



Bridge and Pavement Condition Management System

2020-2021 UPWP Report

JUNE 2021

Syracuse Metropolitan Transportation Council



BRIDGE & PAVEMENT CONDITION MANAGEMENT SYSTEM

Syracuse Metropolitan Planning Area

June 2021

2020-2021 Unified Planning Work Program

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Introduction

The purpose of the Bridge and Pavement Condition Management System (BPCMS) report is to serve as a comprehensive clearinghouse for condition information on selected bridges and pavements throughout the Metropolitan Planning Area (MPA) of the Syracuse Metropolitan Transportation Council (SMTC). Infrastructure improvements such as bridge rehabilitation and pavement milling routinely make up a significant portion of Transportation Improvement Program (TIP) funds spent in the MPA. Through the BPCMS report, member agencies are able to track investments in infrastructure across the system.

In 2017, one of the Federal Highway Administration (FHWA)'s final rules establishing performance measures on the National Highway System (NHS) for State Departments of Transportation and Metropolitan Planning Organizations took effect. The rule establishes measures to assess the condition of bridges and pavements, and addresses requirements established in the two most recent transportation legislations, the Moving Ahead for Progress in the 21st Century (MAP-21) and the Fixing America's Surface Transportation (FAST) Act. With these performance measures, the methods of collecting condition data on bridges and pavements has changed, along with the reporting of this condition data.

Current pavement data on the New York State system continues to be unavailable. However, this

report utilizes data submitted to FHWA on the new Good-Fair-Poor scale from 2018 on the Interstate system. At the time of this report's publication, data on the non-Interstate NYSDOT system is from 2017 and was featured in the 2018-2019 BPCMS report. In the interest of avoiding combining datasets from previous reports and this report, MPA-wide analyses of pavement data are not included in this document.

In 2019, the SMTC collected pavement ratings on the entirety of the City of Syracuse's system, regardless of federal-aid eligibility. The SMTC continued this practice in 2020. The body of this report only considers federal-aid eligible roads, but additional information on the City's system is available in *Appendix B*.

Because the SMTC traditionally rates roads early in the construction season, some road improvements may not be captured in the year which they occur. However, with the onset of the COVID-19 pandemic in March 2020, the SMTC's usual timeline for rating was delayed and reduced. The SMTC rated later in the construction season, after many improvements were complete. This led to an overall rise in ratings compared to prior years. The SMTC completed ratings for Onondaga County and the City of Syracuse, but did not complete the entirety of the federal-aid system owned by Madison County, Oswego County, and local towns and villages. Ratings from 2019 were used to supplement the incomplete 2020 ratings for these road owners.



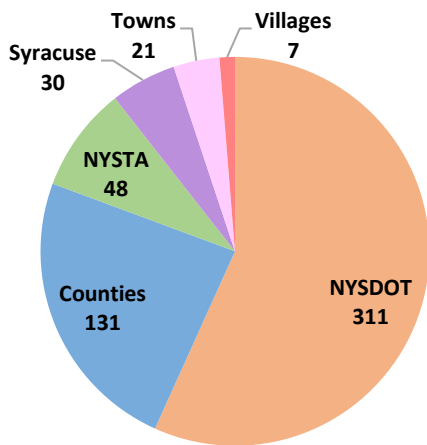
Bridges

The New York State Department of Transportation (NYSDOT) inspects all highway bridges that it owns, as well as those owned by local municipalities, at a maximum of 24 months. Tolling authorities (such as the New York State Thruway Authority) are responsible for their own inspections but are required to submit their data to NYSDOT.

There are many different types of bridges in the SMTC MPA, which includes all of Onondaga County and portions of Madison and Oswego Counties. This report includes information on roadway bridges open to vehicular travel – it does not contain information on private railroad bridges or pedestrian or bicycle overpasses. In the MPA, there are 548 bridges that meet this definition.¹

Of these bridges, NYSDOT owns a majority, with 311. The second most is owned by a county (either Madison, Onondaga, or Oswego), with 131. The Thruway Authority, the City of Syracuse, and local towns and villages make up the remainder. Figure 1 illustrates bridge ownership in our area, and Figure 2 gives National Bridge Inventory (NBI) ratings by structure for these bridges.

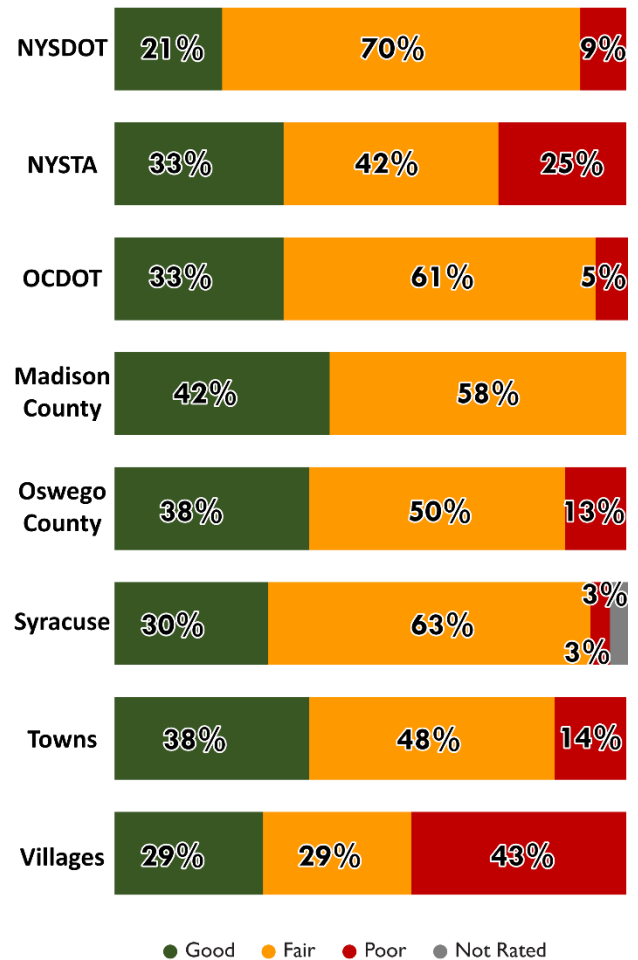
Figure 1 - Roadway Bridges by Owner in the MPA



Source: NYSDOT 2019-2020

¹ This is reduced from 550 in previous reports – two bridges have been removed from the active inventory.

Figure 2 - NBI Rating by Owner, by Structure



Source: NYSDOT 2019-2020

Bridge Condition Ratings

Bridge condition ratings are given on a scale of Good-Fair-Poor. This classification is based on the NBI condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), and Item 62 (Culvert). Each of these items are rated on a scale of 0-9. If the lowest rating is greater than or equal to 7, the bridge is classified as “Good.” If the lowest rating is less than or equal to 4, it is classified as “Poor.” Bridges rated below 7 but above 4 are classified as “Fair.”

Current federal performance measures for bridges monitor condition by deck area, not number of structures. Ownership by deck area paints a different picture of bridge maintenance needs than simply the number of structures owned. For example, although NYSDOT owns 57% of bridges in the MPA, it is responsible for 80% of the total roadway bridge deck area examined in this report. Table 1 below illustrates the percentage of bridge deck owned by each jurisdiction, and Figure 3 gives the percentage of deck area rated Good, Fair, or Poor by each bridge owner, and the total number of Good, Fair, and Poor deck area in the MPA.

Table 1 - Bridges by Structure and Deck Area

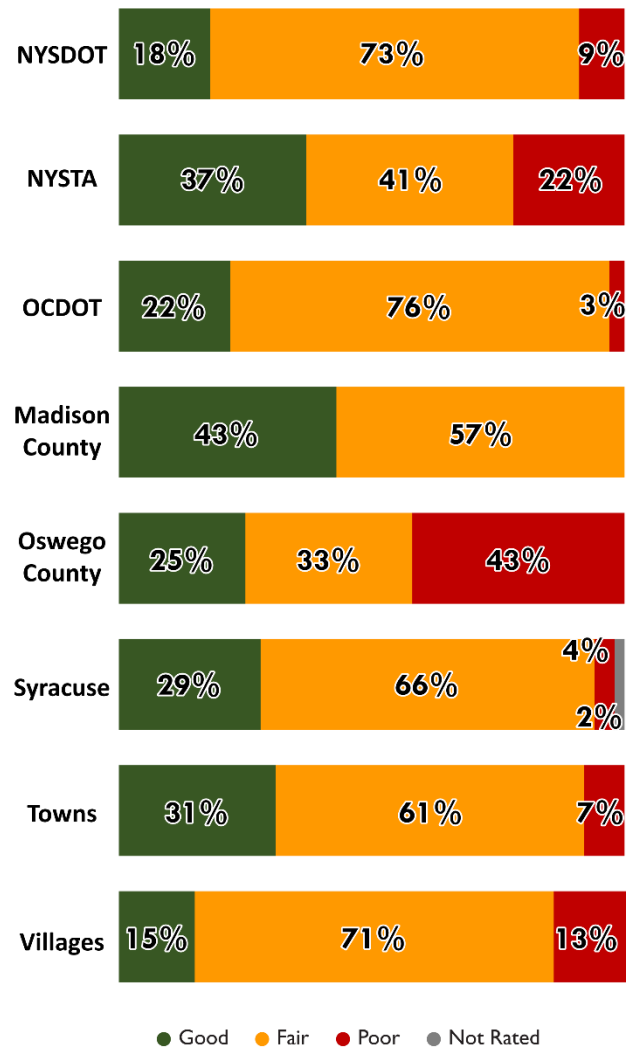
Agency	Deck Area (sq ft)	% of Deck Area	Bridges	% of Bridges
NYSDOT	4,360,800	80.1%	311	56.8%
NYSTA	482,255	8.9%	48	8.8%
OCDOT	326,393	6.0%	96	17.5%
Madison County	36,797	0.7%	19	3.5%
Oswego County	25,508	0.5%	16	2.9%
Syracuse	162,262	3.0%	30	5.5%
Towns	24,909	0.5%	21	3.8%
Villages	23,710	0.4%	7	1.3%

Source: NYSDOT 2019-2020

Environmental Justice

Periodically, the SMTC evaluates recent and future transportation planning projects and programs throughout the MPA, with a 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 and low-income populations. These areas are known as Environmental Justice (EJ) Priority Target Areas. Figure 4 compares bridge assessments (by deck area) in priority and non-priority areas. Bridge ratings are similar for both EJ and Non-EJ

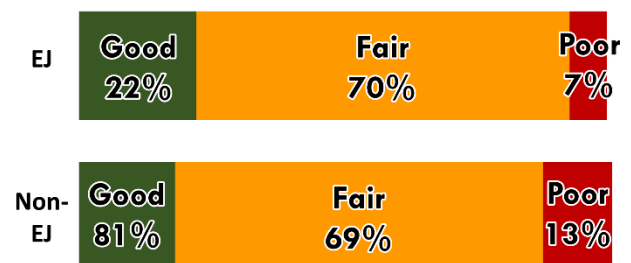
Figure 3 - NBI Rating Weighted by Deck Area



Source: NYSDOT 2019-2020

areas, but EJ areas have a higher percentage of deck area rated Good (22% to 18%) and a lower percentage of deck area rated Poor (7% to 13%). A map of priority target areas can be found in Appendix A.

Figure 4 - Bridge Ratings by EJ Area



Source: NYSDOT 2019-2020, SMTC

National Transportation Performance Measures

As previously mentioned, the Federal Highway Administration (FHWA) established performance measures to use in managing bridge conditions on the National Highway System (NHS). The measures are the percentage of NHS bridges by deck area in Good condition and the percentages of NHS bridges by deck area in Poor condition. NHS bridges are defined as structures carrying the National Highway System. As noted earlier in this section, if the lowest NBI Item rating (for Items 58, 59, 60, and 62) is greater than 7, the bridge is classified as Good. If the lowest rating is less than or equal to 4, it is classified as Poor. Bridges rated below 7 but above 4 are classified as Fair but are not used in the performance measure.

Metropolitan Planning Organizations (MPOs), like the SMTC, must either support their DOT’s targets or establish their own targets for these measures. The SMTC has chosen to support NYSDOT’s targets. Figure 6 shows NYSDOT’s targets, and the current

performance of bridges in the SMTC MPA. Figure 5 gives extended definitions of individual NBI condition ratings.

As a reference, maps with additional bridge assessments and other applicable information are found at the end of this document in *Appendix A*.

Table 2 – Performance Targets on the National Highway System

Performance Measure	NYSDOT Baseline	SMTC MPA Value	Two-Year Target	Four-Year Target
Percent of NHS bridges by deck area in Good condition	22.8%	17.6%	23.0%	24.0%
Percent of NHS bridges by deck area in Poor condition	10.6%	10.1%	11.6%	11.7%

Figure 5 - NBI Bridge Condition Ratings

- | | |
|--|---|
| <ul style="list-style-type: none"> (9) Excellent Condition (8) Very Good Condition – no problems noted. (7) Good Condition – some minor problems. (6) Satisfactory Condition – structural elements show minor deterioration. (5) Fair Condition – all primary structural elements are sound but may have minor corrosion, cracking, or chipping. May include minor erosion on bridge piers. (4) Poor Condition – advanced corrosion, deterioration, cracking, or chipping. Significant erosion of concrete bridge piers. (3) Serious Condition – corrosion, deterioration, cracking, and chipping, or erosion of concrete bridge piers have seriously affected deck, superstructure, or substructure. Local failures are possible. | <ul style="list-style-type: none"> (2) Critical Condition – advanced deterioration of deck, superstructure, or substructure. May have cracks in steel or concrete, or erosion may have removed substructure support. It may be necessary to close the bridge until corrective action is taken. (1) “Imminent” Failure Condition – major deterioration or corrosion in deck, superstructure, or substructure, or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic, but corrective action may put back in light service. (0) Failed Condition – out of service. Beyond corrective action. (N) Not applicable. |
|--|---|

Pavement

As a part of the BPCMS report, the SMTC collects pavement conditions. Traditionally, the BPCMS compiled data from several different sources, although this transitioned to SMTC staff leading the data collection effort on all roads except NYSDOT- or NYSTA-owned facilities. The BPCMS largely deals with federal-aid eligible roads in the MPA. Federal-aid eligibility on roadways is based on functional classification – the process by which streets and highways are grouped into classes or systems according to the character of services they are intended to provide. Roads are considered federal-aid eligible if they have a functional classification of Principal Arterial, Minor Arterial, Major Collector, or Urban Minor Collector.

