Chapter 9
Roadway Congestion, Congested Links, & Recommended Projects

The Travel Demand Forecast Model (TDFM or "model"), as described in Chapter 8, was used to identify roadway capacity constraints and congestion within the Jackson MPO. These results were provided for two different year scenarios:

1) Base year 2018
2) Horizon year 2050 with committed projects, as listed in the FY 2023-2026 TIP, and 2050 Socio-Economic and employment data forecast.

The TDFM produces current or future anticipated roadway volumes over a 24-hour period. Those volumes are compared to the capacity of the roadway through a "Volume over Capacity (VOC)" ratio. Once calculated, the VOCs are assigned to a "Level of Service (LOS)" categorical system, using a letter grade (A-F). A description and visual representation of the LOS grades used for the Jackson MPO are provided in Figure 9-1 below:

Figure 9-1: Level of Service Grades for Vehicular Traffic on Roads

Volume to Capacity Ratio (VOC)	Level of Service (LOS)	Congestion Description	Example
0.00 to 0.60	A and B	Traffic at free & stable flow; high speeds; few interactions	
0.60 - 0.70	C	Moderately high traffic volumes and interactions; stable flow	
0.70 - 0.80	D	High density of traffic & less maneuverability; speed declines; stable flow	
0.80 and above	E and F	Traffic near or at capacity; slowdowns occur; alternate routes used; unstable flow	

The Jackson MPO and the JACTS Technical Advisory and Policy Committees were provided opportunities to review the model results. Since there were limited roadways within the Jackson MPO area that exhibited high VOC levels on a daily level, the results presented to the MPO and the various committees for comment included any roadways

with moderate VOC (0.60 to 0.70) or higher. By showing roadways with moderate VOC levels, members of the various R2PC committees were able to identify potential traffic congestion problem areas that may need attention in future construction programs.

These locations may also illustrate operational-type issues on a roadway segment, especially during peak travel periods. However, other locations not detected as high VOC by the model may also present congestion issues once factors not captured by the travel demand model – such as traffic interruptions (traffic signals, stop signs, merging, etc.), freedom to maneuver, and safety – affect the LOS.

Due to the limited number of congested corridors over a daily period in the area, no capacity projects were tested or selected outside of those already listed in the most current Transportation Improvement Plan (TIP) and already considered in the horizon year scenario.

Base Year 2018 Results

The Base Year 2018 scenario analysis looked at the existing conditions of the area-wide transportation system as it was in 2018. The 2018 year was chosen because of the availability of demographic and employment data and traffic counts for the development and calibration of the model in accordance with the timeline for the 2050 Long Range Transportation Plan. Roadway projects and socio-economic data changes happening after 2018 are not included in this scenario.

The base year model results do not show any roadways with daily traffic volumes that result in a Level of Service E or F (VOC>0.80). Therefore, this document presents the few daily traffic volumes that result in Level of Service C (0.60<VOC<0.70) and Level of Service D (0.70<VOC<0.80) for the area. These thresholds result in the ten roadways listed below:

1) SB M-106 (Cooper St) between Porter St & Leroy St
2) NW & SE M-50 (Brooklyn Rd) between Napoleon Rd & Austin Rd
3) SB West Ave between the I-94 West entrance ramp & Commonwealth Ave
4) EB & WB Ganson St between Lansing Ave & Cooper St
5) NB & SB US-127 between Floyd Ave & Hart Rd
6) NB & SB Francis St between Franklin St & Washington Ave
7) NB & SB West Ave between Wildwood Ave & North St
8) EB & WB Michigan Ave between Laurence Ave & Main St
9) NB M-106 (Cooper St) between Leroy St & Porter St
10) NW & SE Lansing Ave between Steward Ave & Ganson St

A detailed table of the highest VOC roadway corridors, including AM Peak and PM peak VOCs for the Base Year 2018, can be found in Table 9-1. Figures 9-2 through 9-7 show the daily, AM, and PM peak maps base year scenario for Jackson County and the City of Jackson.

