CITY OF NOVI
LAND USE MASTER PLAN UPDATE
THOROUGHFARE REVIEW

Master Plan Steering Committee

October 5, 2022

Introduction

- Evaluation of Transportation Network
  - Existing conditions
  - Safety analysis
  - Capacity analysis
- Focus on existing (2022) and future 10-year (2032) conditions
- Primary sources of data
  - City of Novi
  - Road Commission for Oakland County (RCOC)
  - Michigan Department of Transportation (MDOT)
  - Southeast Michigan Council of Governments (SEMCOG)
- Presentation based on select material

Existing Conditions

- Establish baseline conditions and framework
- Review of prior transportation related studies such as:
  - 2016 Thoroughfare Master Plan
  - Road Committee Reports
  - Complete Streets Guide
- Transportation characteristics evaluation examples *(items in **bold** included in this presentation)*
  - **Road Classification (National Functional Classification and Thoroughfare Classification)**
  - **Road Ownership**
  - **Traffic Volumes**
  - National Highway System (NHS)
  - Truck Routes
  - Pavement Conditions (PASER)
  - Speed Limits
  - Right-of-Way
  - Non-Motorized Network

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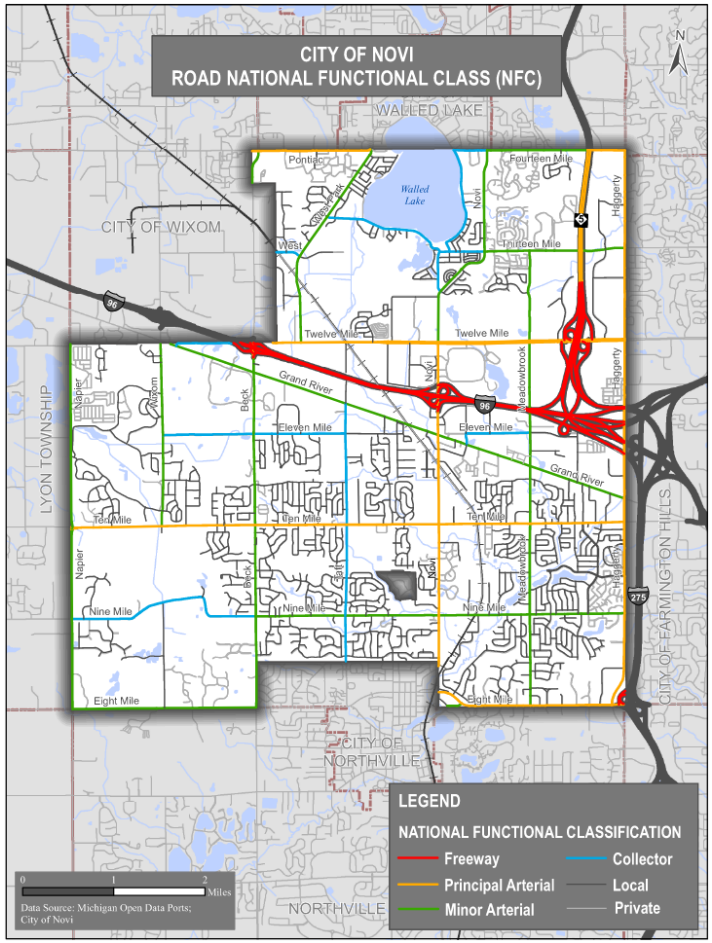
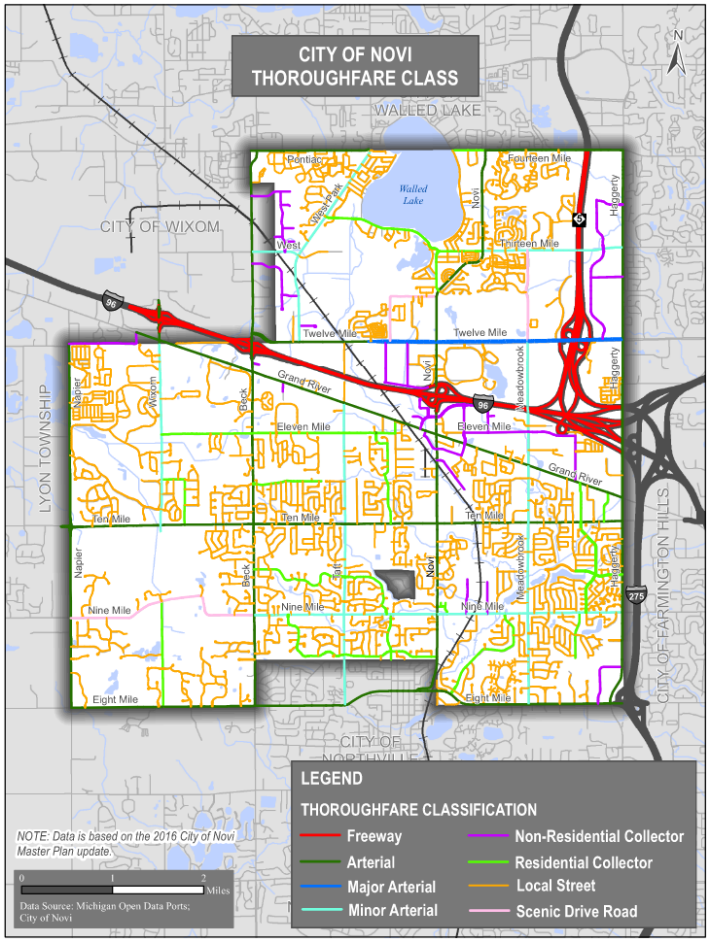
National Functional Classification (NFC)

