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Bridge and Pavement Condition Management System

2017-2018 UPWP

Section 1: Pavement

BRIDGE & PAVEMENT CONDITION MANAGEMENT SYSTEM

Section I: Pavement

Syracuse Metropolitan Planning Area

June 2018

2017-2018 Unified Planning Work Program

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Introduction

The purpose of the Pavement section of the Bridge and Pavement Condition Management System report is to serve as a comprehensive clearinghouse for pavement data for federal-aid eligible (FAE) roads in the SMTC's Metropolitan Planning Area (MPA). Infrastructure improvements such as bridge construction and pavement milling routinely make up a significant portion of Transportation Improvement Program (TIP) funds spent in the MPA. Through the pavement report, SMTC member agencies are able to track investments on federal-aid eligible roads across the system.

In years past, the SMTC has released the Bridge and Pavement Condition Management System report as a single volume, with one chapter addressing bridges and another chapter addressing pavement. This year, the SMTC will be releasing the report in two parts.

This report contains information on federal-aid eligible roads in the SMTC MPA, which includes all of Onondaga County and portions of Madison and Oswego Counties. Roads are considered federal-aid eligible if they have a functional classification of Principal Arterial, Minor Arterial, Major Collector, or Urban Minor Collector. The pavement condition rating data reported on throughout this document is based on linear centerline miles of roads, not lane miles of roads. A linear centerline mile of road is a continuous line of pavement along the center of the length of pavement, whereas a lane mile is the length of each lane in a given section of pavement.

There are approximately 980 centerline miles of federal-aid eligible road in the MPA, excluding ramps. These roads are owned by many different jurisdictions and municipalities. These miles are broken down into those owned by the New York State Department of Transportation (NYSDOT), the New York State Thruway Authority (NYSTA), the Onondaga County

Department of Transportation (OCDOT), Madison County, Oswego County, and the City of Syracuse. Additionally, there are some federal-aid eligible roads that are not owned by one of the entities listed above but by some other municipality, such as a town or village. For purposes of this report, these roads are grouped into a "Local" category.

In the interest of consistency with road ratings, SMTC staff began rating federal-aid eligible roads owned by Onondaga County and the City of Syracuse in 2015. SMTC staff was trained in the NYSDOT system, so that road ratings across our MPA could be presented on a single, uniform scale. NYSDOT staff is still responsible for rating the Interstate System, the US Highway System, and the State Touring Route System, regardless of ownership. There are some examples of State Touring Routes owned by other entities, such as portions of State Route 173 owned by Onondaga County. NYSDOT staff also rates all federal-aid eligible roads in Madison and Oswego Counties, as well as Local FAE Roads in Onondaga County. At the time of this report, State Touring Route, US Route, and Interstate ratings are available for 2016; all other ratings were collected in the summer of 2017.

The State Department of Transportation uses a moving-vehicle windshield survey to assess pavement condition. The rating procedure involves the use of a carefully developed scale, ranging from "1" (very poor) to "10" (excellent condition), based on the frequency and severity of pavement distress. This procedure is designed to permit rapid estimates of overall condition. SMTC staff have been trained in this procedure, and are retrained on a yearly basis. Drawing from the NYSDOT standard, this report breaks the 1-10 rating into four categories: Excellent (9-10), Good (7-8), Fair (6), and Poor (1-5). This scale is shown in Figure 1 below.

Figure 1: The NYSDOT Rating Scale

Rating	9-10 Excellent	7-8 Good	6 Fair	1-5 Poor
Condition Description	No or slight pavement distress.	Minor to moderate distress occurring infrequently to occasionally.	Moderate to severe distress occurring occasionally to frequently.	Severe or very severe distress occurring frequently. Travel may be impaired.

Source: NYSDOT Pavement Rating Manual. There is also a rating of "U," for "Under Construction." These roads are not rated due to ongoing work.

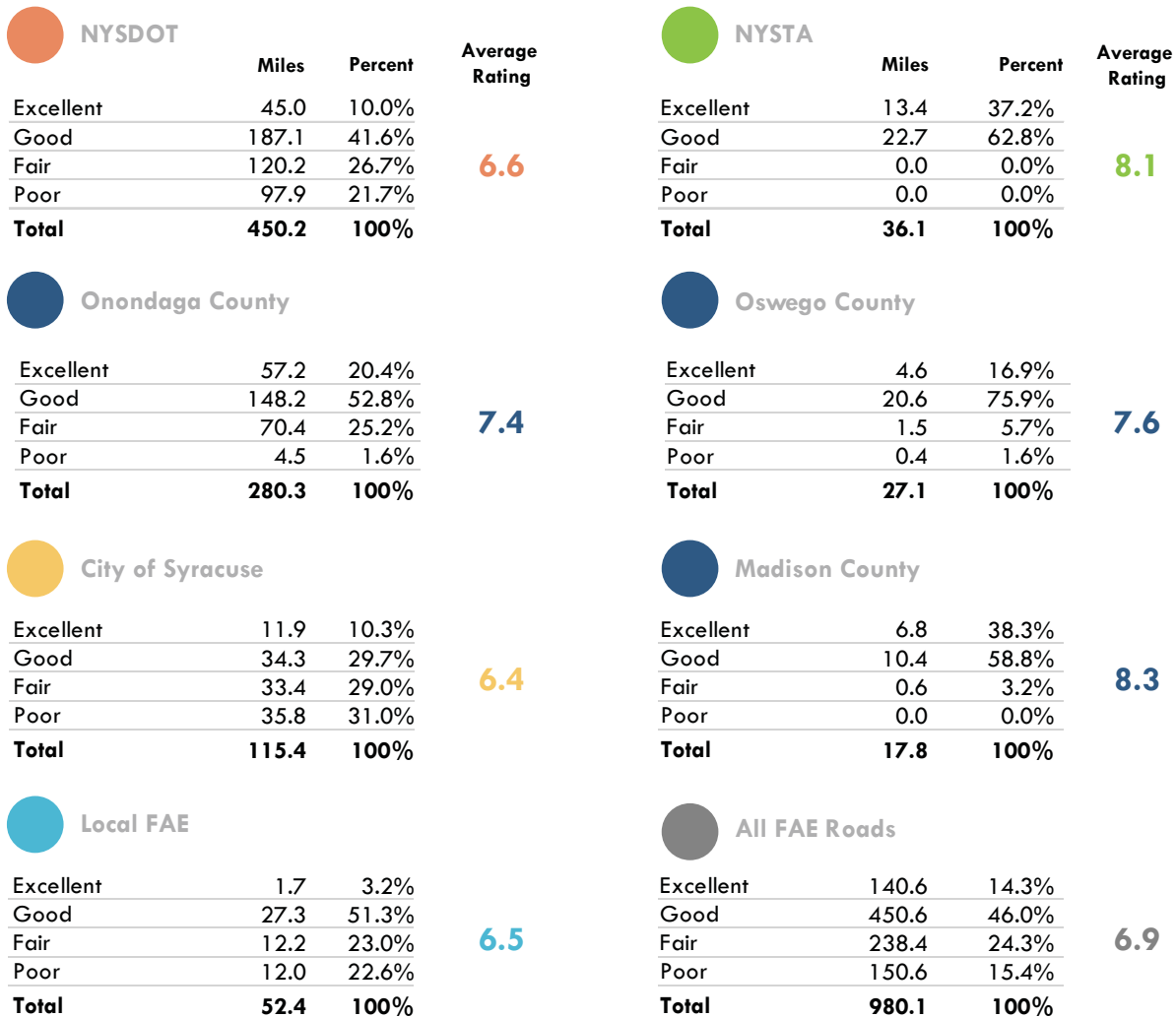
Bridge and Pavement Condition Management System

Figure 2 below illustrates pavement ratings by category and mileage for road owners in the MPA, whereas Figure 3 illustrates the same but in chart form.