Figure 6 - Functional Classifications

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 <i>Rural Minor Collector</i>
<i>Urban Local</i>	<i>Rural Local</i>

Functional Classifications in Italics are not federal-aid eligible.

The pavement condition rating data in 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 1,028 centerline miles of federal-aid eligible roads in the MPA, excluding ramps. These roads are owned by many different jurisdictions and municipalities: the 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 – not to be confused with the “Local” functional classification.

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 at the time, so that road ratings across our MPA could be presented on a single, uniform scale. NYSDOT is still responsible for rating the Interstate System, the US Highway System, and the State Touring Route System, regardless of ownership. Beginning in 2020, SMTC staff also rate all federal-aid eligible roads in the portions of Madison and Oswego Counties that are in the SMTC MPA, as well as Local federal-aid eligible roads in Onondaga County.

In 2019, at the request of the City of Syracuse, the SMTC also began rating the entirety of the City’s system. A report detailing this data collection process and the results is included in *Appendix B*.

Pavement Condition Ratings

The FHWA established performance measures for State Departments of Transportation to manage pavement performance on the NHS. Pavement condition is rated based on cracking, faulting (concrete) or rutting (asphalt), and International Roughness Index (IRI) or the Present Serviceability Rating (PSR). Pavements are rated Good, Fair, or Poor based on the values of these individual metrics. Pavement in Good condition suggests that no major investment is needed. Pavement in Poor condition suggests major reconstruction investment is needed in the near term.

This new rating process requires intricate and specialized technology. NYSDOT has been collecting data on federal-aid eligible roads statewide. The condition survey will occur on the state system (Interstates, US Routes, and the State Touring System) every year, and the federal-aid system over the course of two years, regardless of ownership. This data collection schedule began in 2018.

Figure 7 - New Condition Ratings

Metric	Good	Fair	Poor
IRI (in/mi)	< 95	95-170	> 170
PSR* (0.0 - 5.0)	≥ 4.0	2.0 - 4.0	≤ 2.0
Cracking Percent	< 5%	CRCP 5-10 Jointed 5-15 Asphalt 5-20	CRCP > 10 Jointed >15 Asphalt >20
Rutting (in)	< 0.20	0.20 - 0.40	> 0.40
Faulting (in)	< 0.10	0.10 - 0.15	> 0.15

*PSR may only be used in place of IRI on routes with posted speed limit < 40mph.

IRI, International Roughness Index, objectively measures the cumulative deviation from a smooth surface in inches per mile.

PSR, Present Serviceability Rating, is a subjective rating system based on a scale of 0 to 5.

Cracking Percent is defined as the percentage of pavement surface exhibiting cracking: fissures or discontinuities of the pavement surface not necessarily extending through the entire thickness of the pavement.

Average Rutting, longitudinal surface depressions in the asphalt pavement derived from measurements of a profile transverse to the path of travel on a highway lane.

Average Faulting, vertical misalignments of pavement joints on concrete pavements.

Prior to the adoption of the new performance measures, the NYSDOT used a moving-vehicle windshield survey to assess pavement condition. The SMTC adopted this method for the rating staff complete as a part of this project. This system is used throughout this report, and SMTC staff will continue to use this system for non-performance measure purposes for the foreseeable future. The procedure involves the use of a carefully crafted 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. 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 10 below. There are also a small number of roads listed as “unrated,” largely due to either construction occurring, or the use of road materials not suited to pavement rating (such as brick or bridge deck).

Figure 8 - NYSDOT Surface Score Scale

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

Pavement Performance Metrics and Long-Range Transportation Planning

As a part of the most recent transportation legislation, the FHWA requires the reporting of certain pavement conditions as a part of national performance measures. Four pavement condition measures apply to the National Highway System (NHS) and were established under Subpart C of 23 CFR 490. The established pavement condition measures are:

- Percentage of pavements of the Interstate System in Good condition
- Percentage of pavements of the Interstate System in Poor condition
- Percentage of pavements of the non-Interstate NHS in Good condition
- Percentage of pavements of the non-Interstate NHS in Poor condition

For the Interstate system, FHWA requires that this data be collected annually and submitted by April 15th of the following year. For the remainder of the NHS, the data can be collected over two years, and must be submitted by June 15th of the following year. 23 CFR 190.309(a)

requires the first data collection cycle to start in calendar year 2018 for the Interstate System and to start in calendar year 2020 for the non-Interstate NHS.

As a part of this legislation, NYSDOT established statewide performance planning targets for pavement on May 20, 2018. The SMTC agreed to support NYSDOT’s performance targets on December 11, 2018 via SMTC Policy Resolution No. 2018-14. By adopting NYSDOT’s targets, the SMTC will partner with the State to plan and program projects that achieve these targets.

As a result of adopting these targets, the SMTC is required to report conditions in the MPA as a part of the agency’s Long Range Transportation Plan (LRTP).

Because some data was not available, the SMTC Performance numbers in Figure 9 below are a combination of different sources. Figure 9 also represents updated information not included in the agency’s most recent LRTP, adopted in 2020.

At the time of this report’s publication, data is available from 2018 on the Interstate system using the new FHWA condition scale of Good-Fair-Poor, *which is not congruent to the Surface Score conditions used by SMTC in the rest of this report*. Data on the remainder of the NHS using the Good-Fair-Poor metric is not available, and the NHS numbers below utilize the Surface Score system based on ratings collected in 2017 and 2018.

Figure 9 - Pavement Performance Targets

Performance measure	New York Performance (Baseline)	SMTC Performance (Baseline)	New York 2-year Target	New York 4-year Target
Percent of Interstate pavements in good condition	52.2%*	38.5%**	46.4%*	47.3%
Percent of Interstate pavements in poor condition	2.7%*	0.2%**	3.1%*	4.0%
Percent of non-Interstate NHS pavements in good condition	20.4%	46.7%***	14.6%	14.7%
Percent of non-Interstate NHS pavements in poor condition	8.3%	24.2%***	12.0%	14.3%

* These values are those that were calculated by NYSDOT and agreed to by the SMTC on December 11, 2018. These may differ compared to those published by the Federal Highway Administration, which utilized a different calculation methodology.

** This data *does* use the federal definitions of Good and Poor, as defined in 23 CFR 490. Data is from 2018.

*** This information is based on 2017 and 2018 data collected using the NYSDOT Surface Score Scale cited in Figure 8 and cannot be directly compared to the performance targets, because the targets involve the newer condition rating system described in Figure 7. However, this was the most recent data made available to the SMTC at the time of this report. Consistent with the NYSDOT Transportation Asset Management Plan (2019), for this analysis, “Good” pavements have a Surface Score of 7-10, and “Poor” pavements have a Surface Score of 1-5.

Environmental Justice

As previously mentioned, the SMTC uses data from the US Census to identify geographic areas with significant minority and low-income populations and develop Environmental Justice (EJ) Priority Target Areas. Figures on the following pages illustrate pavement conditions in both EJ and non-EJ areas by owner. Comparisons are difficult to make, because no facility owner has a relatively even number of roads in both EJ and non-EJ areas. Map 16 in Appendix A of this document show the location of EJ areas; a majority of the City of Syracuse falls in an EJ area, whereas most of Onondaga County does not. There are no EJ areas in Madison County and Only

the Village of Phoenix in Oswego County falls into an EJ area. The number of miles of road in each area can be found in the figures that follow.

For the City of Syracuse, there are more roads in Excellent Condition in non-EJ areas, and more roads in Poor Condition in EJ areas. For OCDOT-owned roads, there are more roads rated Excellent in EJ areas than non-EJ areas.

Pavement Condition Data

The pages that follow detail information about pavement rating by owner in the SMTC MPA. Each page includes percentage of ratings by category for all federal-aid eligible roads and breakdowns into Principal Arterials, Minor Arterials, and Collectors. Ratings are also given based on whether a road falls into an Environmental Justice Area, and rating trends are shown over time. Additional maps are shown in *Appendix A*.

NOTE

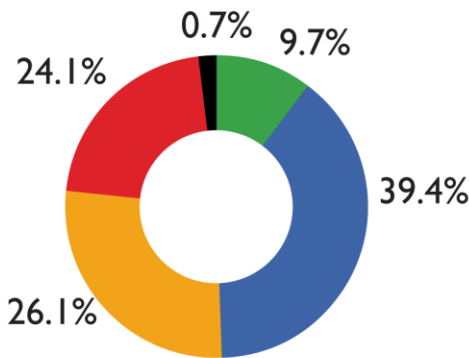
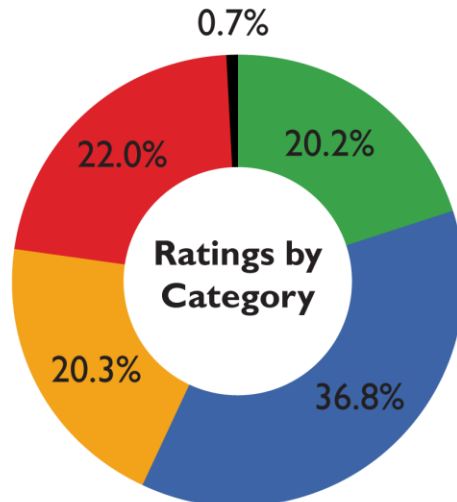
All road measurements in the following section are based off the SMTC's roads database, built using a Geographic Information System (GIS). These measurements are not survey- or engineering-grade and should be considered for planning purposes only. This report is not intended to be the system of record for road ownership in the MPA. The SMTC is constantly updating our roads database to better and more accurately depict conditions on the ground, to the best of our ability. Thus, small deviations in road measurements from year-to-year in this report are to be expected.



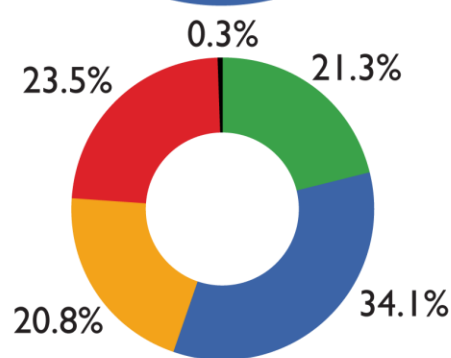
City of Syracuse



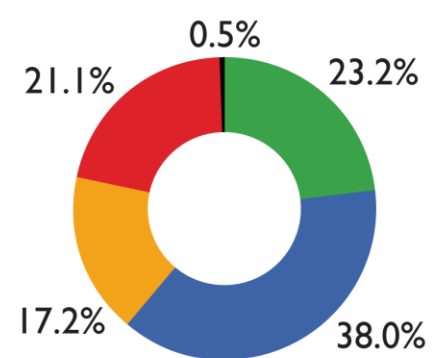
Total FAE Miles **129**
Weighted Average Rating **6.9**



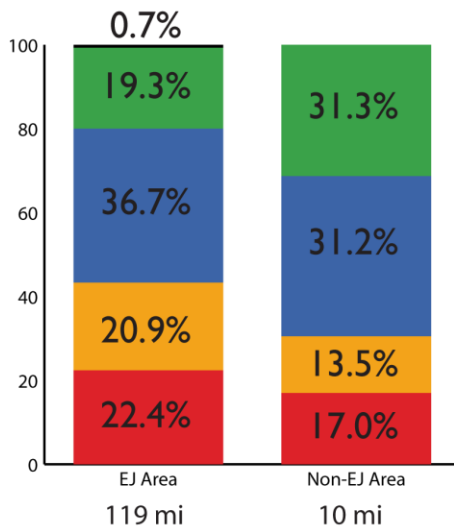
Principal Arterials



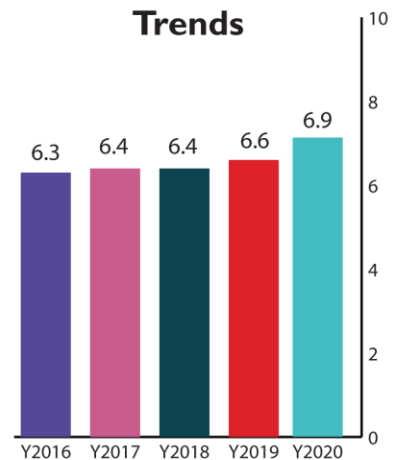
Minor Arterials



Collectors



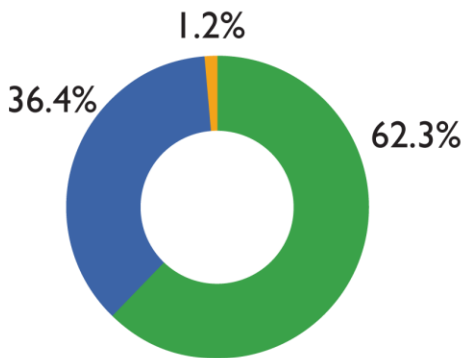
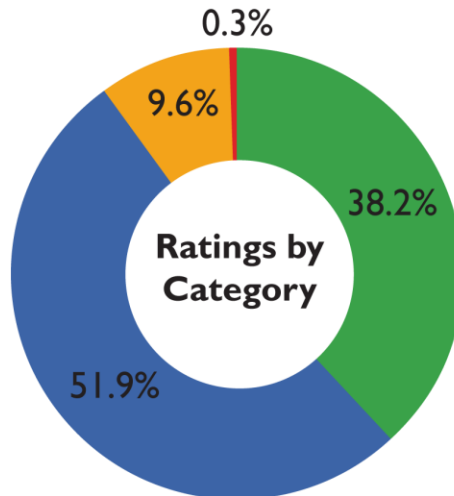
Trends



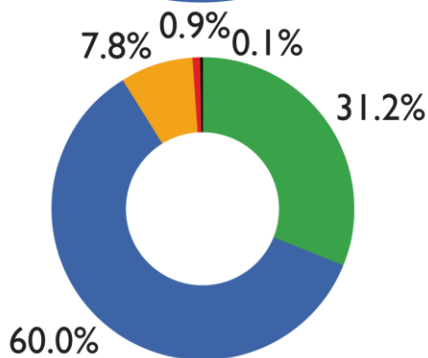
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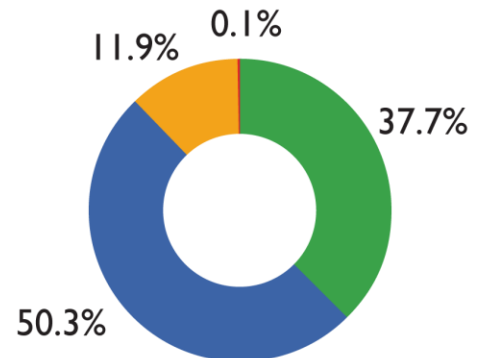
Total FAE Miles 278
Weighted Average Rating 8.0