Table 9-1: Base Year 2018 Scenario Capacity Limitations

Jackson Area Comprehensive Transportation Study (JACTS) Base Year 2018 Scenario Congestion										
Rank	**Road Name**	**Direction**	**From**	**To**	**Jurisdiction**	**Maintaining Road Agency**	**Length (Miles)**	**Average AM Peak VOC**	**Average PM Peak VOC**	**Average Daily VOC**
1	M-106 (Cooper St)	SB	Porter St.	Leroy St	City of Jackson	MDOT	0.81	**0.84**	**0.82**	**0.77**
2	M-50 (Brooklyn Rd)	NW-SE	Napoleon Rd	Austin Rd	Napoleon Twp	MDOT	0.88	**0.82**	**0.79**	**0.71**
3	M-50/BUS US-127 (West Ave)	SB	I-94 West Entrance Ramp	Commonwealth Ave	Blackman Twp/City of Jackson	MDOT	0.30	**0.86**	**0.79**	**0.70**
4	Ganson St	E-W	Lansing Ave	Cooper St	City of Jackson	City of Jackson	0.58	**0.72**	**0.70**	**0.66**
5	US-127	N-S	Floyd Ave	Hart Rd	Summit Twp	MDOT	0.80	**0.76**	**0.79**	**0.64**
6	Francis St	N-S	Franklin St	Washington Ave	City of Jackson	City of Jackson	0.13	**0.69**	**0.67**	**0.64**
7	West Ave	N-S	Wildwood Ave	North St	City of Jackson	MDOT	0.60	**0.72**	**0.70**	**0.63**
8	Michigan Ave	E-W	Laurence Ave	Main St	Blackman Twp	MDOT	0.41	**0.71**	**0.68**	**0.61**
9	M-106 (Cooper St)	NB	Leroy St	Porter St	City of Jackson	MDOT	0.81	**0.70**	**0.69**	**0.61**
10	Lansing Ave	NW-SE	Steward Ave	Ganson St	City of Jackson	City of Jackson	0.32	**0.66**	**0.65**	**0.60**