As noted in the figures, the average pavement rating across the MPA for this cycle is 6.9, or Fair. NYSDOT

and OCDOT have the highest mileage of rated roads. The category with the largest percentage of rated roads is “Good,” with 46% of rated mileage receiving this rating. Approximately, 14% are considered Excellent, 24% Fair, and 15% Poor.

Figure 2: Pavement Ratings for Federal Aid-Eligible Roads



A note on funding...

Transportation funding is distributed to capital projects in the SMTTC's MPA through the Transportation Improvement Program (TIP). The TIP identifies the timing and funding of all transportation projects scheduled for implementation over a multi-year period. Bridge and Pavement projects consume the largest portion of available TIP funds; 80% of the TIP is programmed for either bridge or highway projects.

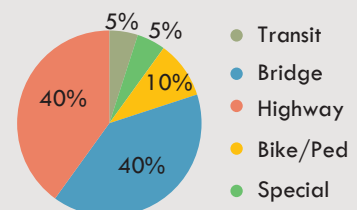
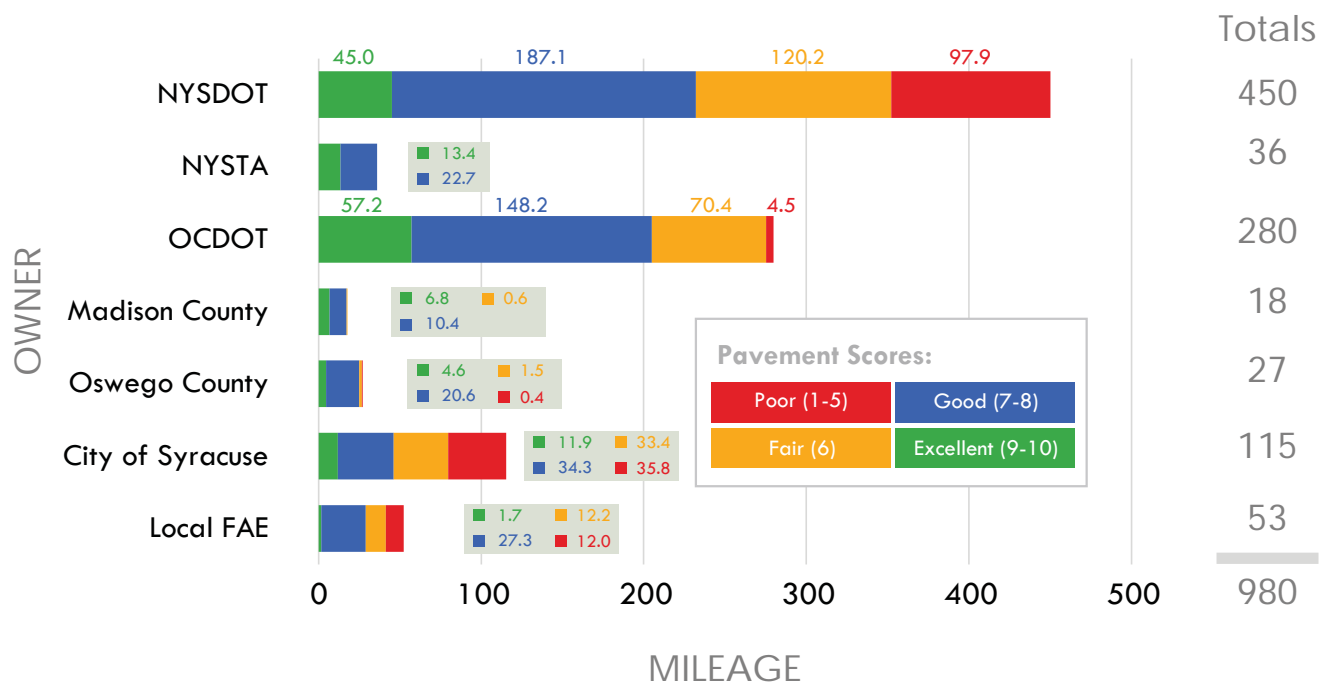


Figure 3: Pavement Ratings for Federal Aid-Eligible Roads by Owner, Rating Category, and Mileage



Functional Classification

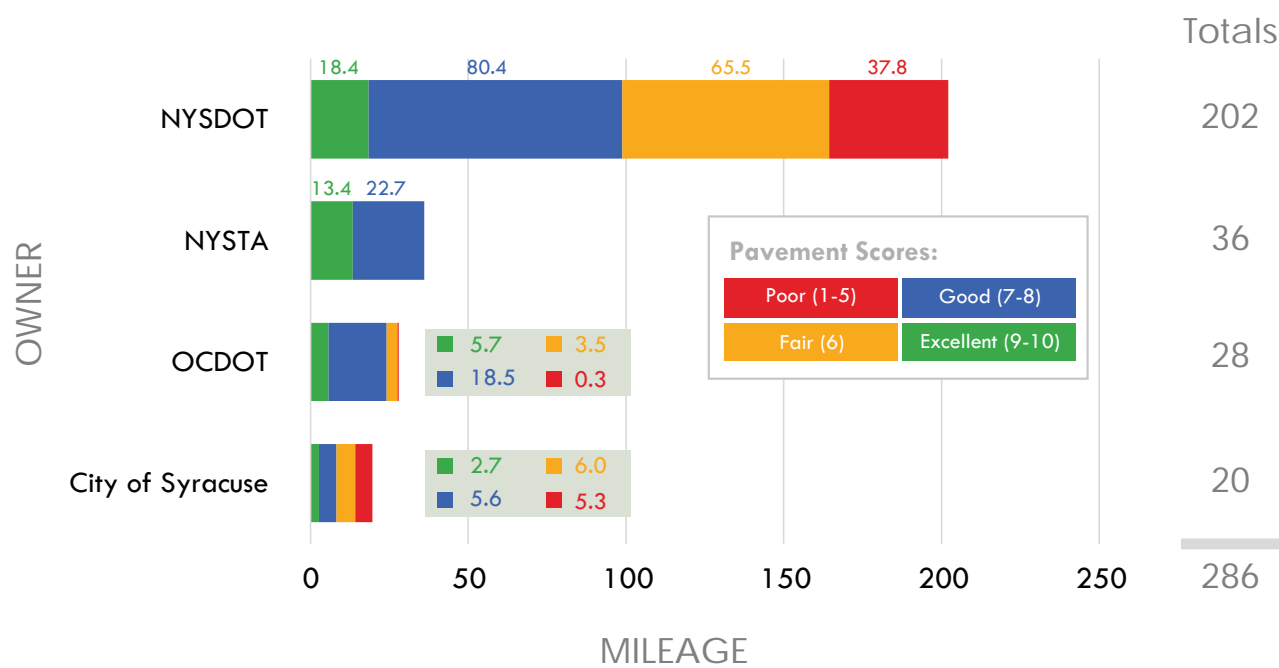
As mentioned previously, federal-aid eligibility is based on functional classification. There are ten functional classification codes used to describe the road network. Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Arterials generally have higher design standards than other roads, often with multiple lanes and some degree of access control. Collectors provide a lower degree of mobility than arterials, and are designed for travel at lower speeds and for shorter distances. Collectors are typically two-lane roads that collect and distribute traffic from the arterial system. Roads not falling into one of these categories are classified as “Local.” Note that this “Local” is different than the way “Local” is used in terms of Road Ownership in this report, i.e. federal-aid eligible roads not owned by one of the major entities. Additionally, roads are also classified as “Urban” or “Rural,” largely based on urban area boundaries from the US Census. The above table reviews the functional classification system, with designations for classifications that are considered federal-aid eligible.