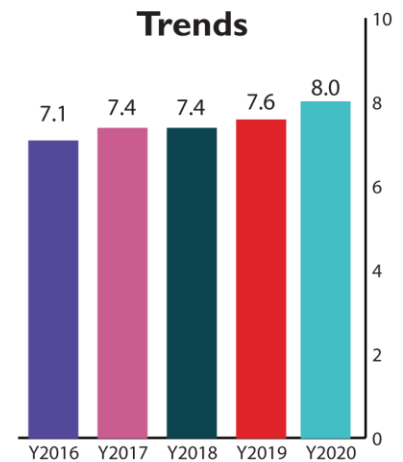
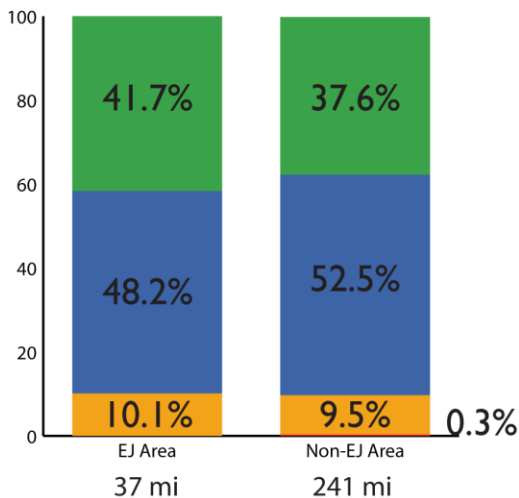
Principal Arterials



Minor Arterials



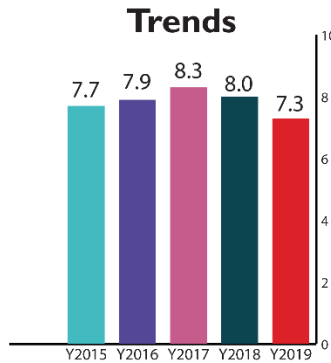
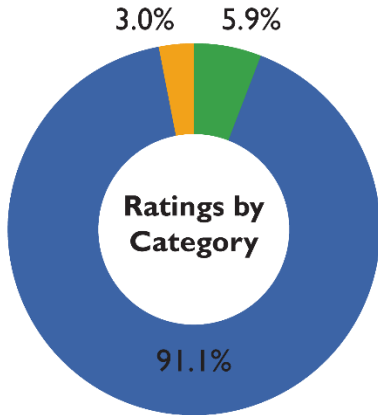
Collectors



Madison County (SMTC MPA)



Total FAE Miles 18
Weighted Average Rating 7.3

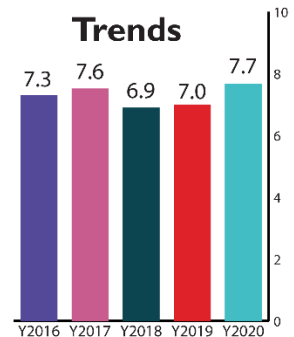
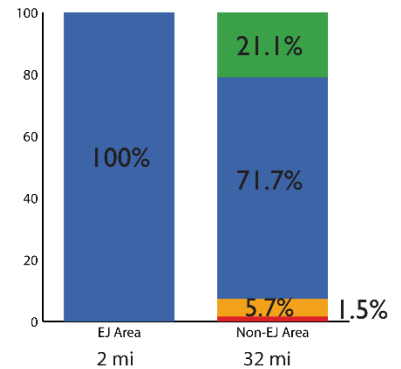
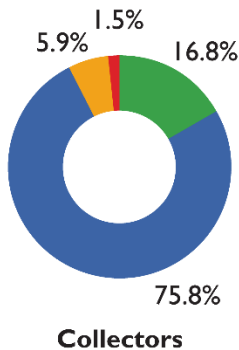
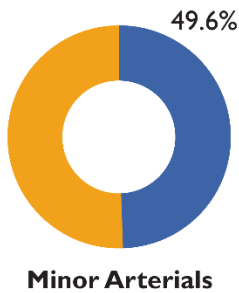
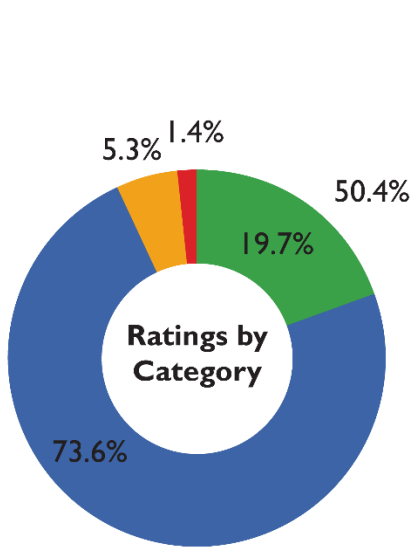


NOTE
 All rated Madison County roads are Collectors and fall in Non-EJ Areas.

Oswego County (SMTC MPA)

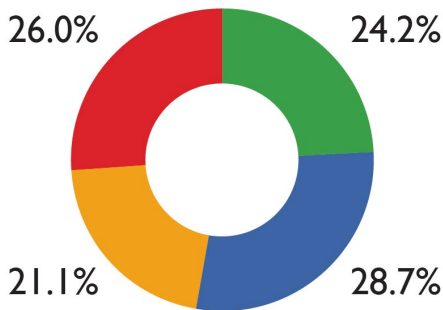
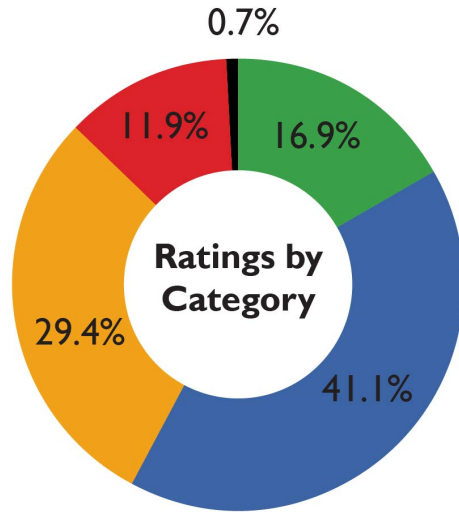


Total FAE Miles 34
Weighted Average Rating 7.7

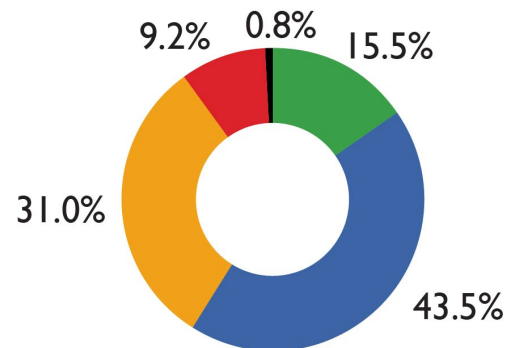


Towns and Villages

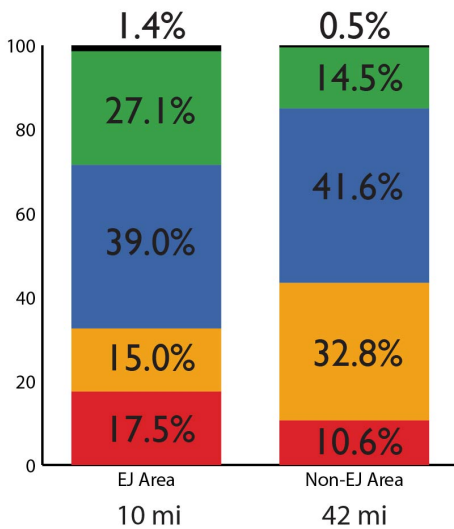
Total FAE Miles **52**
Weighted Average Rating **6.9**



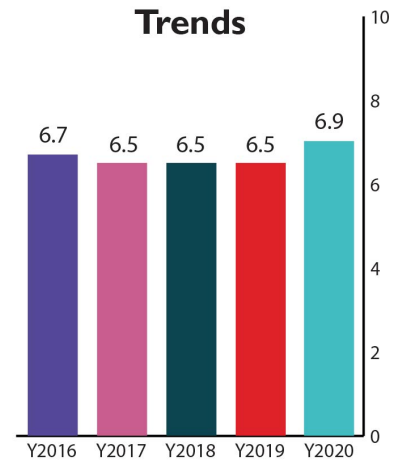
Minor Arterials



Collectors



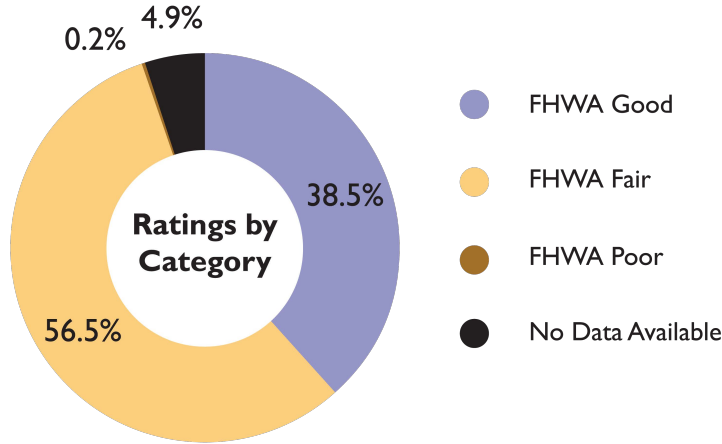
Trends



Interstates (2018)



Total Miles 112



Conclusion

Overall, the goal of this report is to illustrate and analyze data collected on bridge and pavement conditions over the past rating cycle. This uniform dataset serves as a useful tool to the SMTC’s member agencies and provided 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

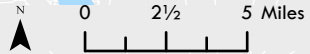
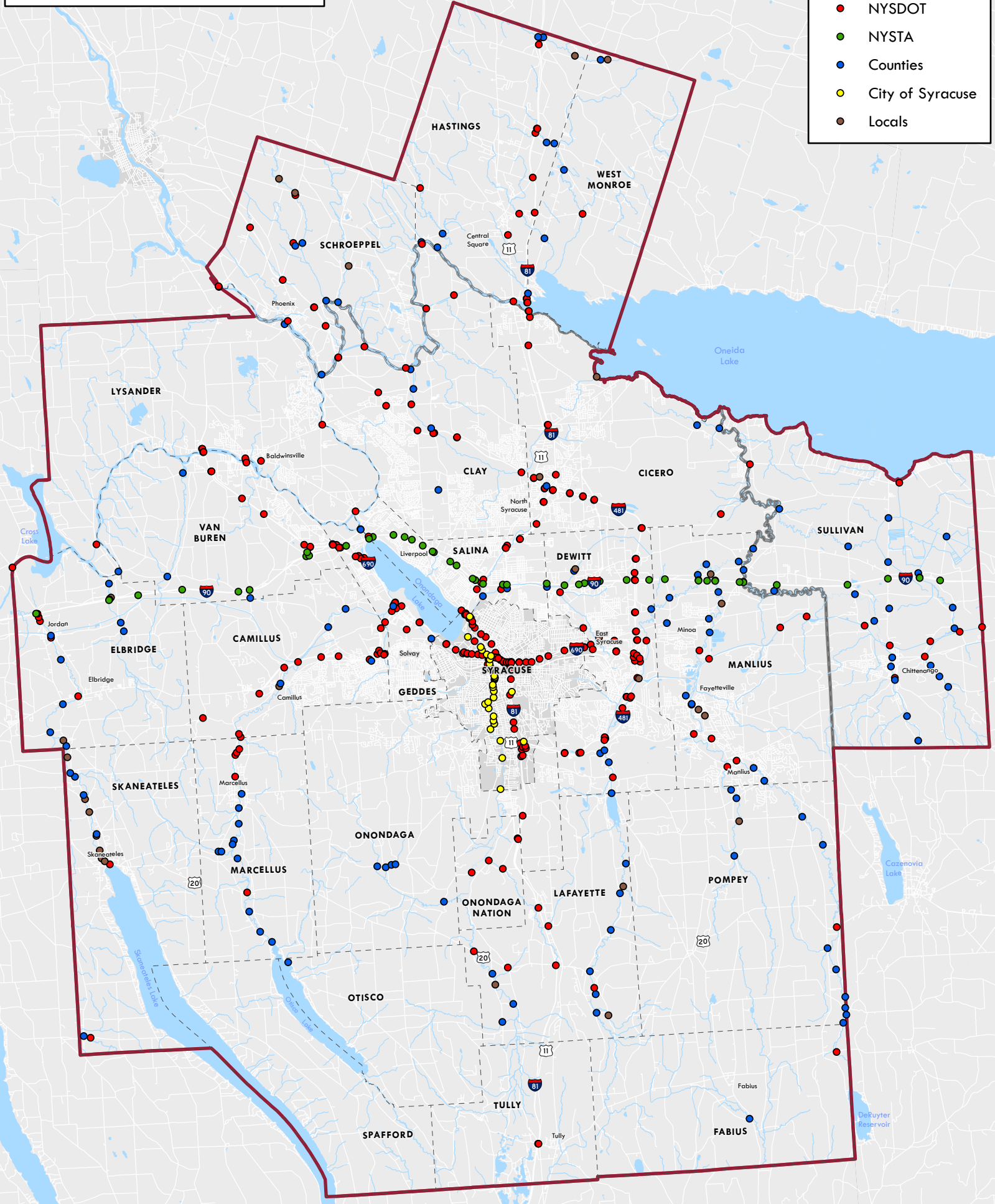
efforts. As mentioned in this report, a large portion of capital project funds are spent on highway and bridge projects in our MPA. The data in this report helps plan for ways to preserve and maintain the bridges and pavement of our infrastructure system, especially with limited increases in funding for capital improvements.