- Standard classification of public roads based on mobility and land access *(based on MI Geographic Framework v20a)*
  - **Freeway** – Includes Interstate and Other Freeways (25.4 miles)
  - **Principal Arterial** – Most heavily traveled cross city routes which encourage mobility and commercial traffic (29.3 miles)
  - **Minor Arterial** – Lower level of mobility than other principal arterial and are intended for shorter trip distances and less traffic (34.2 miles)
  - **Collector** – Includes Major Collectors and Minor Collectors which connect local roads to arterials (12.7 miles)
  - **Local Roads** – Limited mobility and greater land use access (160 miles)
  - **Private Roads** – Not in NFC system (67.4 miles)



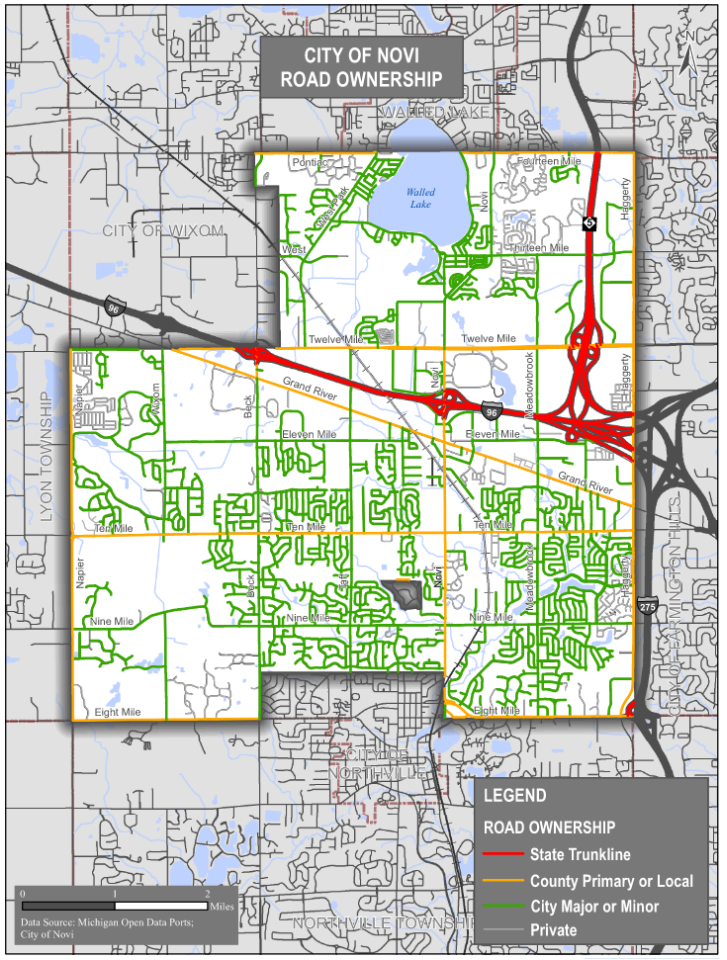
Thoroughfare Classification

- Classifies roads based on the City of Novi Master Plan
  (based on City of Novi GIS database)
  - **Freeway** – Limited access highway with no at-grade crossings (34.4 miles)
  - **Major Arterial** – High level arterial which encourages mobility and commercial traffic (6.2 miles)
  - **Arterial** – Medium level arterial which encourages mobility and commercial traffic (46.3 miles)
  - **Minor Arterial** – Low level arterial which encourages mobility and commercial traffic (17.9 miles)
  - **Non-Residential Collector** – Connect non-residential areas to arterials (14.7 miles)
  - **Residential Collector -** Connect residential areas to arterial (20.5 miles)
  - **Local Street** – street of limited continuity used for immediate access to residential properties (230 miles)
  - **Scenic Drive Road** – public road offering enjoyment to adjacent environmental and natural features (4.2 miles)



Road Ownership

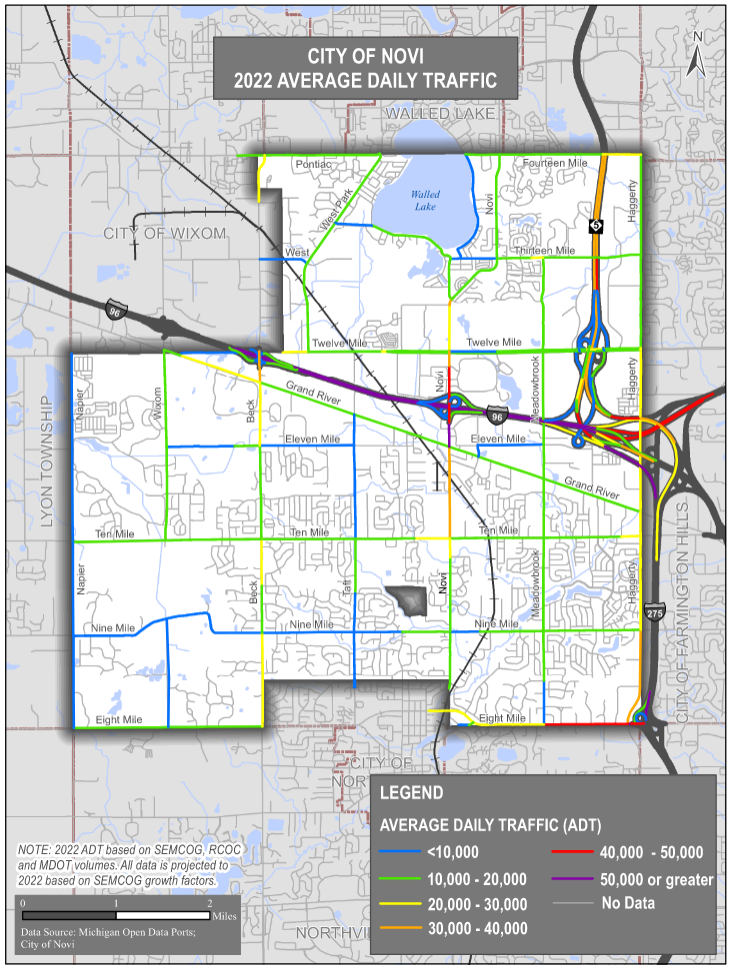
- Road ownership in the City falls under four categories
  - State Trunkline - MDOT
  - County Primary or Local - RCOC
  - City Major or Local - Novi
  - Private – Private entities

