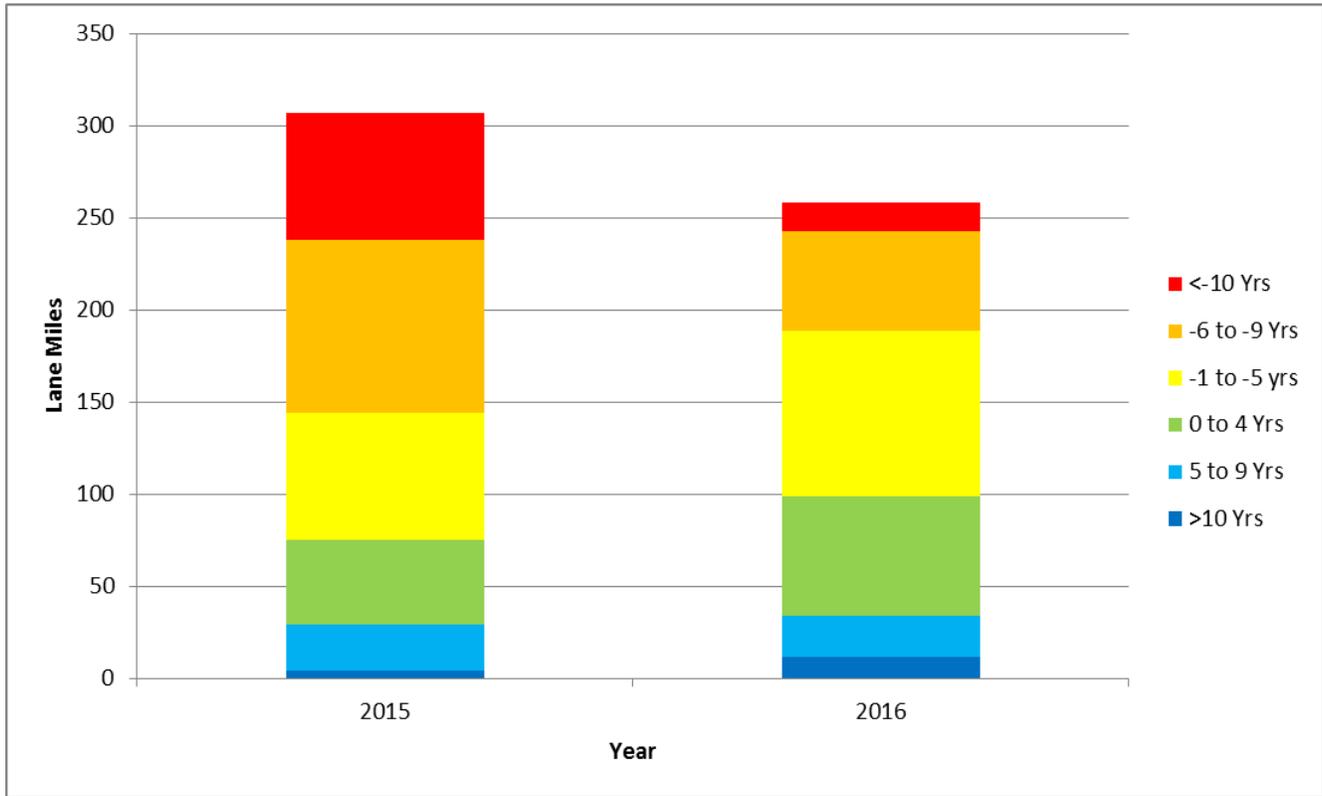


Graph 1: Remaining service life (15.6 million)



Graph 2: Remaining service life (31.7 million)

Graph 3, also on the next page, highlights the actual 2015 and 2016 RSL and the spending of 2.8 million per year. The Graph 2 scenario as predicted by Graph 2 is steadily increasing the RSL of roads. With new federal funding in place over the next 5 to 6 years, following the trend of Graph 2, BCATS area roads should see a steady increase in RSL. BCATS will continuously follow the RSL trends each year.



Graph 3: Actual RSL Data for 2015 and 2016

Conclusion of Bay City Asphalt Road Scenario

Bay City asphalt roads are only one slice of the transportation pie with BCATS, with Scenario Two costing \$31.7 million over 13 years, the remaining 14 years of this plan can be expected to cost around \$60 million to maintain the same road system over a similar time span while accounting for a 3.3% inflation rate.

The cost for maintaining this 26% of the BCATS local agencies Federal Aid Road System over the life of this plan totals \$91 million. If the assumption is made that this accounts for half of the cost to the roads system, as repairs in the city tend to run higher than repairs in the townships due to more utilities, higher population and employment densities, and traffic issues, then the total funds needed to just maintain the system in good repair would be \$182 million.

The total estimated revenues for Bay City roads plus half of the BCATS federal funds (the other half would be available for the BCRC and Essexville) is not enough to adequately maintain the Bay City asphalt roads. This shortfall applies similarly to the remainder of the system which will continue to deteriorate faster than repairs can be made without a substantial increase in funding.