Appendix A – Maps

Map 1 - Bridges by Owner, MPA

Bridge Owner

- NYSDOT
- NYSTA
- Counties
- City of Syracuse
- Locals



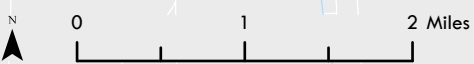
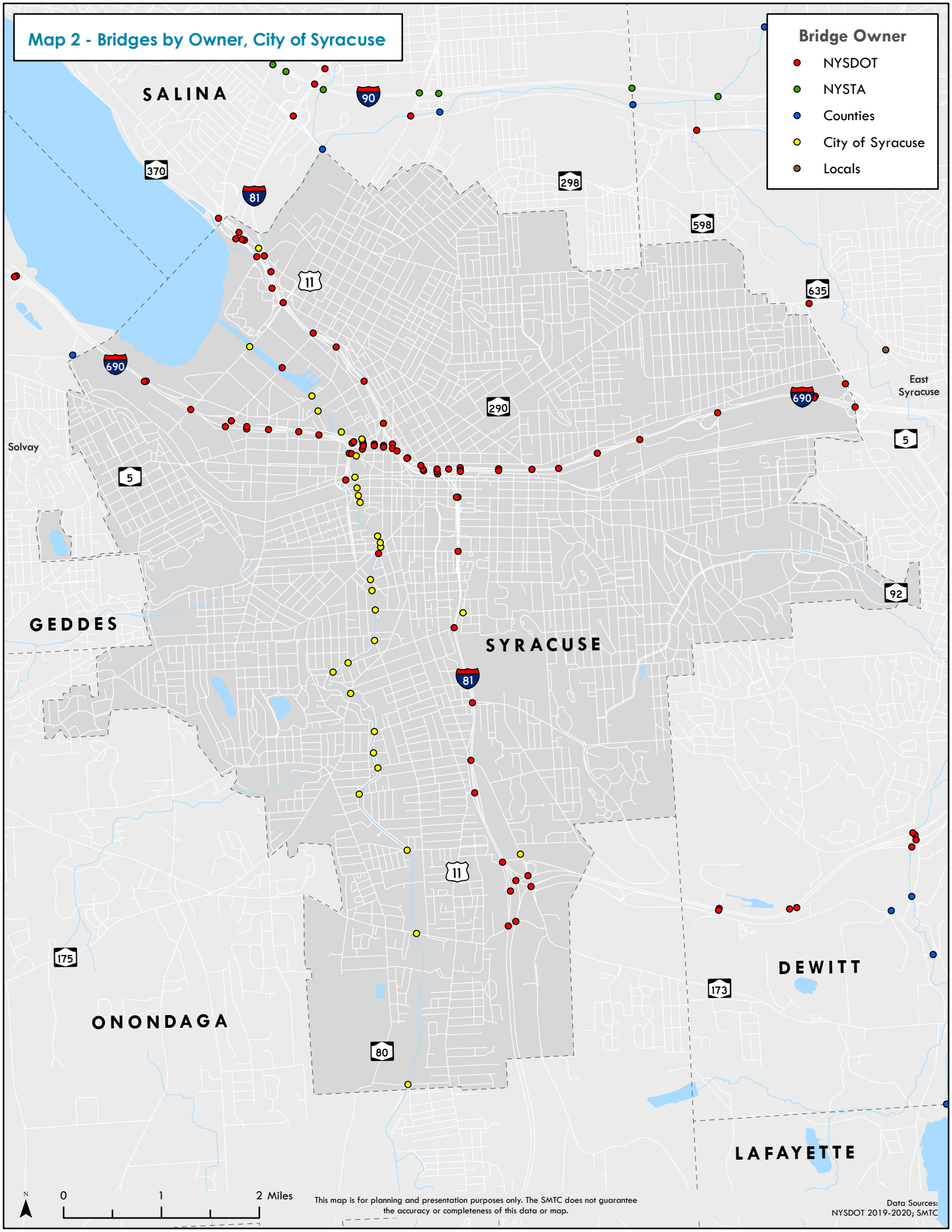
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 2 - Bridges by Owner, City of Syracuse

Bridge Owner

- NYSDOT
- NYSTA
- Counties
- City of Syracuse
- Locals



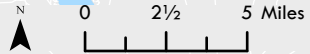
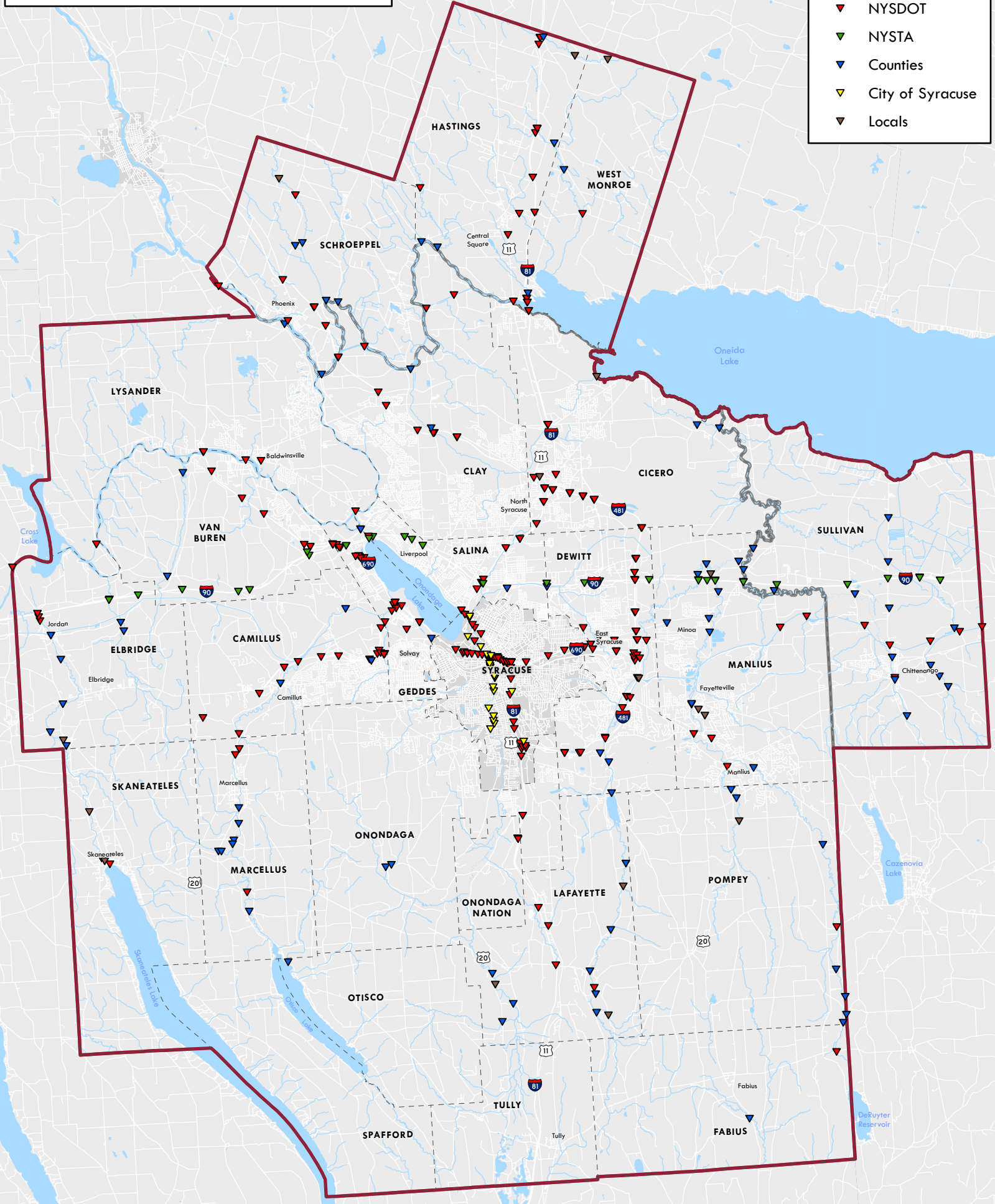
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 3 - Bridges Rated Fair or Poor, MPA

Bridge Owner

- ▼ NYSDOT
- ▼ NYSTA
- ▼ Counties
- ▼ City of Syracuse
- ▼ Locals



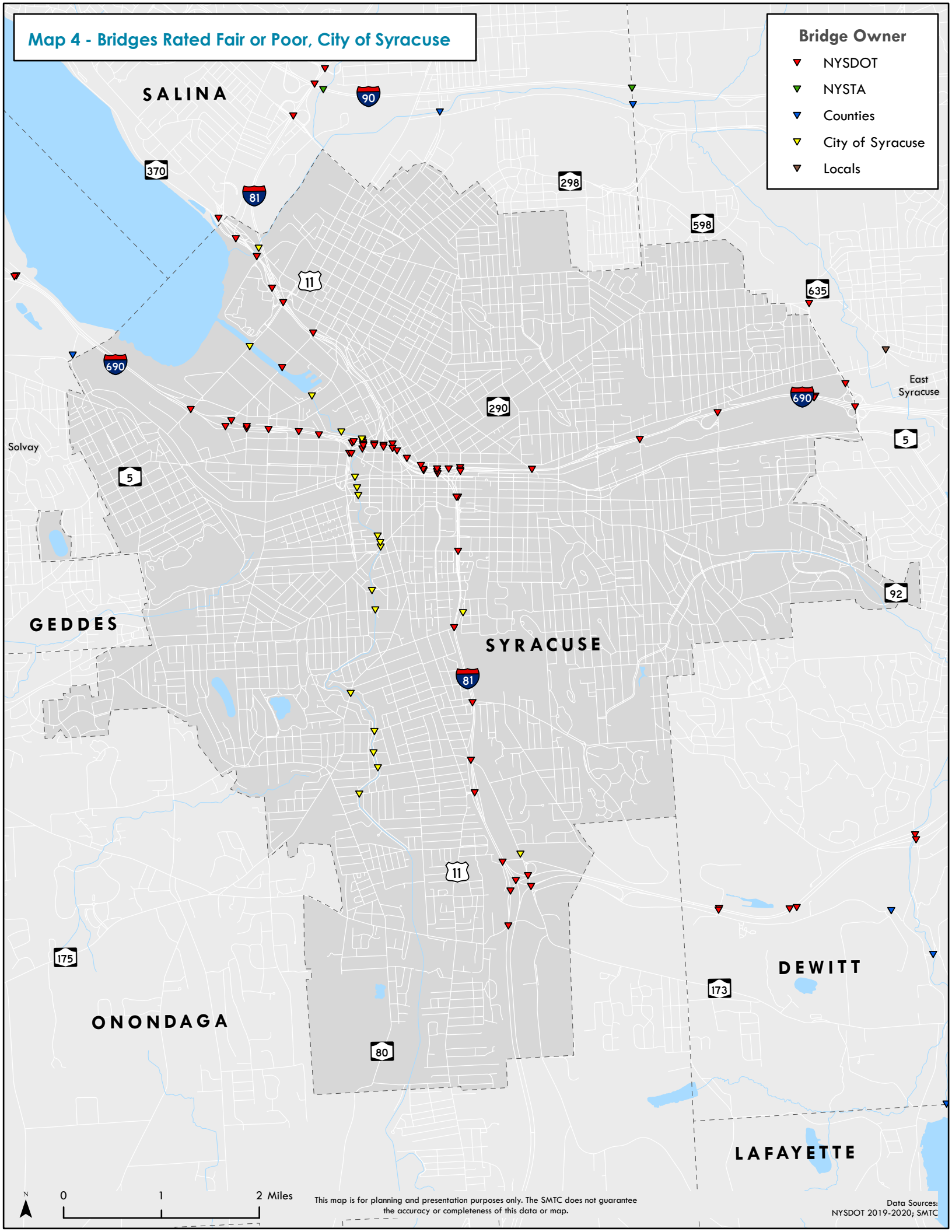
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 4 - Bridges Rated Fair or Poor, City of Syracuse

Bridge Owner

- ▼ NYSDOT
- ▼ NYSTA
- ▼ Counties
- ▼ City of Syracuse
- ▼ Locals



SALINA

370

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92

GEDDES

SYRACUSE

81

175

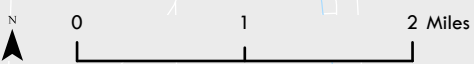
DEWITT

173

ONONDAGA

80

LAFAYETTE



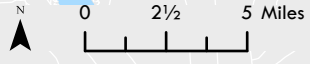
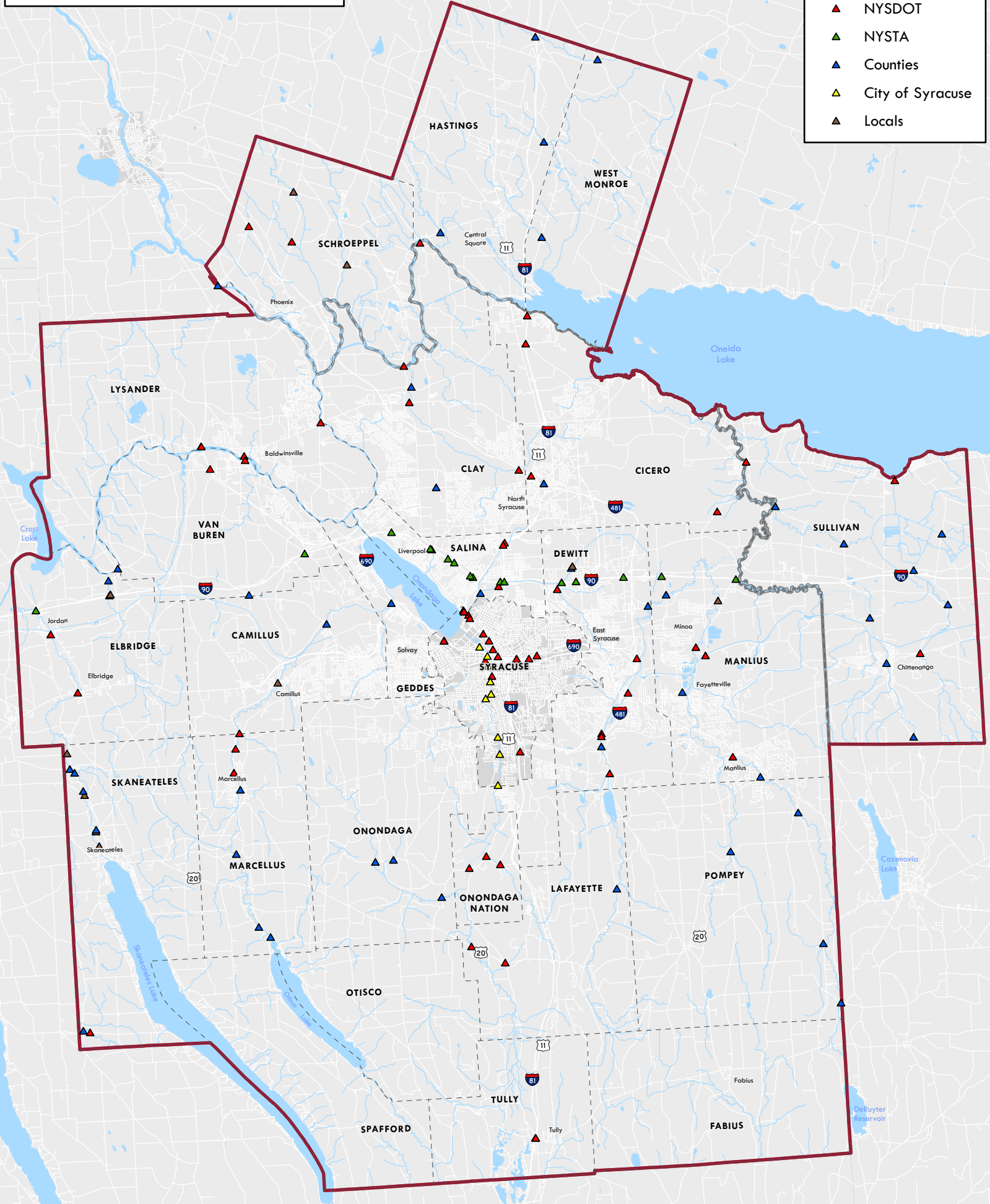
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020, SMTC