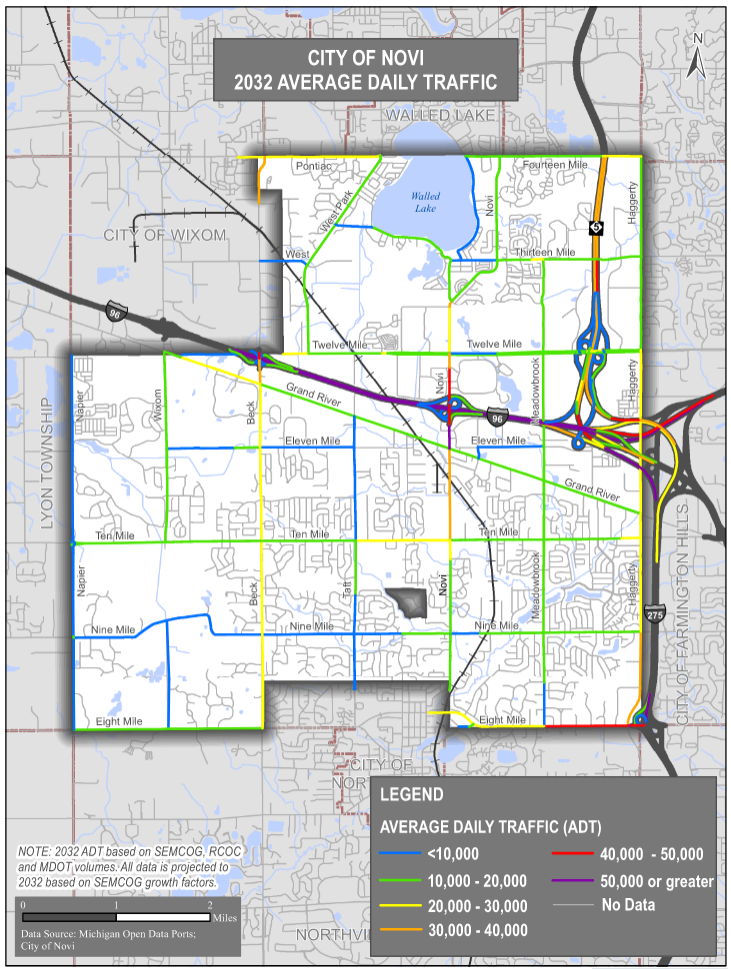


6

Traffic Volumes

- Critical variable in the evaluation of transportation network
  - Safety – Primary exposure variable
  - Capacity – Represent demand side of network
  - Other – Can be used in determining level of funding for maintenance, improvements etc.
- Data collected from various sources such as RCOC Transportation Data Management System (TDMS), RCOC Traffic Count Database System (TCDS), MDOT TDMS, SEMCOG Traffic Volumes, SEMCOG Traffic Demand Forecast Model
- Growth rates based on SEMCOG's 2015 and 2035 Traffic Demand Forecast Model and applied on all volumes.
  - Present Volumes – 2022
  - Future Volumes – 2032 (10-year projection)


CITY OF NOVI
2022 AVERAGE DAILY TRAFFIC
WALLED LAKE
CITY OF WIXOM
LYON TOWNSHIP
CITY OF FARMINGTON HILLS
Pontiac
Fourteen Mile
Thirteen Mile
Twelve Mile
Eleven Mile
Ten Mile
Nine Mile
Eight Mile
Grand River
Walled Lake
West Park
Napier
Wixom
Beck
Novi
Meadowbrook
Haggerty
96
275
NOTE: 2022 ADT based on SEMCOG, RCOC and MDOT volumes. All data is projected to 2022 based on SEMCOG growth factors.
0 1 2 Miles
Data Source: Michigan Open Data Ports; City of Novi
LEGEND
AVERAGE DAILY TRAFFIC (ADT)
<10,000
10,000 - 20,000
20,000 - 30,000
30,000 - 40,000
40,000 - 50,000
50,000 or greater
No Data


CITY OF NOVI
2032 AVERAGE DAILY TRAFFIC
WALLED LAKE
CITY OF WIXOM
LYON TOWNSHIP
CITY OF FARMINGTON HILLS
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Fourteen Mile
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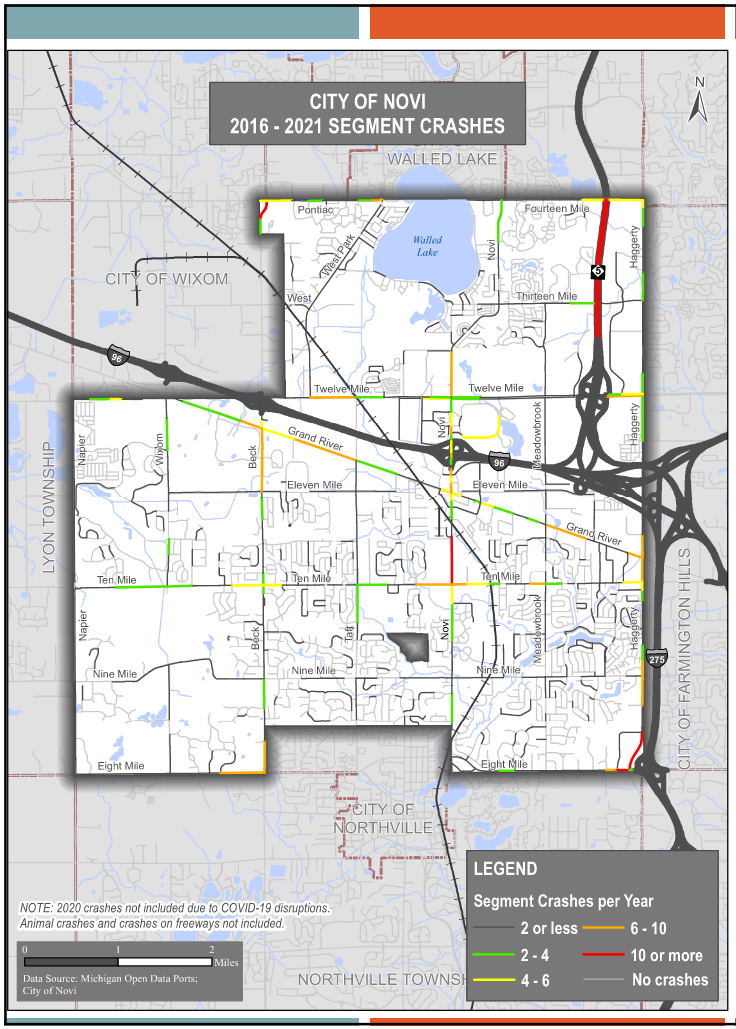
No Data