Urban Classifications	Rural Classifications
Urban Principal Arterial (interstates, other expressways and other principal arterials)	Rural Principal Arterial (interstates, other expressways and other principal arterials)
Urban Minor Arterial	Rural Minor Arterial
Urban Major Collector Urban Minor Collector	Rural Major Collector Rural Minor Collector
Urban Local	Rural Local

Functional Classifications in *Italics* are not federal-aid eligible, and therefore not included in this report.

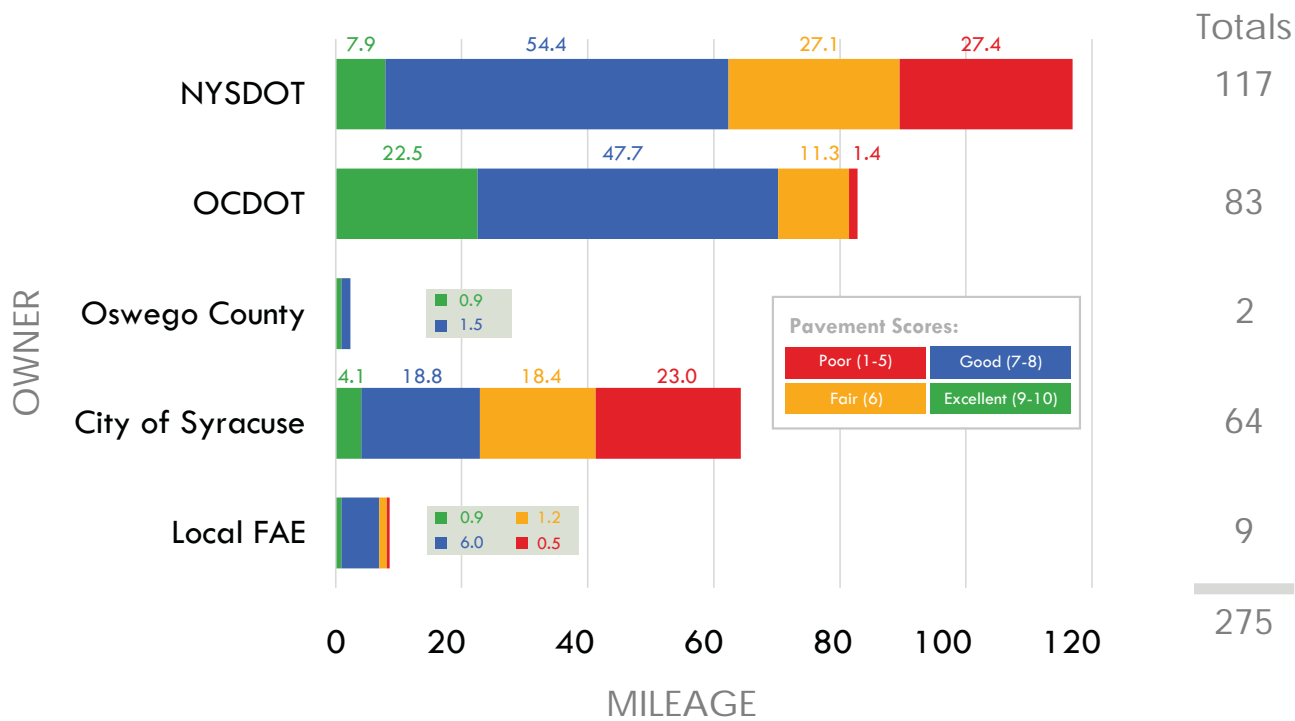
Figures 4, 5, and 6 illustrate the rating mileage by owner of Principal Arterials, Minor Arterials, and Collectors, respectively. In the figures, road owners who do not own roads in a given category are omitted from the graphs. Of the total FAE mileage in the MPA, Principal Arterials make up approximately 29%, Minor Arterials 28%, and Collectors 42%.

Figure 4: Pavement Ratings for Principal Arterials, by Mileage, Rating Category, and Owner