Map 5 - Bridges Rated Good, MPA

Bridge Owner

- ▲ NYSDOT
- ▲ NYSTA
- ▲ Counties
- ▲ City of Syracuse
- ▲ Locals



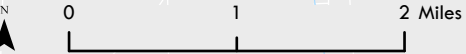
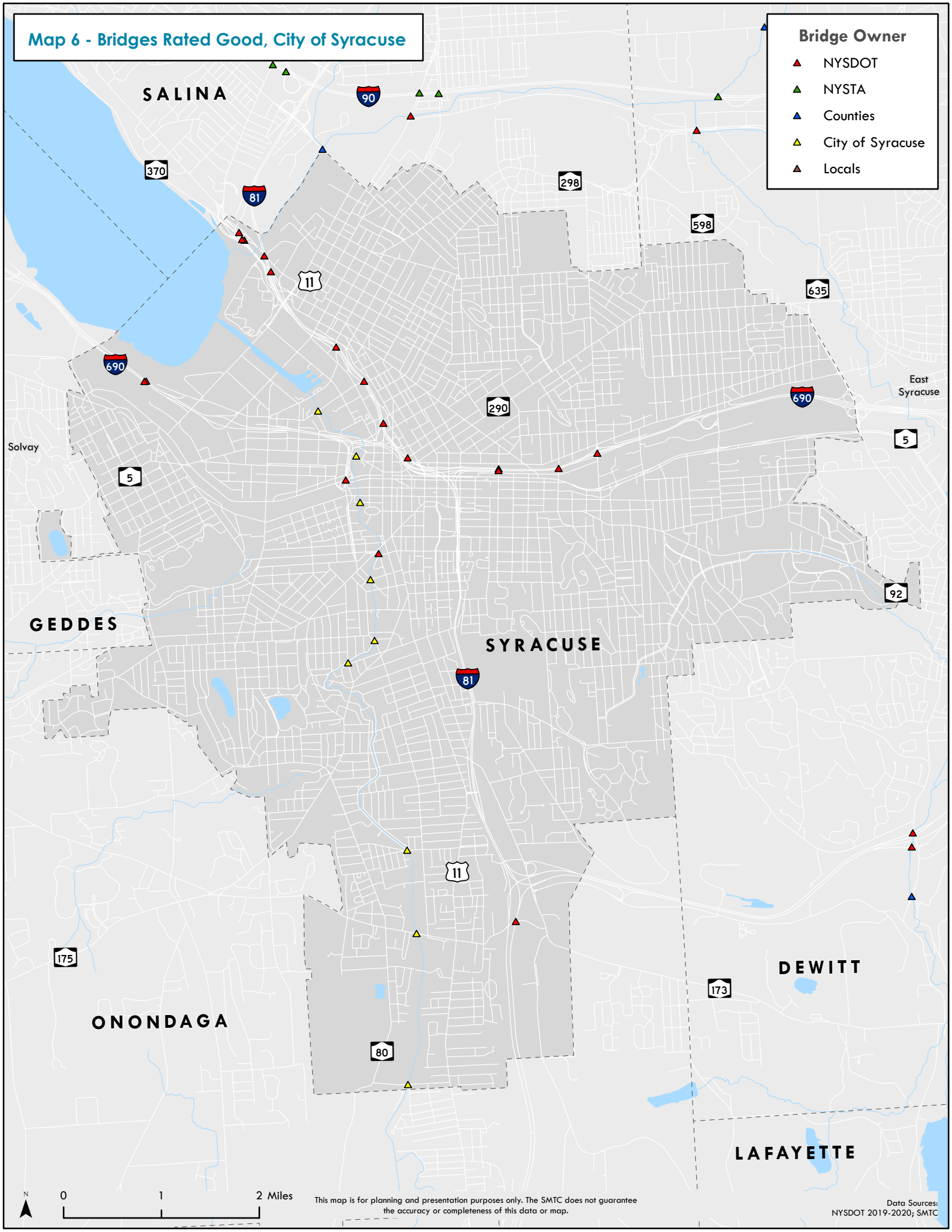
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources:
 NYSDOT 2019-2020; SMTC

Map 6 - Bridges Rated Good, City of Syracuse

Bridge Owner

- ▲ NYSDOT
- ▲ NYSTA
- ▲ Counties
- ▲ City of Syracuse
- ▲ Locals



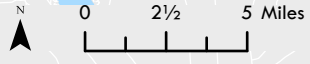
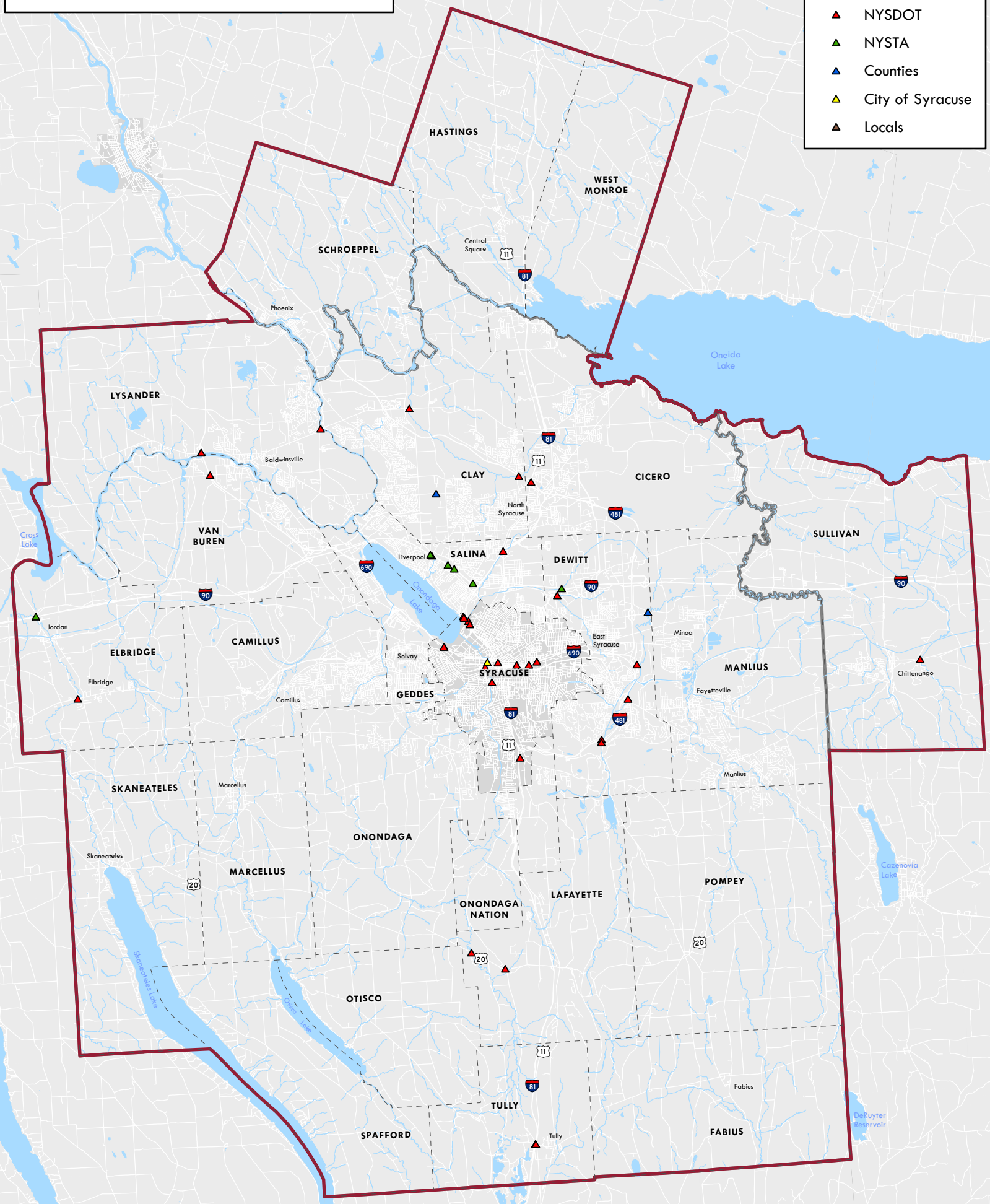
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020, SMTC

Map 7 - NHS Bridges Rated Good, MPA

Bridge Owner

- ▲ NYSDOT
- ▲ NYSTA
- ▲ Counties
- ▲ City of Syracuse
- ▲ Locals



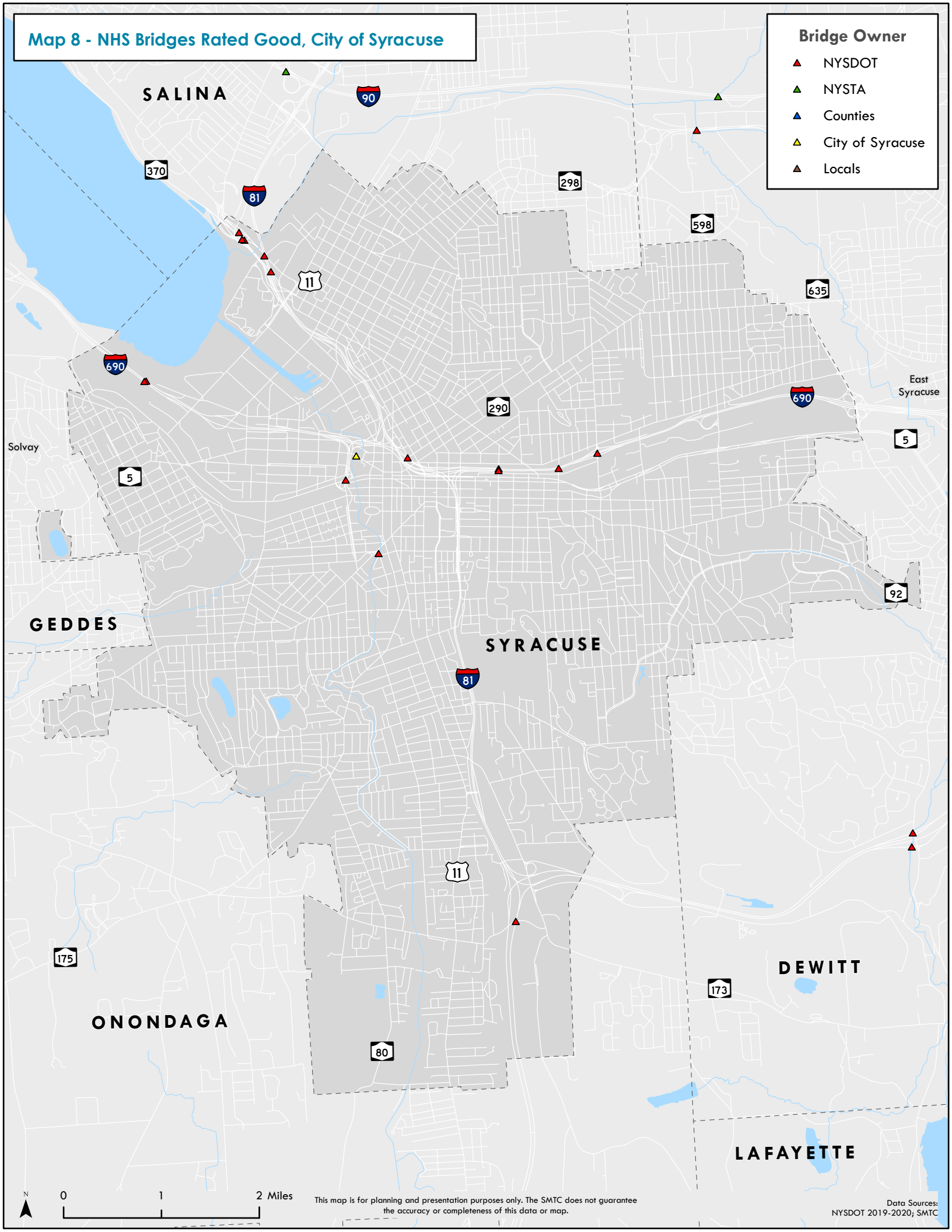
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources:
 NYSDOT 2019-2020; SMTC