8

Safety Analysis

- Primary objective of safety is to prevent fatal and injury crashes through appropriate Engineering, Enforcement, Education, Emergency services, and Equity measures (5 E's)
- Safety analysis aims to identify areas of safety improvements opportunities
  - Based on five years of crash data 2016-2021 (2020 not included due to COVID-19 disruptions in traffic patterns)
  - Animal related crashes not included to minimize element of randomness associated with these crashes
  - Segment and intersection crashes evaluated separately to account for different geometric, operational, and behavioral characteristics
- Safety evaluated in terms of crash frequencies and crash rate
- A high magnitude of crashes or crash rates may indicate a safety concern



Segment Crash Frequency

Top 5 Segments (All):

Haggerty Rd (8 Mile to Orchard Hill)

M-5 (13 Mile to 14 Mile)

M-5 NB (Off-Ramp to 13 Mile)

Novi Rd (10 Mile to Gen Mar)

8 Mile Rd (Orchard Hill to Haggerty)

Top 5 Segments (FI):

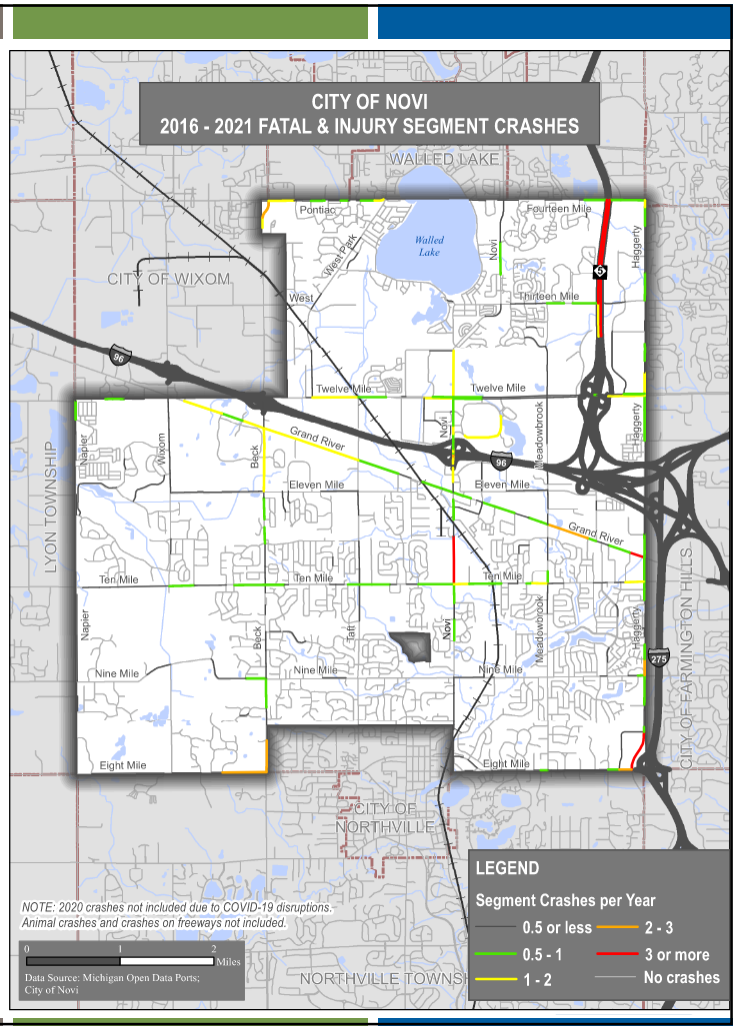
M-5 (13 Mile to 14 Mile)

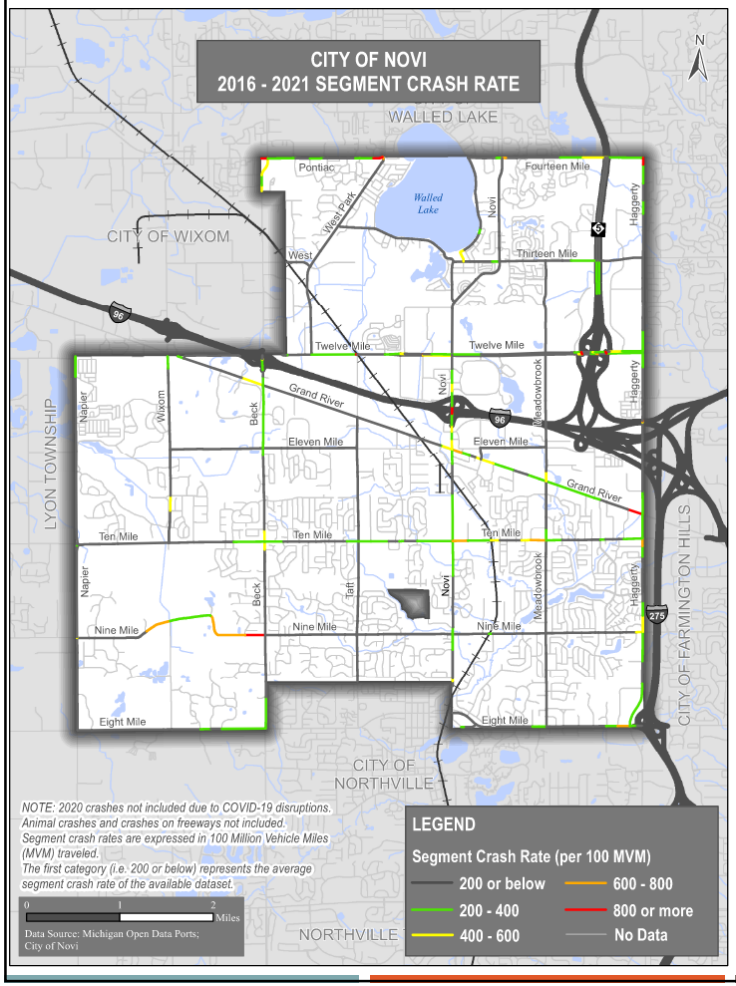
M-5 NB (Off-Ramp to 13 Mile)