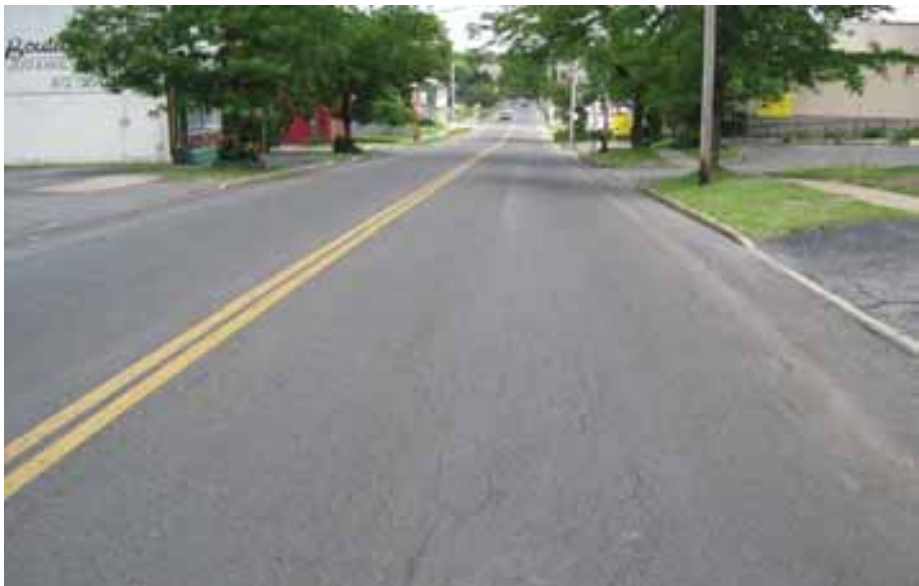
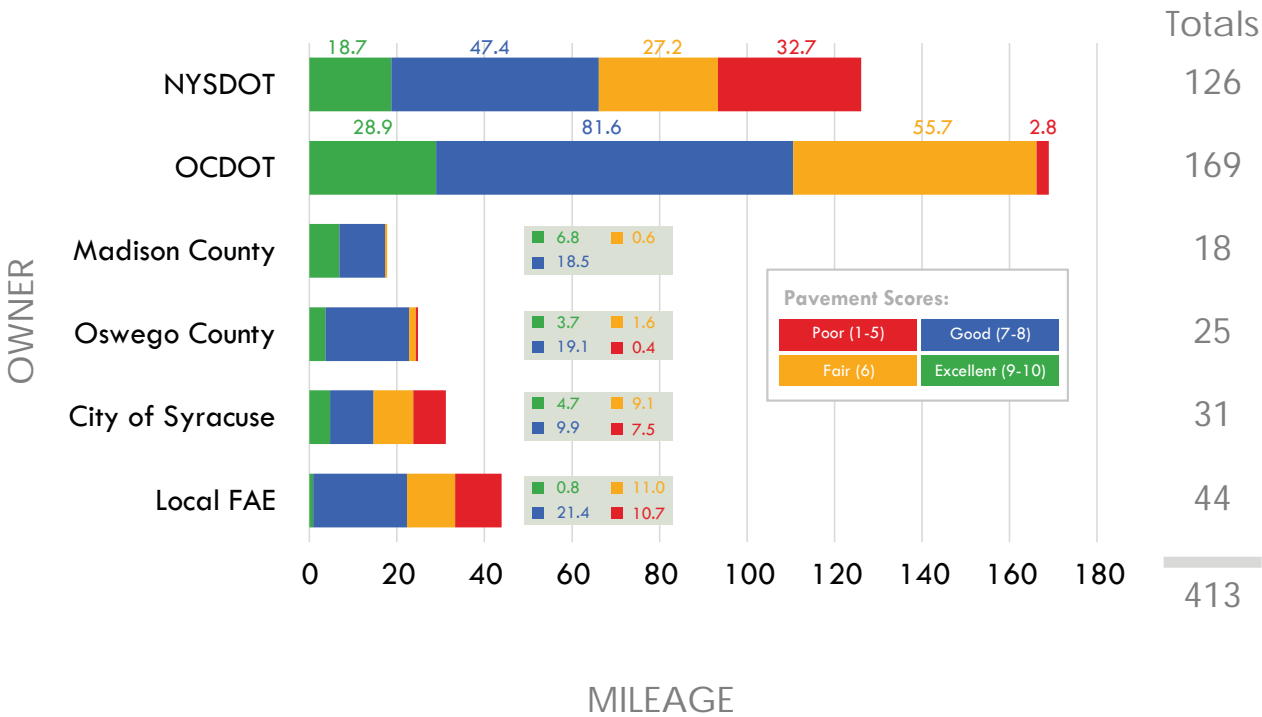
Thompson Road in DeWitt - Principal Arterial

Figure 5: Pavement Ratings for Minor Arterials, by Mileage, Rating Category, and Owner



Kinne Street in DeWitt - Minor Arterial

Figure 6: Pavement Ratings for Collectors, by Mileage, Rating Category, and Owner



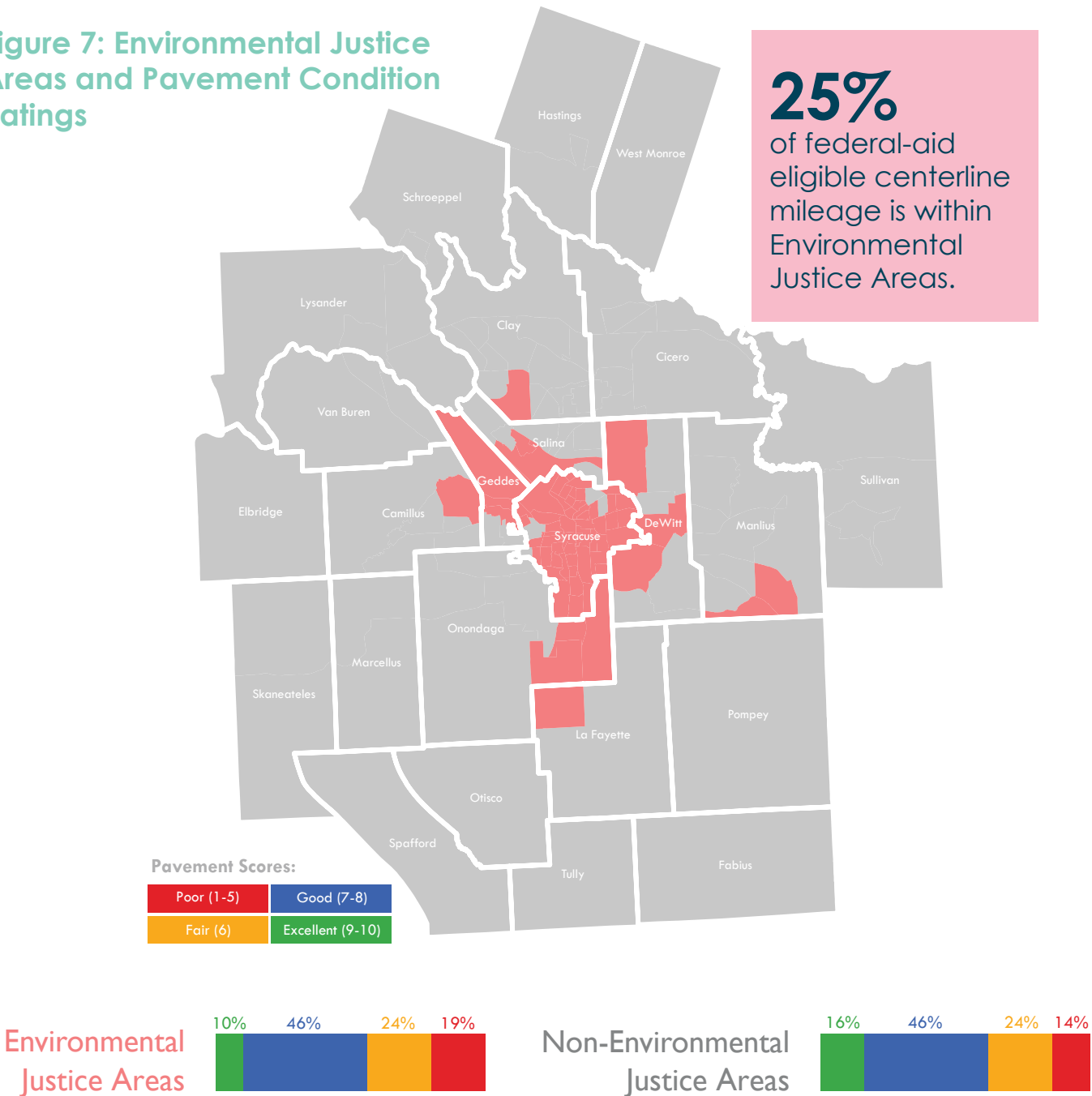
East Fayette Street in Syracuse - Collector