Map 8 - NHS Bridges Rated Good, City of Syracuse

Bridge Owner

- ▲ NYSDOT
- ▲ NYSTA
- ▲ Counties
- ▲ City of Syracuse
- ▲ Locals



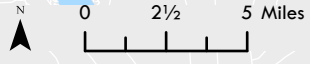
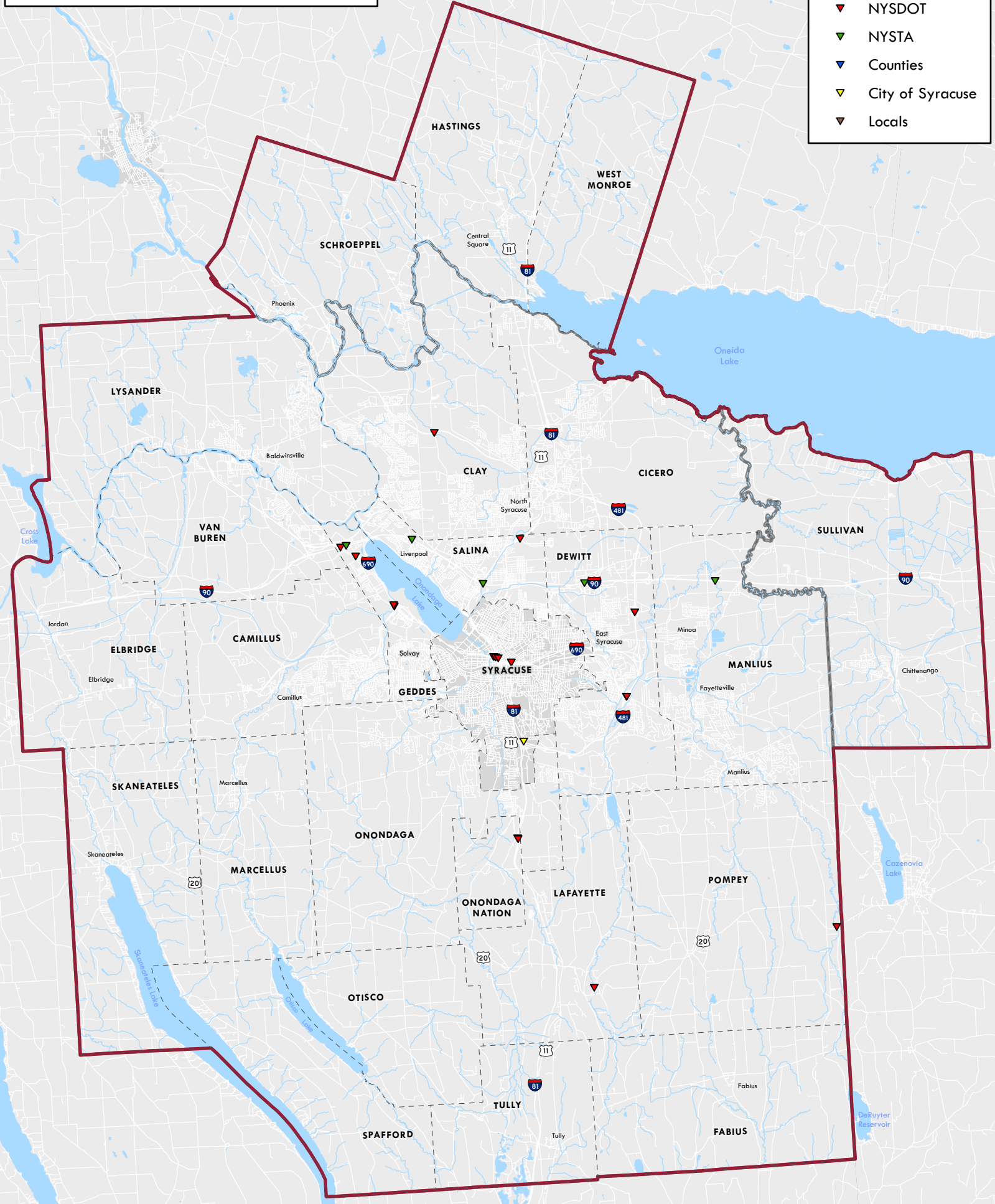
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 9 - NHS Bridges Rated Poor, MPA

Bridge Owner

- ▼ NYSDOT
- ▼ NYSTA
- ▼ Counties
- ▼ City of Syracuse
- ▼ Locals



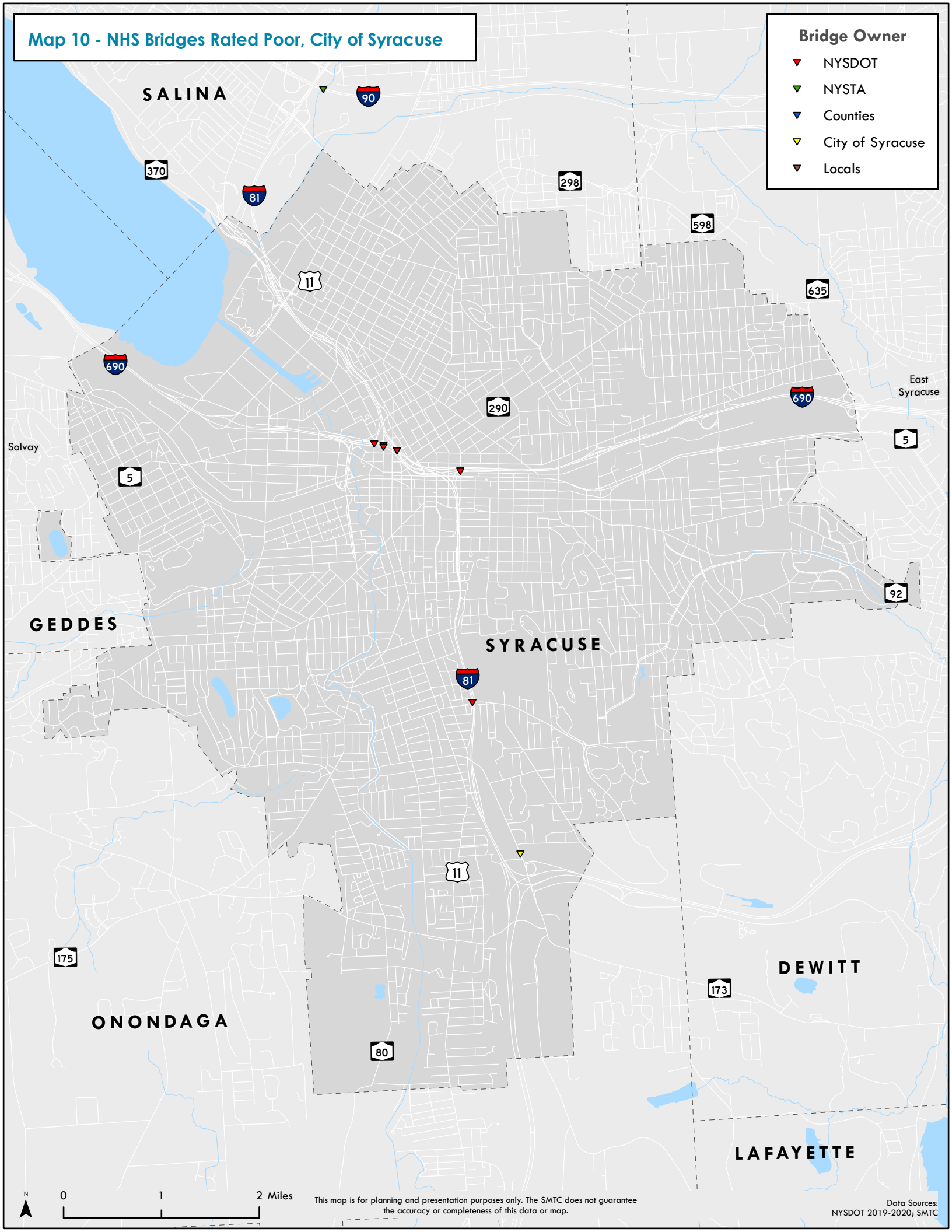
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 10 - NHS Bridges Rated Poor, City of Syracuse

Bridge Owner

- ▼ NYSDOT
- ▼ NYSTA
- ▼ Counties
- ▼ City of Syracuse
- ▼ Locals



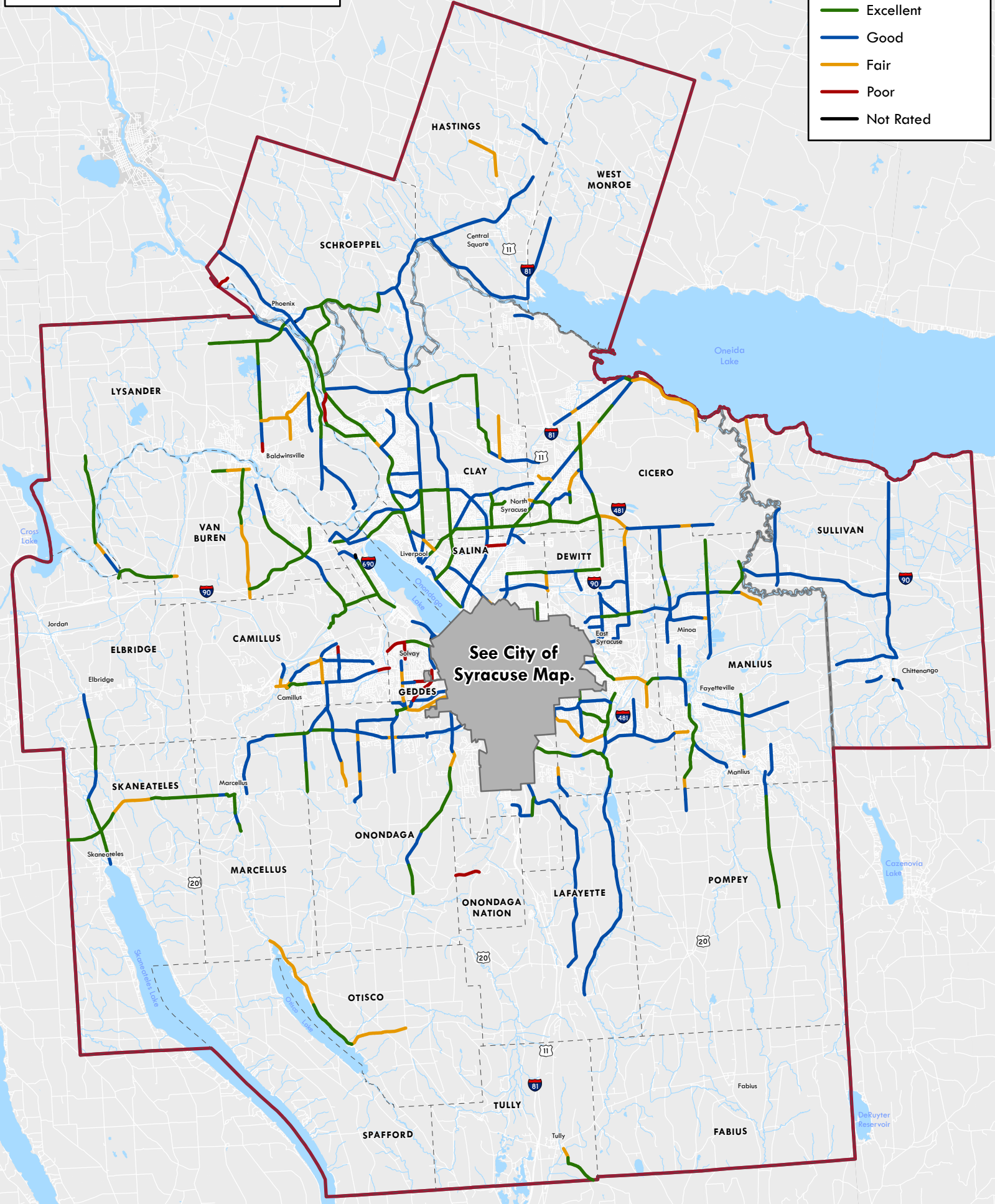
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

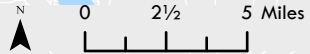
Map 11 - Pavement Ratings, MPA

Pavement Rating

- Excellent
- Good
- Fair
- Poor
- Not Rated



See City of Syracuse Map.



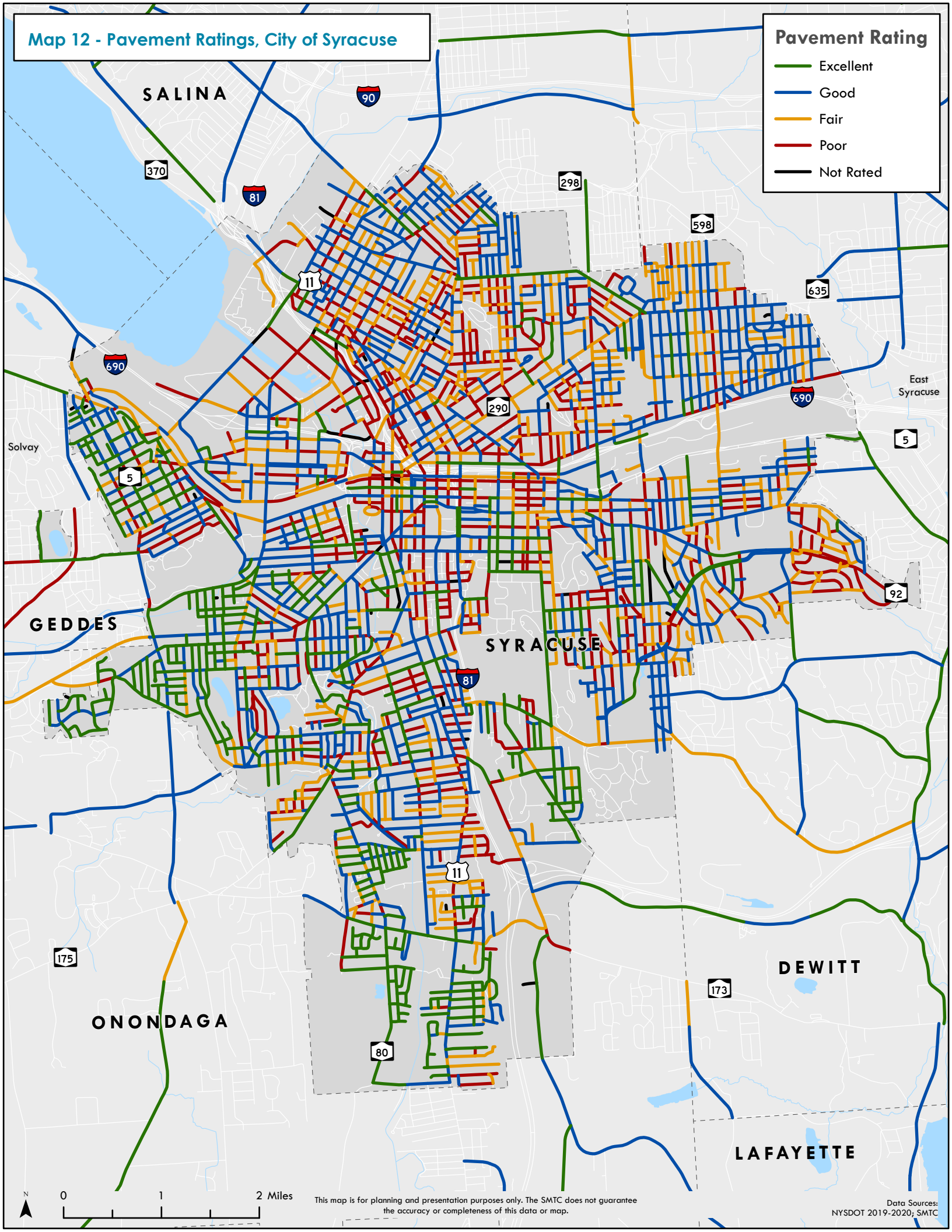
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 12 - Pavement Ratings, City of Syracuse