Haggerty Rd (8 Mile to Orchard Hill)

Novi Rd (10 Mile to Gen Mar)

8 Mile Rd (Orchard Hill to Haggerty)





Segment Crash Rate

Top 5 Segments (All):

9 Mile Rd (Kensington to Beck)

Grand River Ave (Karim to Haggerty)

10 Mile (Novi to Catherine Industrial)

10 Mile (Manor Park to Meadowbrook)

8 Mile Rd (Orchard Hill to Haggerty)

Top 5 Segments (FI):

9 Mile Rd (Kensington to Beck)

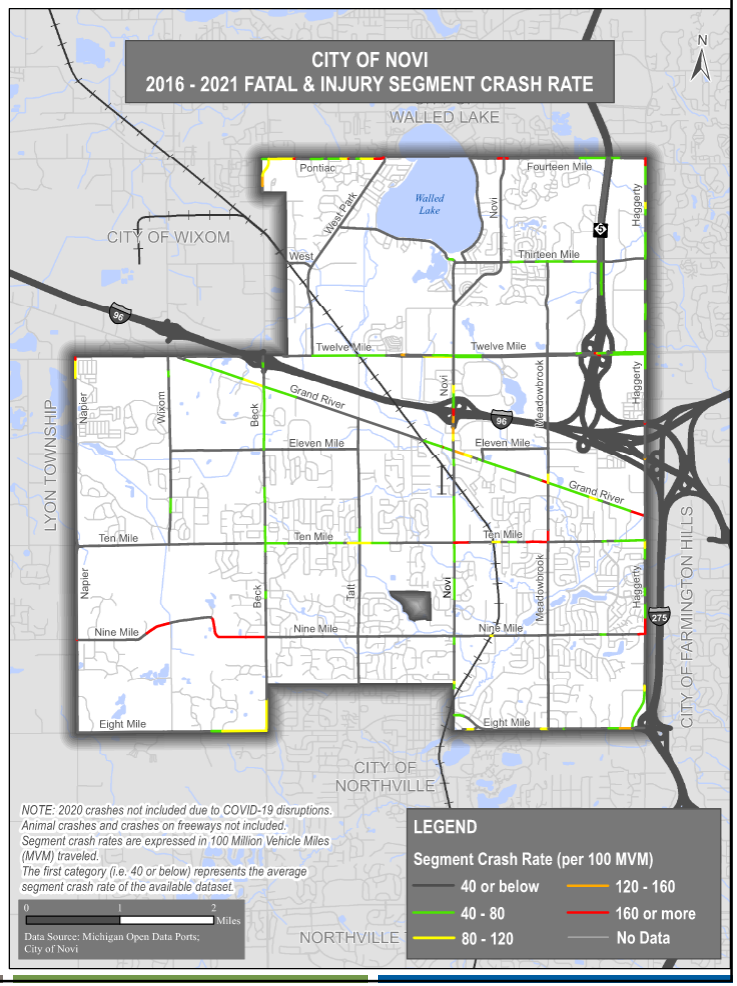
9 Mile Rd (Evergreen to Garfield)

Grand River Ave (Karim to Haggerty)

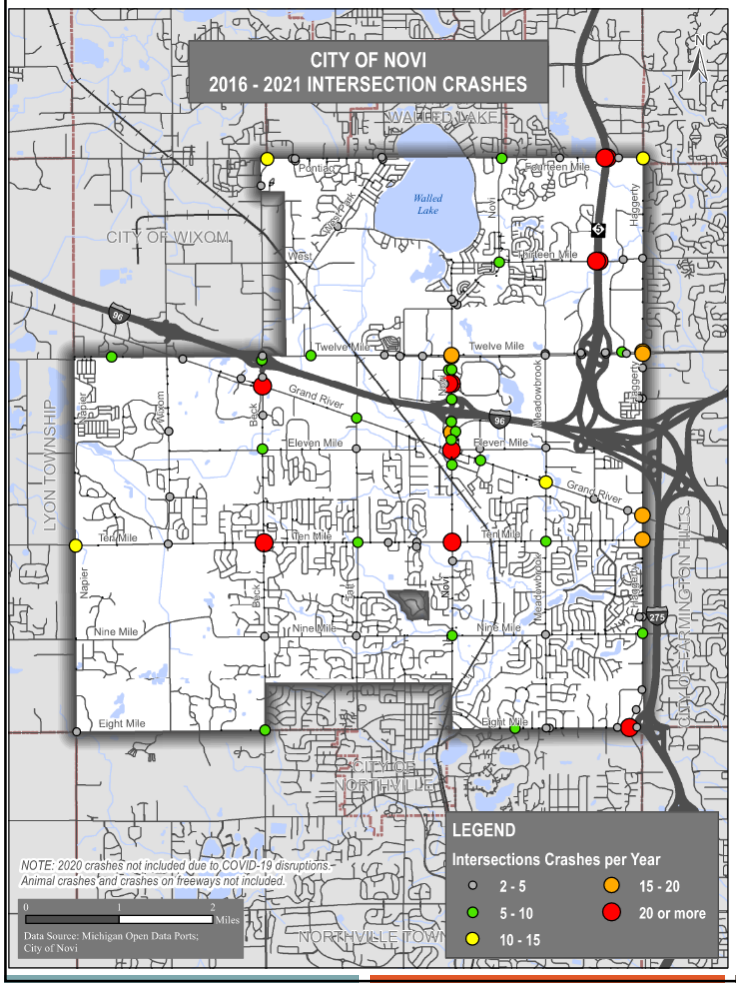
10 Mile (Manor Park to Meadowbrook)

Haggerty Rd (9 Mile to Pavillion)

Note:
Only segments over 0.1 miles in length are listed.