Environmental Justice Areas

Periodically, the SMTC evaluates recent and future transportation planning projects and programs throughout the MPA, with the goal of ensuring that both the positive and negative impacts of transportation planning are fairly distributed across all socioeconomic populations and that no one population is adversely affected or neglected. As a part of this analysis, the SMTC

uses data from the US Census to identify geographic areas with significant minority populations, low-income populations, and populations with Limited English Proficiency. These areas are known as Environmental Justice Priority Areas. Figure 7 shows locations of these priority areas in the MPA and compares pavement ratings in priority areas and non-priority areas.

Figure 7: Environmental Justice Areas and Pavement Condition Ratings



Pavement Ratings Statewide

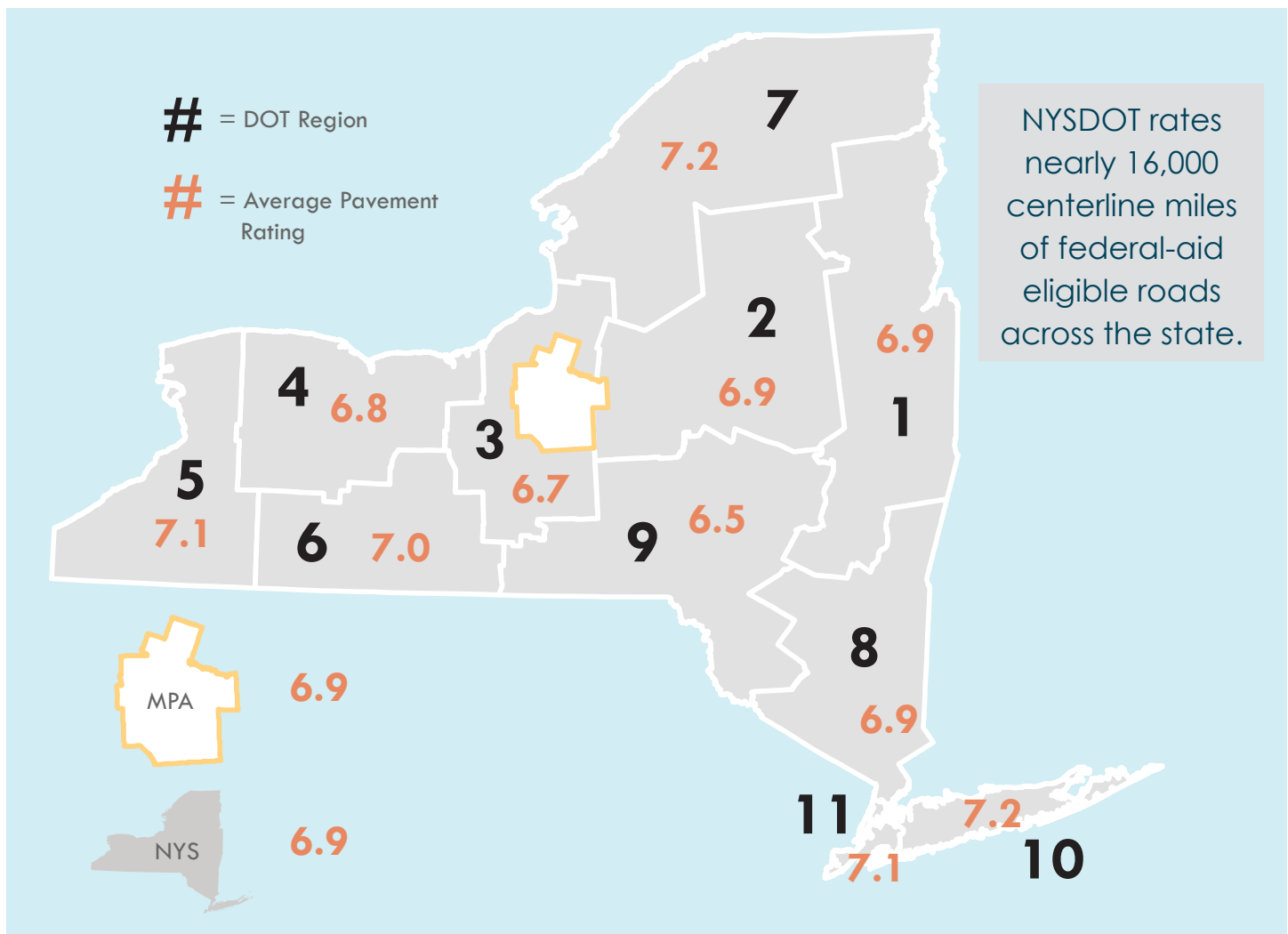
The New York State Department of Transportation has eleven regional offices. The Onondaga and Oswego County portions of the SMTC MPA are in Region 3 and the Madison County portion is in Region 2.

2016 Pavement data is available for all NYSDOT-rated roads in New York State; this includes the Interstate, US Highway, and Touring Route Systems regardless of ownership or federal-aid eligibility. To be consistent with other data used in this report, the average ratings

shown in Figure 8 below are NYSDOT-rated federal-aid eligible roads using 2016 data. For comparison purposes, the State and MPA averages are also shown, however, the MPA average here also only includes 2016 ratings on NYSDOT-rated federal-aid eligible roads.

Region 3 has the second-lowest average score with 6.7, and Region 10 (Long Island) and Region 7 (Northern NY) have the highest at 7.2.