Pavement Rating

- Excellent
- Good
- Fair
- Poor
- Not Rated



SALINA

370

81

90

298

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East Syracuse

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Solvay

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GEDDES

SYRACUSE

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DEWITT

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LAFAYETTE

0 1 2 Miles

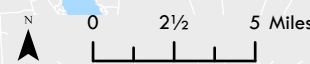
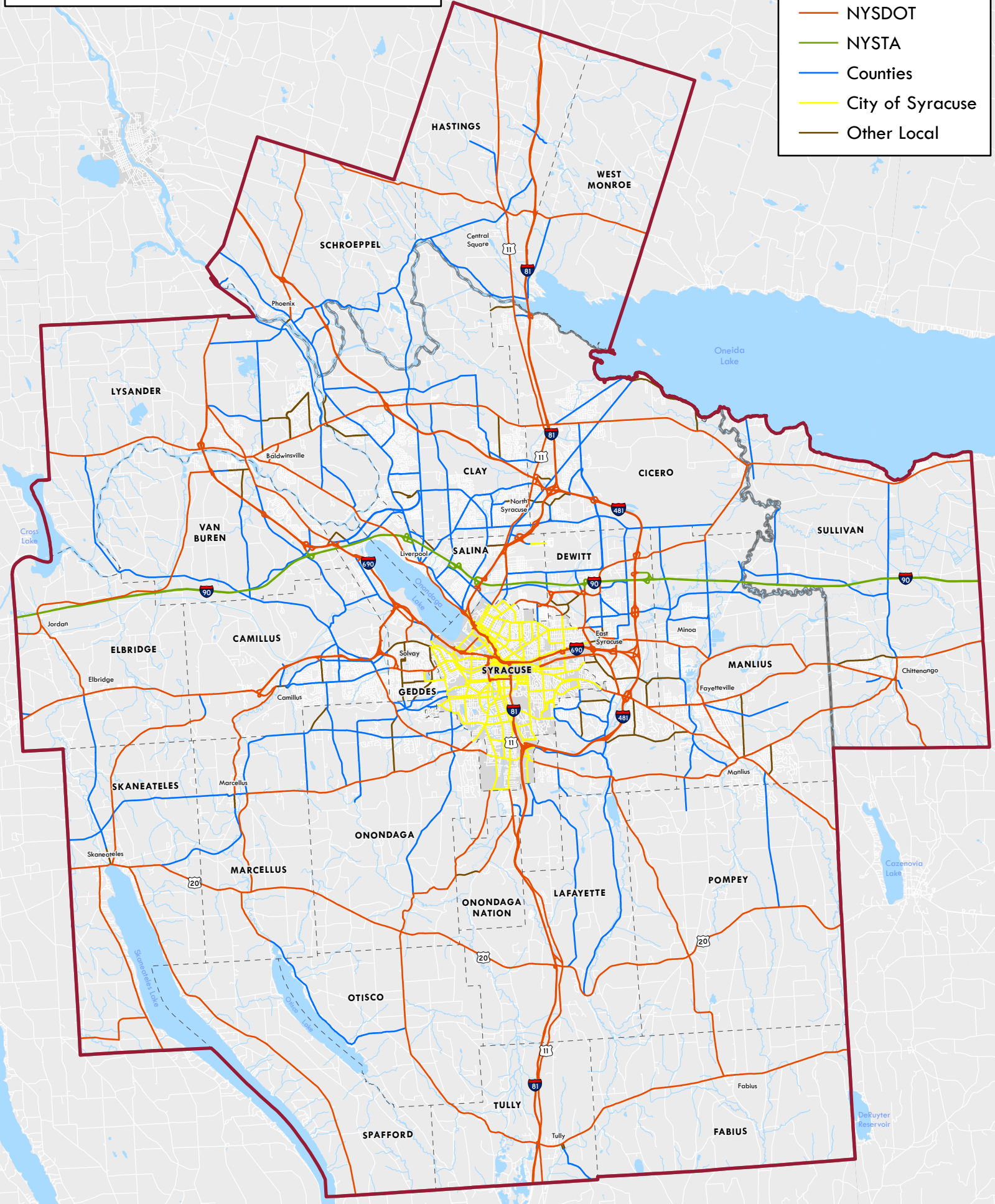
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020, SMTC

Map 13 - Federal-aid Eligible Roads by Owner

Road Ownership

- NYSDOT
- NYSTA
- Counties
- City of Syracuse
- Other Local



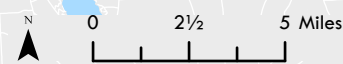
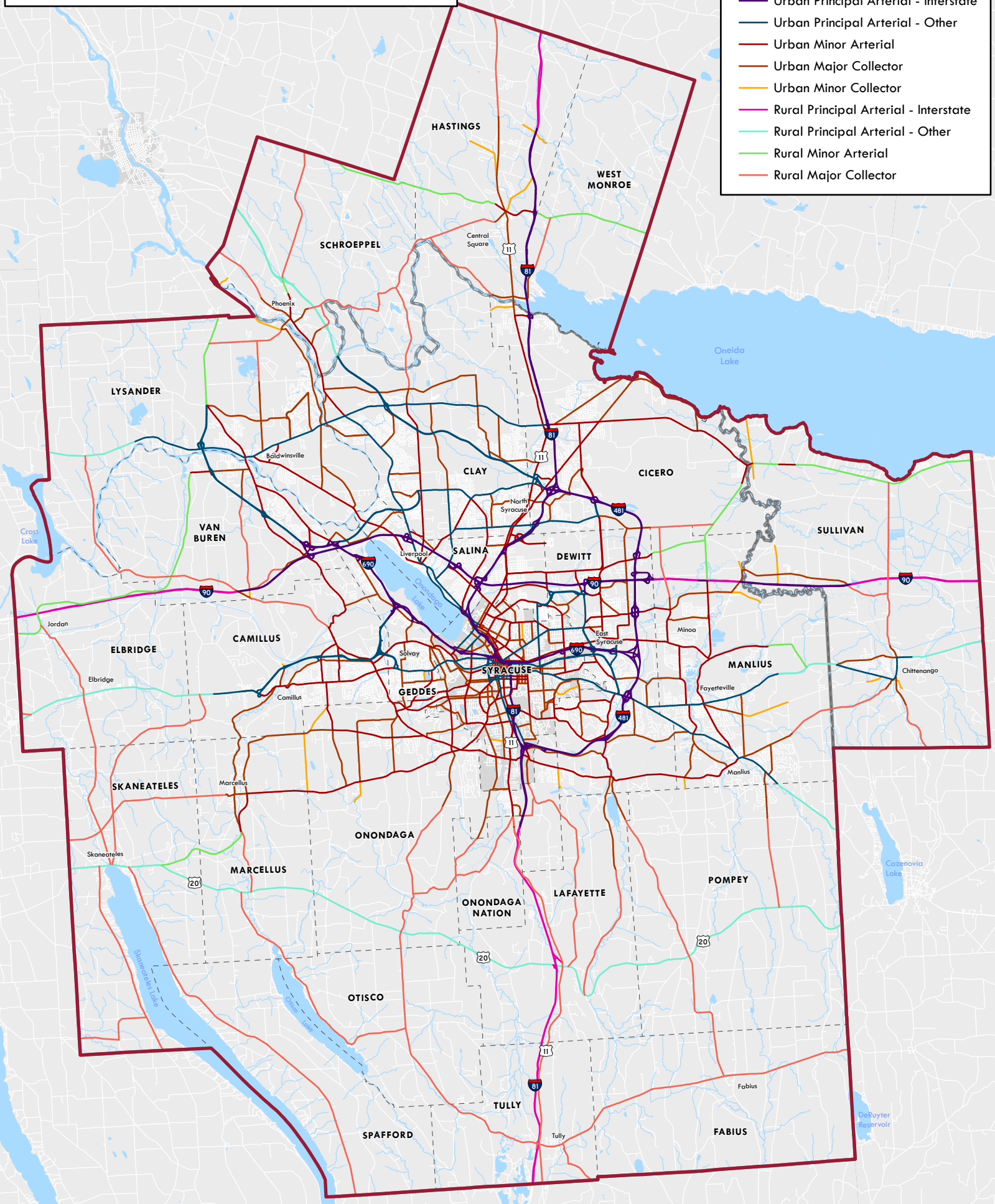
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 14 - Functional Classification on FAE Roads

Functional Classification

- Urban Principal Arterial - Interstate
- Urban Principal Arterial - Other
- Urban Minor Arterial
- Urban Major Collector
- Urban Minor Collector
- Rural Principal Arterial - Interstate
- Rural Principal Arterial - Other
- Rural Minor Arterial
- Rural Major Collector



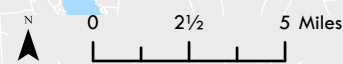
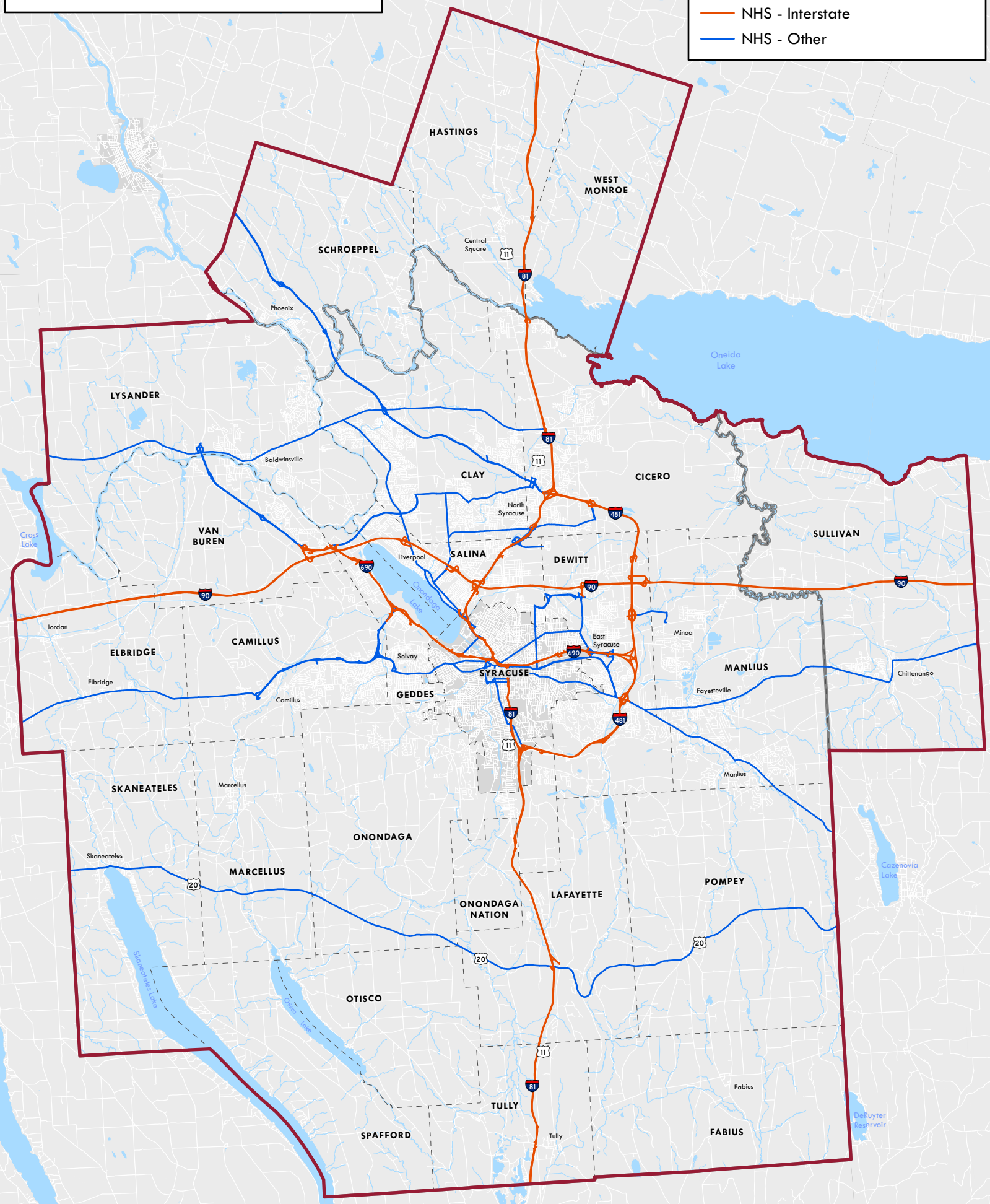
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 15 - The National Highway System

National Highway System (NHS)

- NHS - Interstate
- NHS - Other



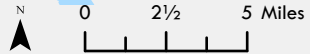
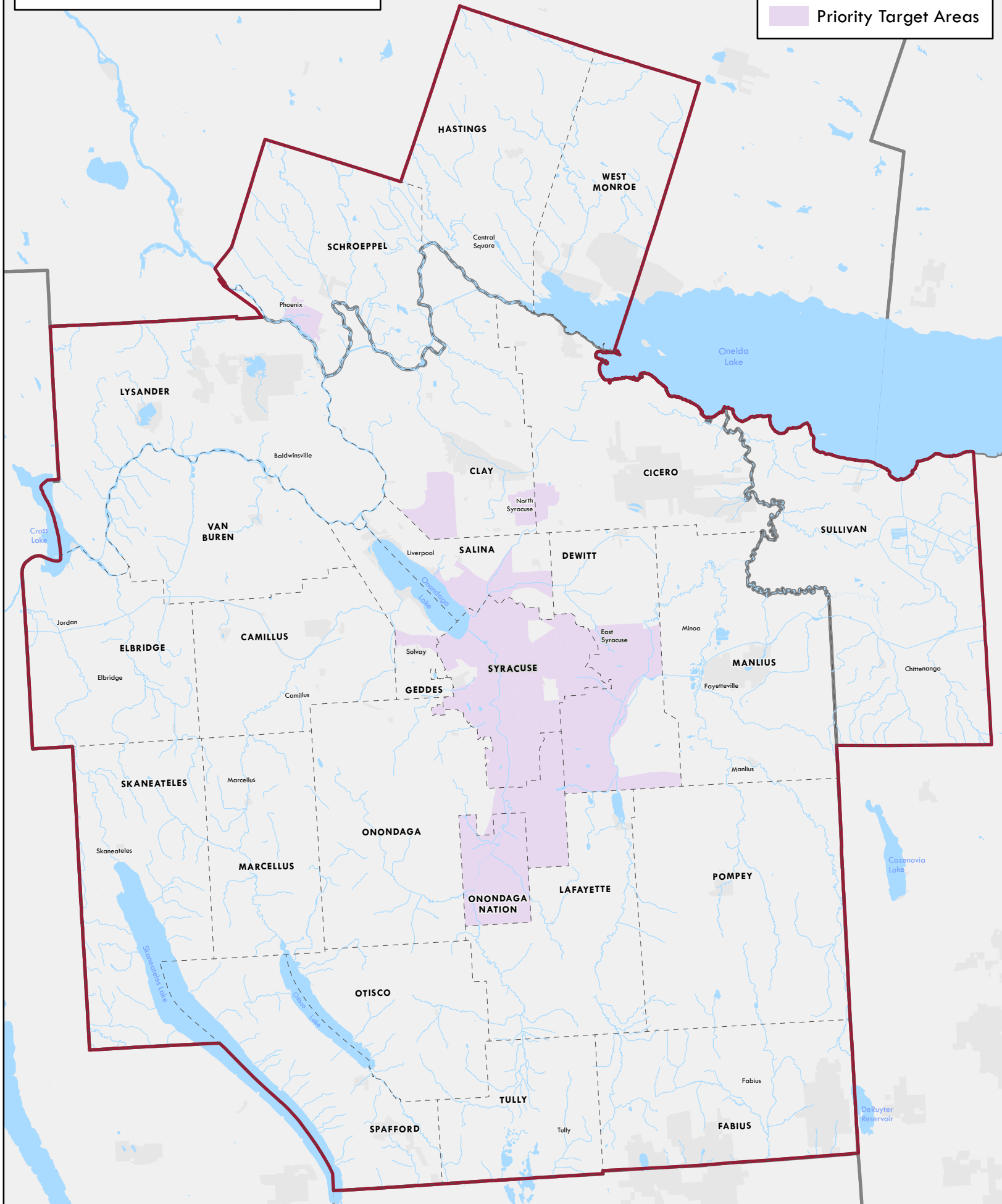
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 16 - Environmental Justice Areas