Figure 9-2: Base Year Daily Congestion – Jackson County

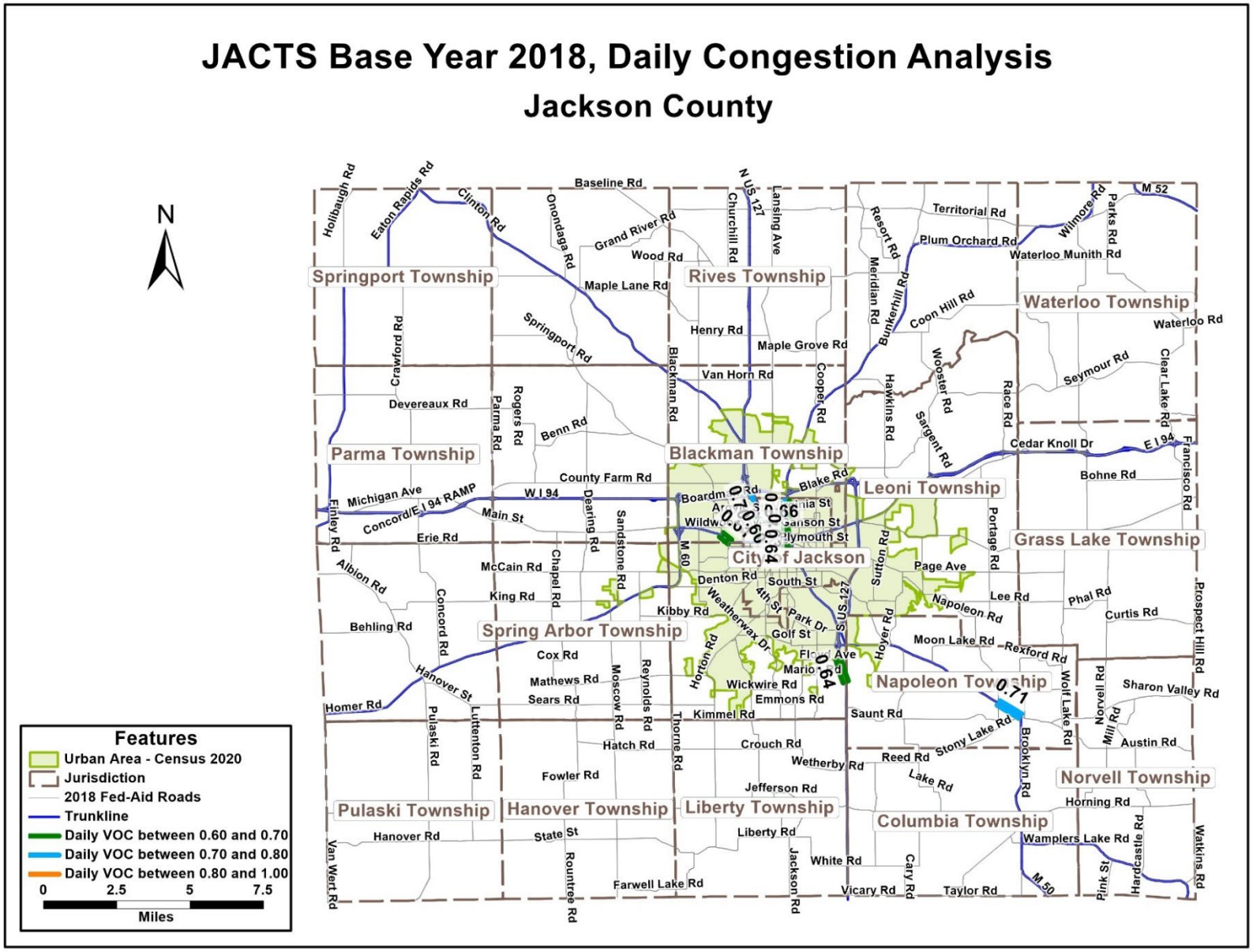


Figure 9-3: Base Year Daily Congestion – City of Jackson

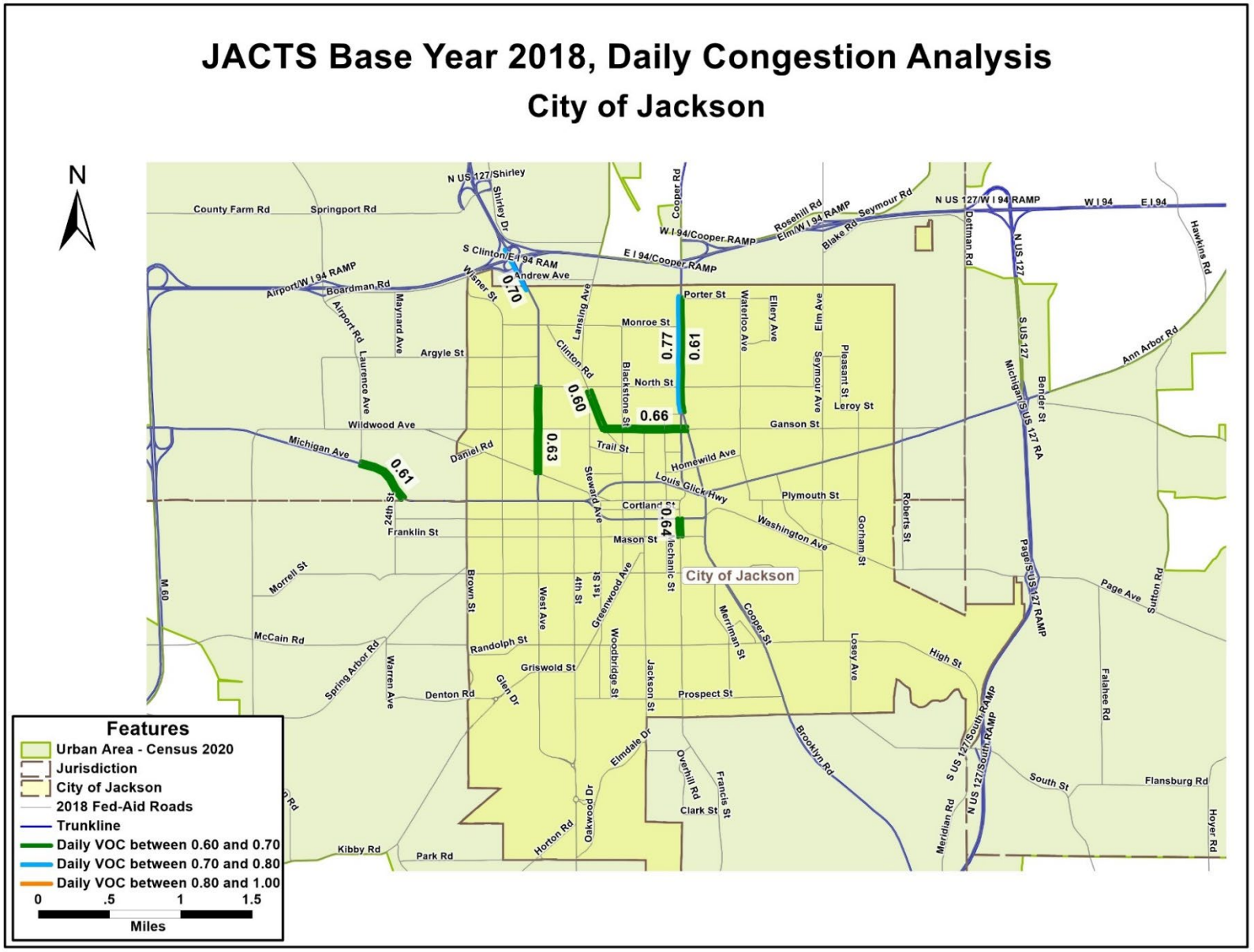