Figure 8: Comparison of Pavement Ratings Across New York State DOT Regions



National Transportation Performance Measures

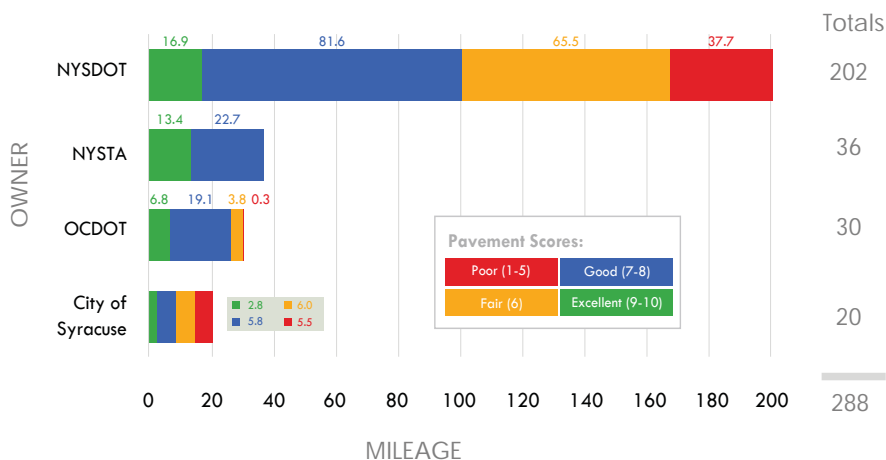
The recent federal transportation legislations, Moving Ahead for Progress in the 21st Century (MAP-21) and the Fixing America's Surface Transportation (FAST) Act, require that State Departments of Transportation and Metropolitan Planning Organizations make progress towards a series of goals. Progress towards these goals is tracked using a set of performance measures, which are outlined in the SMTTC's Long Range Transportation Plan (LRTP). One of the transportation system goals outlined in the LRTP is to strategically preserve our existing infrastructure and focus future investment in areas that are already served by significant public

infrastructure investments. One of the objectives of this goal is to “preserve and maintain pavement” – and the performance measure associated with this objective, which differs slightly from the national pavement performance measures, is the percentage of the Interstate and the rest of the National Highway System (NHS) with pavement classified as in “Good” condition. Figure 9 shows pavement ratings on the National Highway System, broken down into Interstates and non-Interstates. Figure 10 gives pavement conditions for the NHS as a whole, separated by owner.

Figure 9: NHS Pavement Conditions

Road Type	Excellent		Good		Fair		Poor		Totals
	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	
NHS - Interstate	13.4	12%	64.3	59%	23.1	21%	7.9	7%	109
NHS - Non-Interstate	26.4	15%	65.2	36%	52.1	29%	35.6	20%	179
									288

Figure 10: NHS Pavement Conditions by Owner



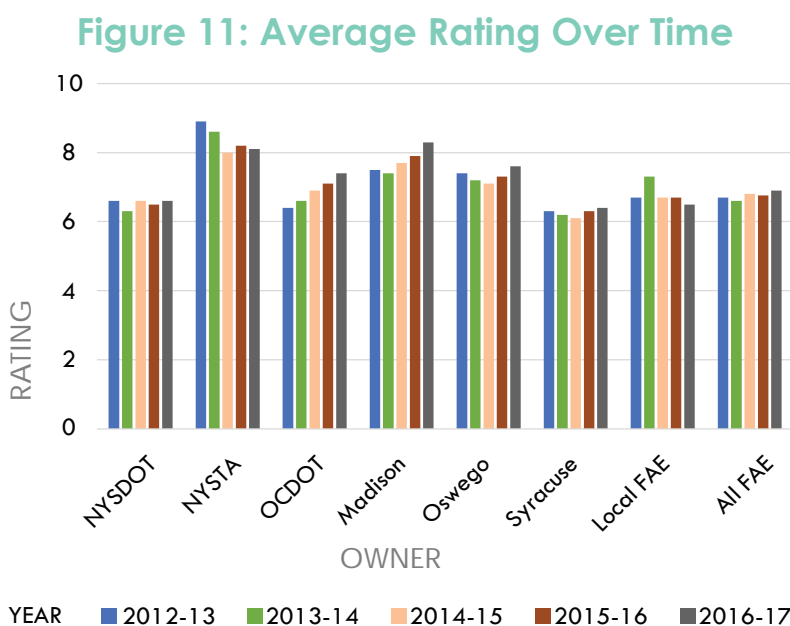
Four national performance measures for pavement conditions have been established. They are:

- The percentage of pavement on the Interstate System in **Good** condition
- The percentage of pavement on the Interstate System in **Poor** condition
- The percentage of pavement on the non-Interstate NHS in **Good** condition
- The percentage of pavement on the non-Interstate NHS in **Poor** condition.

Note: There are approximately 2.5 miles of NHS roads MPA-wide that are not rated at this time, largely because either they are functionally classified as Local, or because they serve as the reverse direction of a one-way couplet.

Pavement Trends

Since the Bridge and Pavement Condition Management System report is an annual undertaking by the SMTC, there is a large amount of data collected and synthesized from year to year. One of the advantages of this process is to be able to observe trends in bridge and pavement conditions throughout our metropolitan planning area. Figure 11, to the right, shows average pavement ratings by owner over the last 5 rating cycles. Pavement conditions are slightly up this year, from 6.7 to 6.9.