11



Intersection Crash Frequency

Top 5 Intersections (All):

Grand River Ave & Novi Rd

M-5 & 14 Mile Rd (NB & SB)

M-5 & 13 Mile Rd (NB & SB)

Novi Rd & Twelve Oaks/ Karevich Dr

8 Mile Rd & Haggerty Rd

Top 5 Intersection (FI):

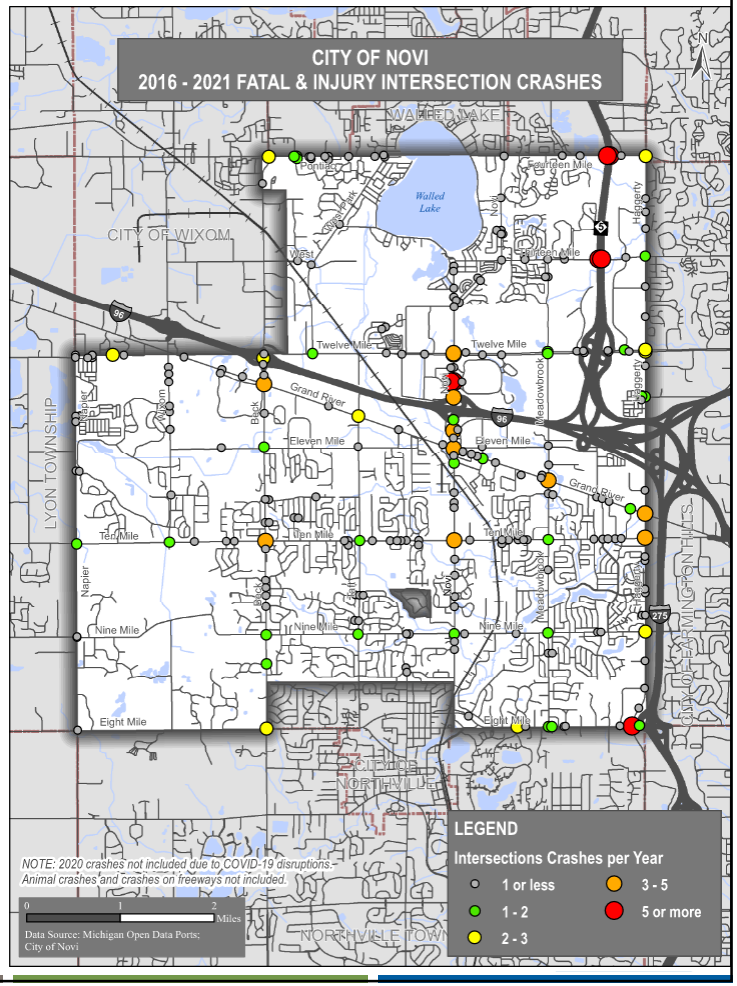
Novi Rd & Twelve Oaks/ Karevich Dr

M-5 & 13 Mile Rd (NB & SB)

M-5 & 14 Mile Rd (NB & SB)

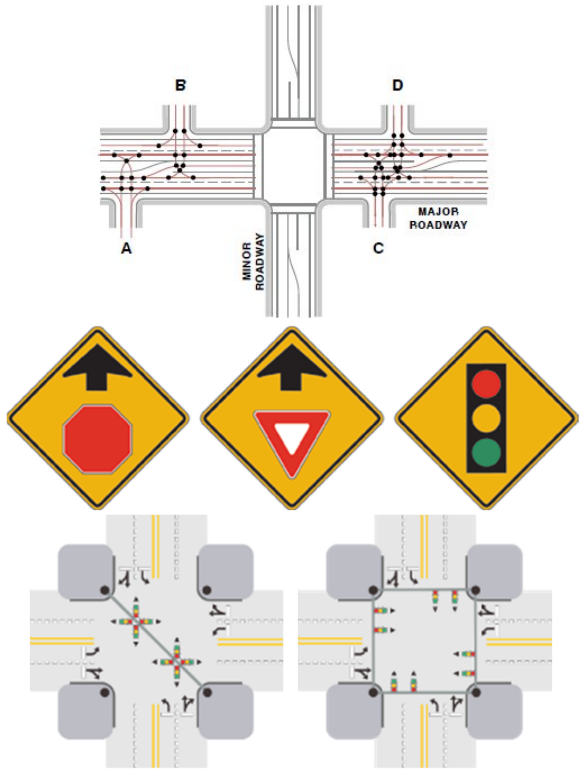
8 Mile Rd & Haggerty Rd

12 Mile Rd & Novi Rd



Typical Safety Countermeasures

- Access Management
- Advanced Intersection Signs
- Advisory Speeds
- Signal backplate
- Two-Way Left-Turn Lane
- Signal modernization
- Flashing Beacons at Stop Signs
- Left Turn Signal Phasing
- Reflective Sheeting on Sign Posts
- Road Safety Audit
- Speed Feedback Sign
- Wet Reflective Pavement Markings
- Bicycle Lanes
- Pedestrian Bump Outs
- Pedestrian Countdown Timer
- Pedestrian Refuge Island
- R1-6 Gateway Treatment
- Rectangular Rapid Flash Beacon (RRFB)
- Safety Paths