Environmental Justice

Priority Target Areas



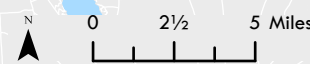
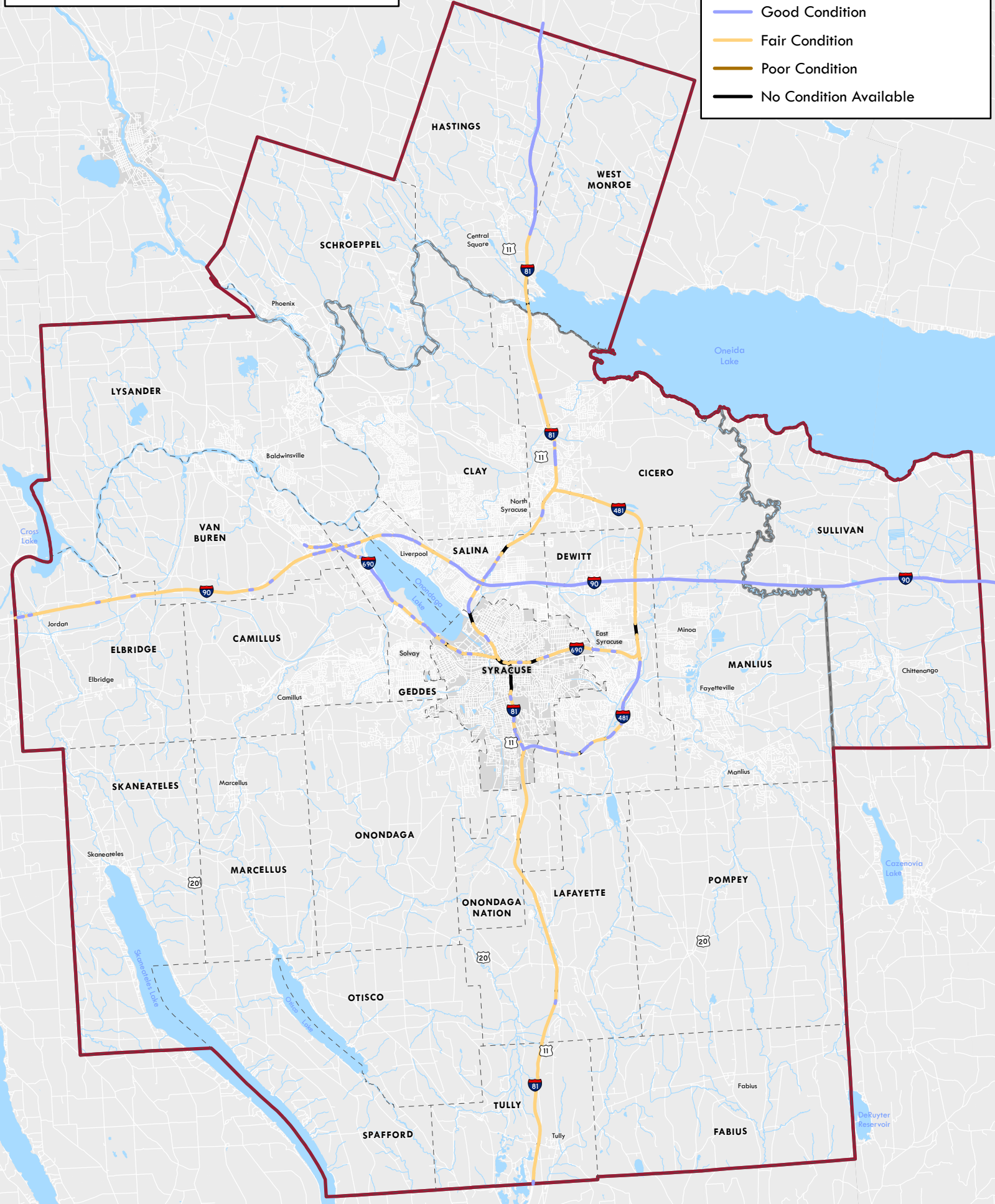
This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: NYSDOT 2019-2020; SMTC

Map 17 - Interstate Pavement Conditions

Pavement Condition (2018)

- Good Condition
- Fair Condition
- Poor Condition
- No Condition Available



This map is for planning and presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this data or map.

Data Sources: FHWA 2018; SMTC

Appendix B – City of Syracuse Supplemental Pavement Rating

Introduction

Each program year, the Syracuse Metropolitan Transportation Council publishes a Bridge and Pavement Condition Management System (BPCMS) report to serve as a comprehensive clearinghouse for condition information on selected bridges and pavements throughout the Metropolitan Planning Area (MPA). Throughout its history, the BPCMS has contained different types of information varying in scope, depending on the needs of member agencies, federal regulations, and data collection methods. Most recently, the Pavement section of the report has included condition information on all federal-aid eligible roads in the MPA.

In 2019, in addition to compiling data on federal-aid eligible roads, the SMTC undertook a new effort – providing ratings on the entirety of the City of Syracuse’s road system. In keeping with past data collection efforts by the City, roads were rated on a block-by-block basis. The City indicated that having consistent pavement ratings will allow the Department of Public Works and other City entities to make data-driven decisions for street repair, reconstruction, and preventative maintenance. The SMTC again collected ratings on the entirety of the system in 2020.

Rating Scale

The SMTC rates pavement using the NYSDOT’s *Surface Score* rating scale, which is a windshield survey providing ratings ranging from 1 (impassible) to 10 (new pavement). The ratings on this scale are given based on the frequency and severity of surface cracking. The survey is completed at posted speed limits while within the vehicle, no additional testing is conducted as a part of the Surface Score Analysis.

The *Surface Score* categorizes ratings based on the 1-10 values. Roads with a score of 9 or 10 are

considered Excellent, 7-8 are considered Good, 6 is considered Fair, and 1-5 are considered Poor. SMTC staff have attended several trainings with NYSDOT staff to rate pavement using this scale. In addition to the 1-10 values, the SMTC applies a value of “0,” or Unrated, to a very small percentage of roads. In most instances, Unrated roads are either under construction at the time of rating, or consist of materials not suited for pavement rating, such as brick or concrete bridge deck.

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

Figure 10 – An overview of the Surface Score. Source: NYSDOT Pavement Rating Manual.

Results

Figures 2 and 3 below illustrate pavement ratings by category and mileage for the City of Syracuse. Mileage totals are given as linear centerline miles, not lane miles – a single rating is applied to a mile of pavement, regardless of the number of lanes or pavement width. Mileage totals are not engineering- or survey-grade, and should be considered for planning purposes only. The SMTC is constantly updating the roads database to better and more

accurately depict conditions on the ground, and therefore, small deviations in road measurements from year-to-year are to be expected.

Category	Miles	Percent
Excellent	75.0	19.1%
Good	136.6	34.7%
Fair	86.9	22.1%
Poor	92.1	23.4%
Unrated	3.4	0.9%
Total Miles	394.1	100%
Weighted Average Rating		6.8 (Fair)

Figure 2 – Pavement ratings by centerline miles in the City of Syracuse.

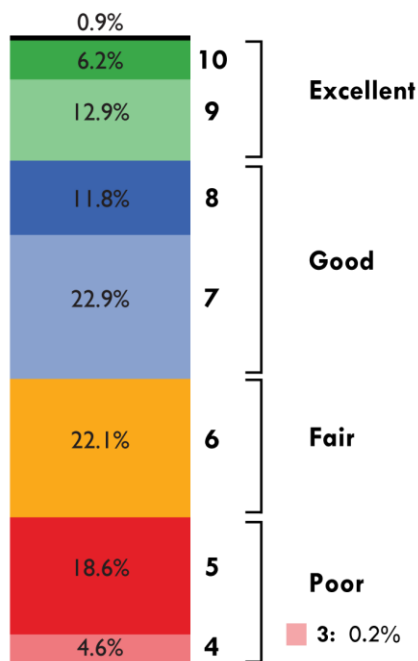


Figure 3 – Percentages by individual score.

Federal-aid eligibility on roadways 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 which do not fall into one of these categories are classified as Local. Local, when used in this sense, has no bearing on the ownership of the road – only its functional classification.

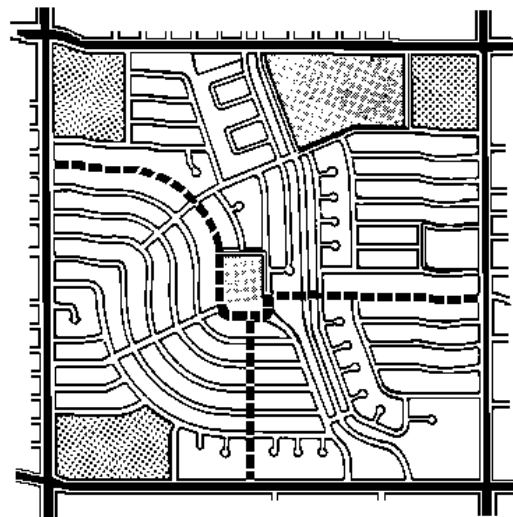


Figure 4 - An illustration of the relationship between functional classifications. The thick lines represent arterials, the dotted lines are collectors, and the hollow lines are locals. Source: FHWA.

Additionally, roads are classified as urban or rural, largely based on urban area boundaries from the US Census. All roads in the City of Syracuse have an urban classification. All urban roads with a functional classification other than Local are considered federal-aid eligible. Figure 5 illustrates rating category by functional classification in the City of Syracuse, and Figure 6 shows rating categories on the federal-aid eligible system. Note that the federal-aid system is only approximately one third of the City's entire network.

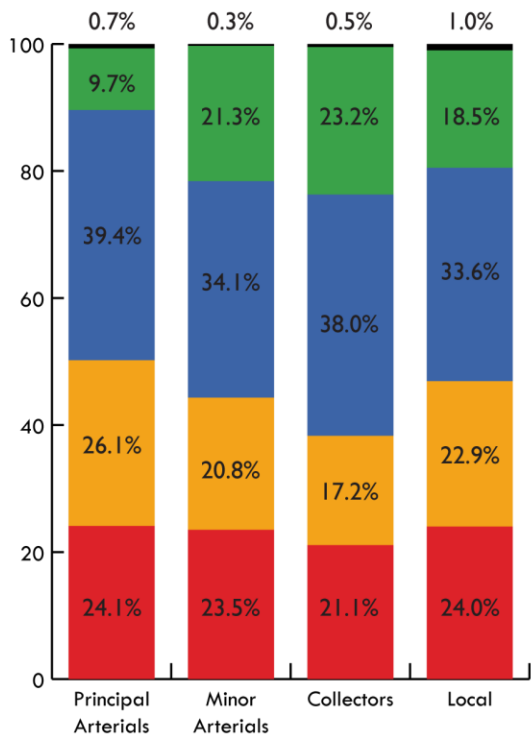


Figure 5 – Percent of pavement centerline miles in each rating category by functional classification.

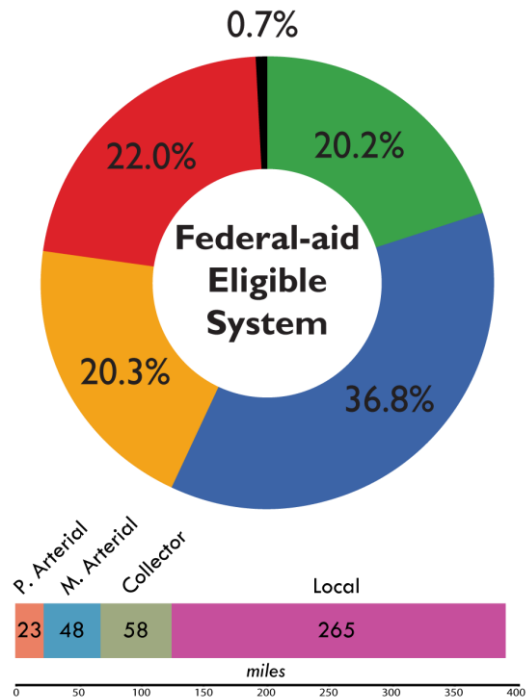


Figure 6 – Percent of pavement centerline miles in each rating category on the federal-aid system, and number of miles on the road network in each functional class.

In addition to this document, the SMTC published the pavement ratings collected onto a web-based application using the ESRI ArcGIS Online platform. City officials and members of the public are able to visit the web application and select any road segment, and find the rating, additional information, and a picture of the pavement on that segment at the time of data collection. 2020 pavement ratings now accompany the 2019 ratings in the application.

The application is available at <https://smtcmpo.org/syracuse-pavement-ratings>.

As a reference, Map 1 at the end of this appendix shows pavement ratings for the City. Additional maps can be provided upon request.



Figure 7 – An example of the type of photo collected as a part of the rating process.