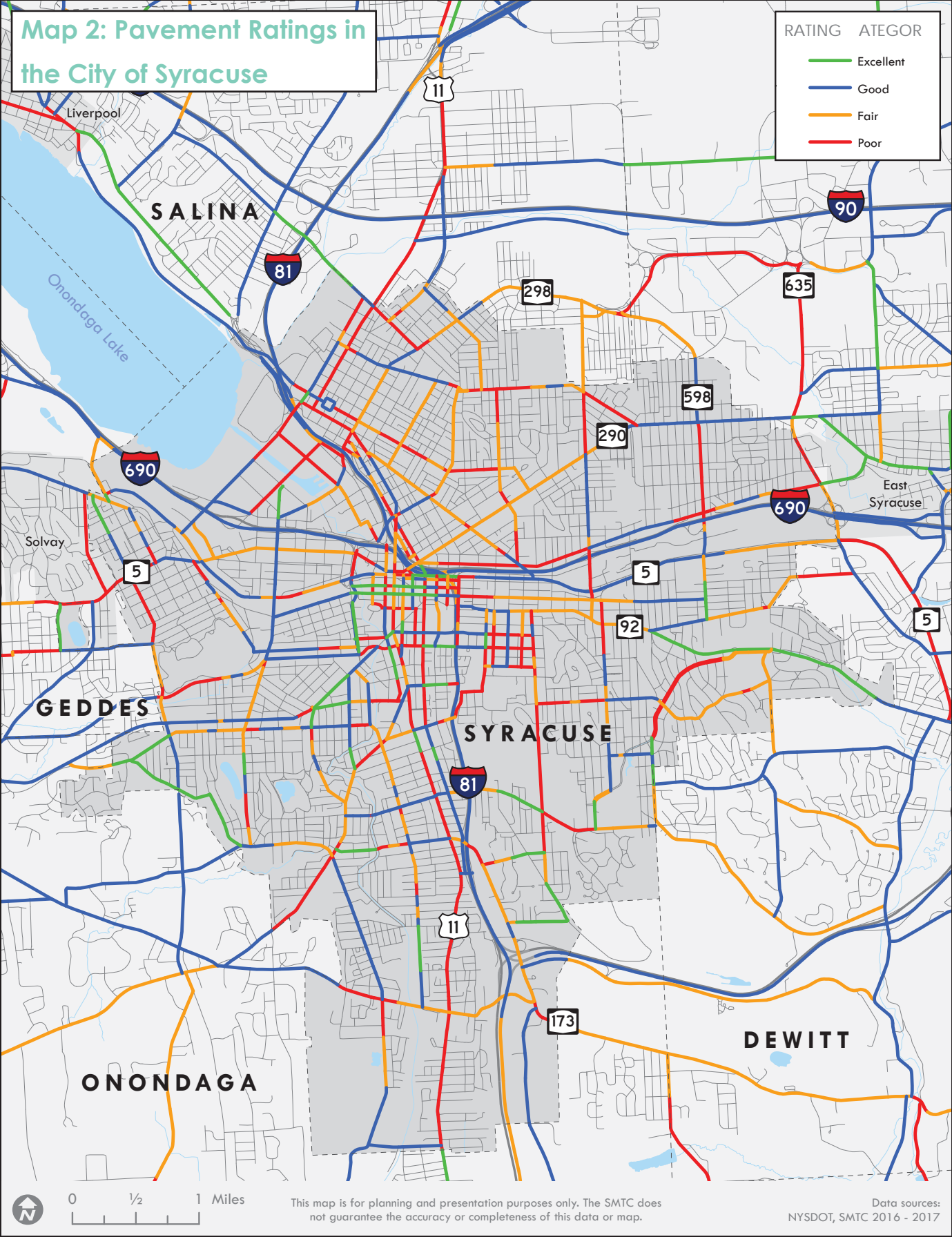
Maps

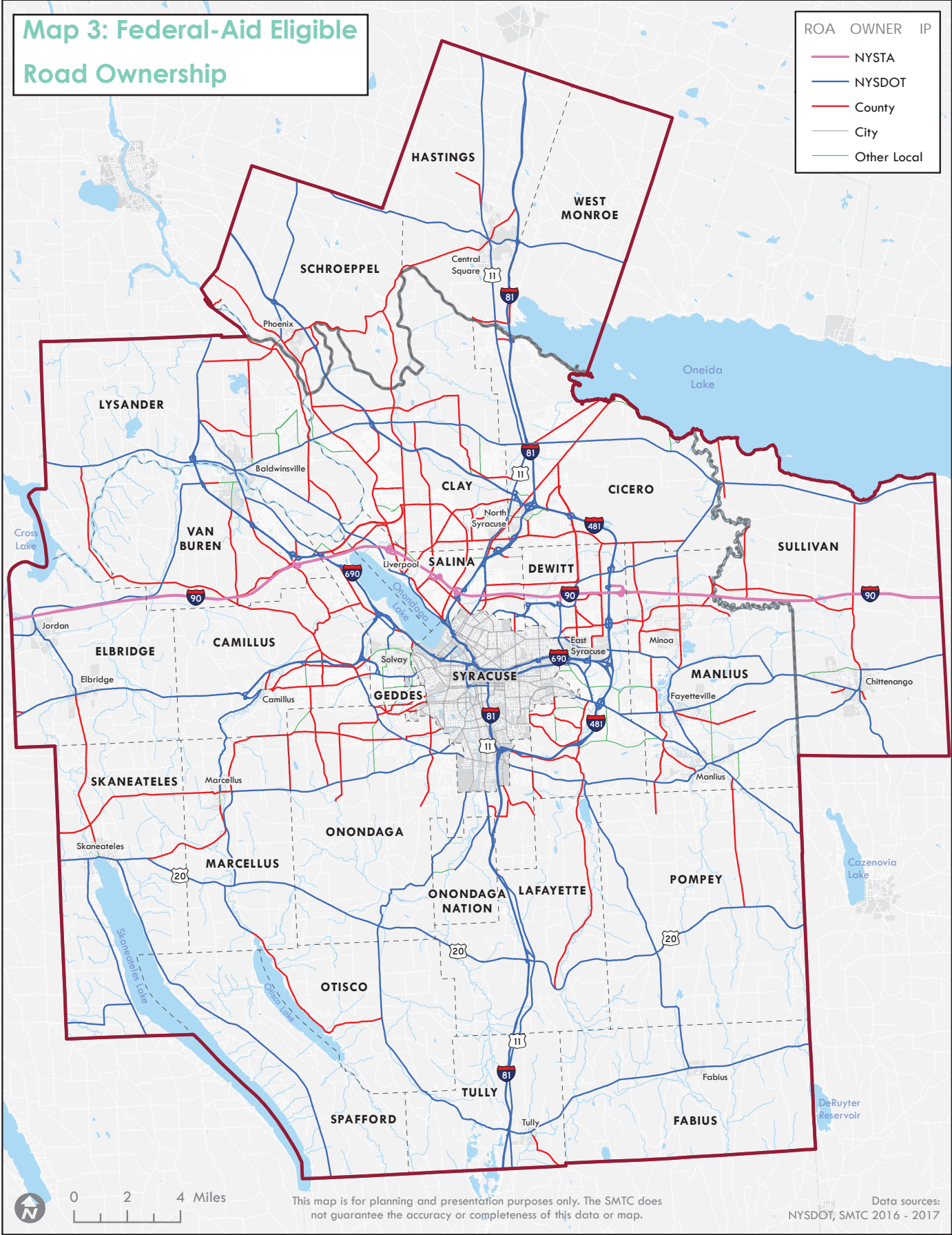
As a reference, maps with more pavement rating and other applicable information are found in the pages that follow.