Capacity Analysis

- Primary objective is to evaluate network capacity performance
- SEMCOG 2015 and 2035 Traffic Demand Forecast Models for PM peak used to determine existing (2022) and future (2032) capacity for all public non-local roads
  - Models reviewed and revised for traffic volumes and road lane configurations
- Based on Volume-to-Capacity (V/C) Ratio
  - Performance measure for level of congestion on a given roadway
  - Function of demand (volume) and capacity (maximum traffic flow)
- V/C ratio ranges:
  - 0 → no demand
  - 0.8 to 1 → demand reaching capacity
  - 1 → demand equals capacity
  - Greater than 1 → demand exceeds capacity
- 2032 model revised to include funded or likely to be funded projects
  - I-96 Flex Route
  - 10 Mile Rd, Meadowbrook Rd to Haggerty Rd – Install TWLTL
  - 12 Mile Rd, Beck Rd to Cabaret Dr – Widen to 4-lane boulevard
  - Beck Rd, 11 Mile Rd to Providence Dr – Widen to 5-lane road

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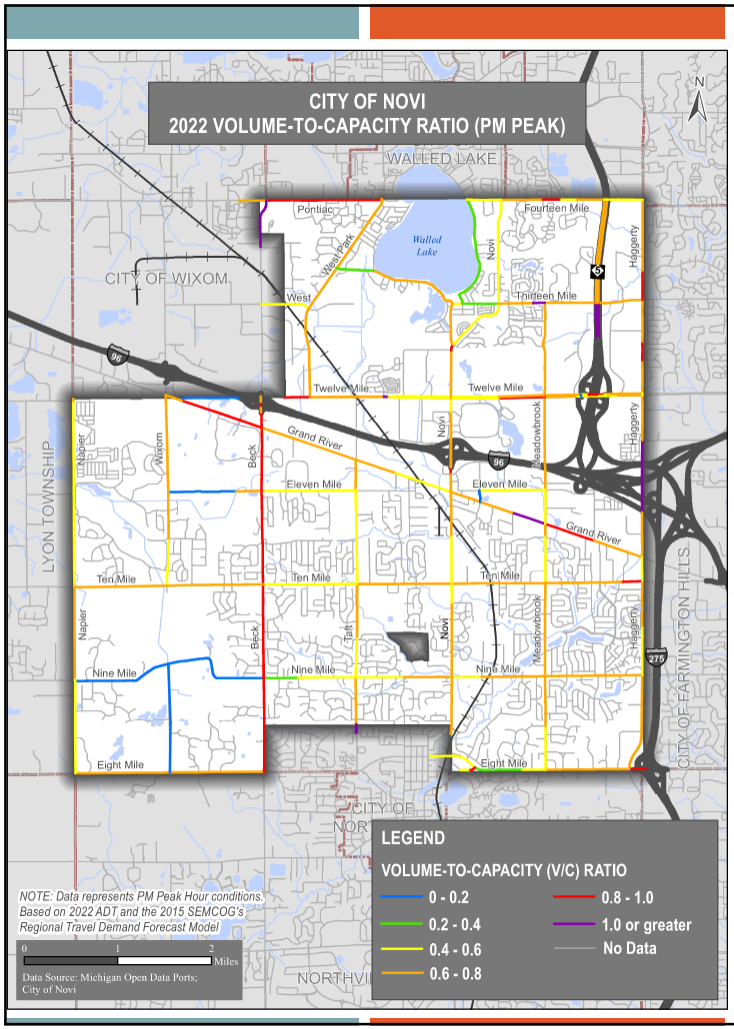

Capacity Analysis

V/C 0.8 or Greater (2022)

M-5 – M-5 Ramps to 13 Mile
8 Mile Rd – Haggerty to City Limits
10 Mile Rd – Karim to Haggerty
12 Mile Rd – City Limits to West Park
12 Mile Rd WB – Mall to Meadowbrook
12 Mile Rd WB – Between M-5 Ramps
Beck Rd – 8 Mile to 12 Mile
Beck Rd – City Limits to Pontiac Trl
Grand River Ave – Wixom to Beck
Grand River Ave – Fountain Pk to Seeley
Haggerty Rd – Regency to JR
Novi Rd – Crescent to I-96 Ramps
Pontiac Trl – Beck to West Park

V/C 0.8 or Greater (2032)

M-5 – M-5 Ramps to 13 Mile
8 Mile Rd – Haggerty to City Limits
10 Mile Rd – Karim to Haggerty
12 Mile Rd WB – Mall to Meadowbrook
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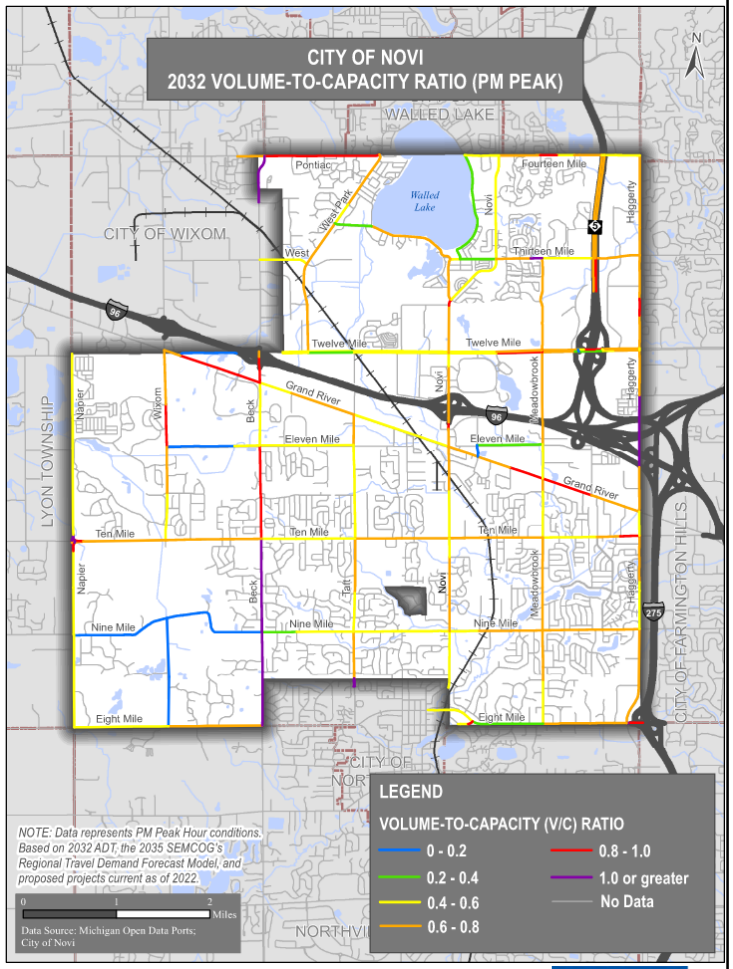
Beck Rd – 8 Mile to 11 Mile
Beck Rd – Grand River to Pontiac Trl
Grand River Ave – Wixom to Beck
Grand River Ave – Fountain Pk to Seeley
Haggerty Rd – Regency to JR
Novi Rd – Crescent to I-96 Ramps
Pontiac Trl – Beck to West Park