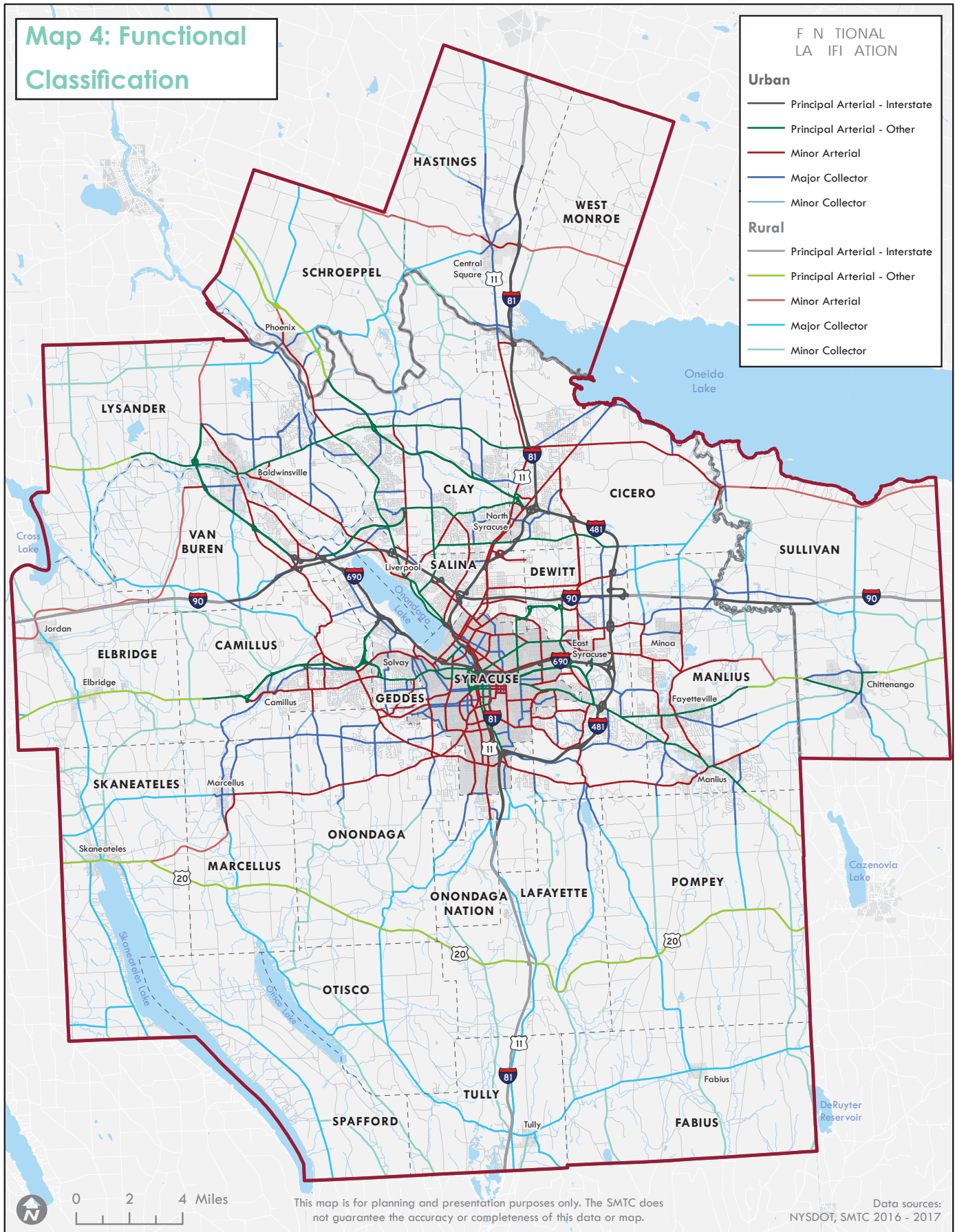


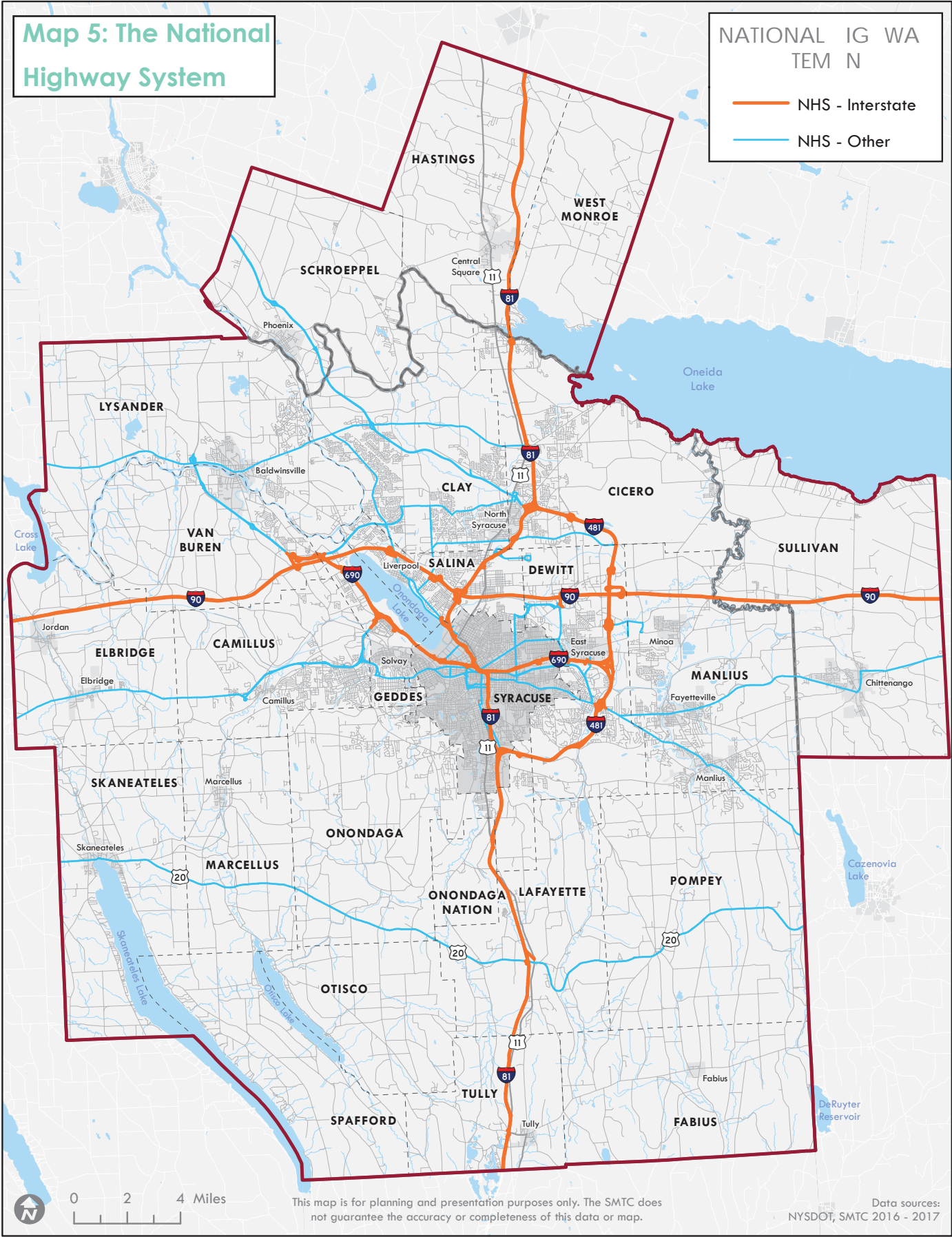
Walton Street in Syracuse











Conclusion

Overall, the goal of this report is to illustrate and analyze data collected on pavement conditions over the past rating cycle. This uniform dataset serves as a useful tool to the SMTC's member agencies, and provides a window into the tangible return on infrastructure investment. By collecting and publishing this data, the SMTC hopes to continue to elucidate the importance of ongoing maintenance efforts. As mentioned in this report, over three-quarters of capital project funds are spent on highway and bridge projects in our MPA. The data in this report helps plan for ways to preserve and maintain the pavement of our infrastructure system, especially with limited increases in funding for capital improvements.



NYS Route 80 in Tully