Note:
Interstate and Freeways not included.
Select segments shown

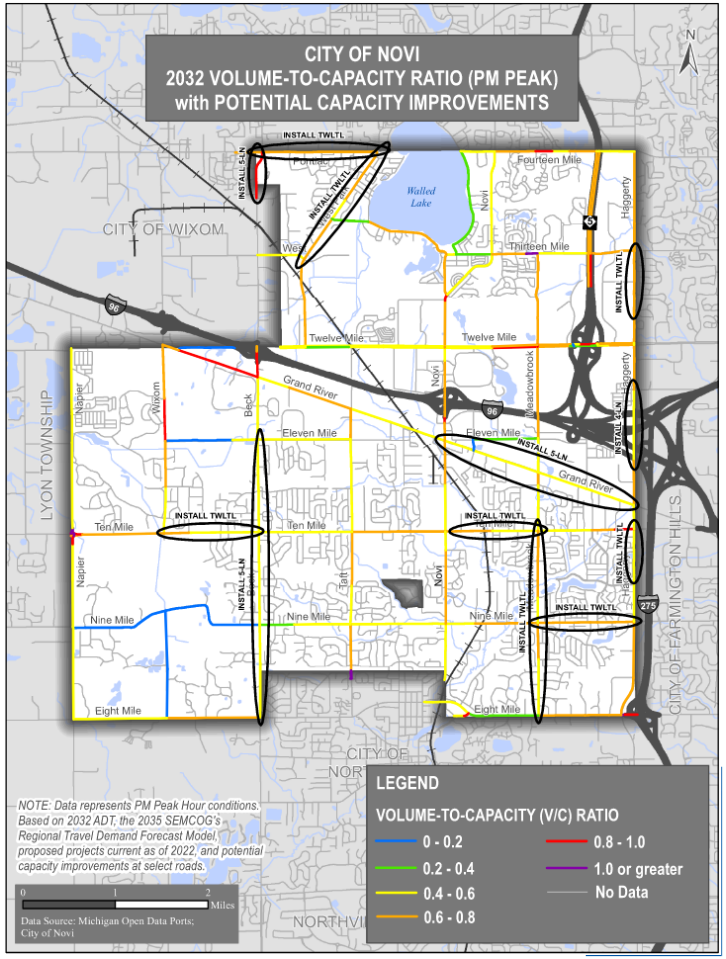


Potential Capacity Improvements

- Potential corridor-wide capacity improvements identified based on 2032 V/C ratios, land use, functional classification, safety, and potential ROW.

ROAD NAME	FROM	TO	POTENTIAL IMPROVEMENT	2032 V/C RATIO	
				BEFORE	AFTER
9 Mile Rd	Meadowbrook Rd	Haggerty Rd	Install TWLTL	0.74	0.67
10 Mile Rd	Wixom Rd	Beck Rd	Install TWLTL	0.64	0.58
10 Mile Rd	Novi Rd	Meadowbrook Rd	Install TWLTL	0.66	0.60
Meadowbrook Rd	8 Mile Rd	10 Mile Rd	Install TWLTL	0.66	0.60
West Park Dr	West Rd	South Lake Dr	Install TWLTL	0.68	0.61
West Park Dr	Bristol Cir	Gateway Dr	Install TWLTL	0.73	0.67
Pontiac Trl	Beck Rd	Park Dr	Install TWLTL	0.85	0.77
Haggerty Rd	8 Mile Rd	10 Mile Rd	Install TWLTL where missing	0.60	0.58
Haggerty Rd	12 Mile Rd	13 Mile Rd	Install TWLTL where missing	0.76	0.69
Haggerty Rd	Regency Dr	JR Blvd	Widen to 4-lane road	1.16	0.58
Grand River Ave	Novi Rd	Haggerty Rd	Widen to 5-lane road	0.79	0.49
Beck Rd	8 Mile Rd	11 Mile Rd	Widen to 5-lane road	1.10	0.52
Beck Rd*	City Limit	Pontiac Trl	Widen to 5-lane road	1.79	0.94

**Widening should extend south to 12 Mile Rd*
V/C ratios above are for the entire segment. Parts of the segment may exhibit lower or greater V/C ratios
TWLTL = Two-Way Left Turn Lane



Typical Capacity Improvements

- Add Travel Lane
- Flexible Work Hours
- Non-Motorized Routes
- Incident Management
- Intersection Turn Lanes
- Roundabouts
- Signal Optimization
- Traveler Information Systems

17

THANK YOU

18