Figure 9-4: Base Year AM Peak Congestion – Jackson County

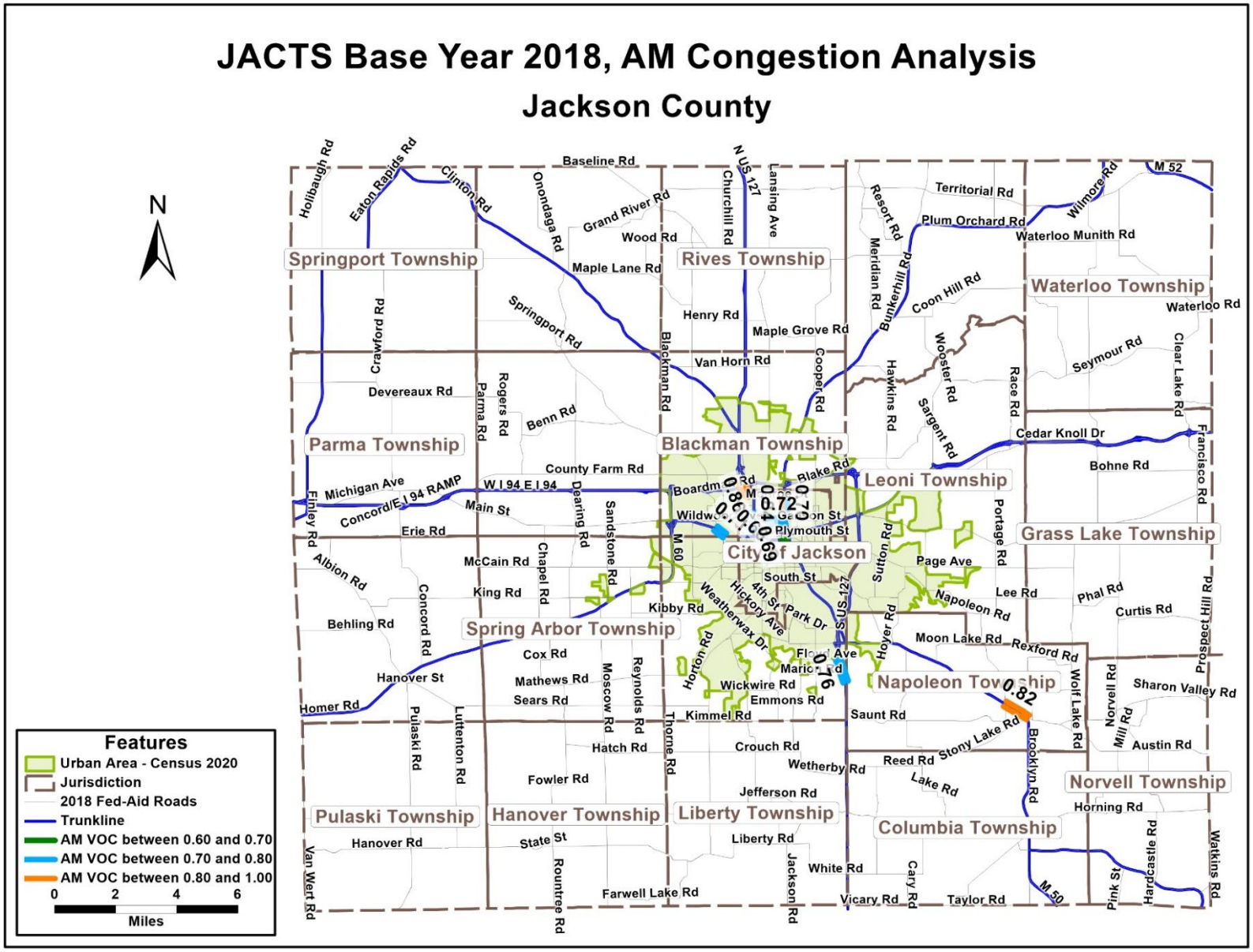


Figure 9-5: Base Year AM Peak Congestion – City of Jackson

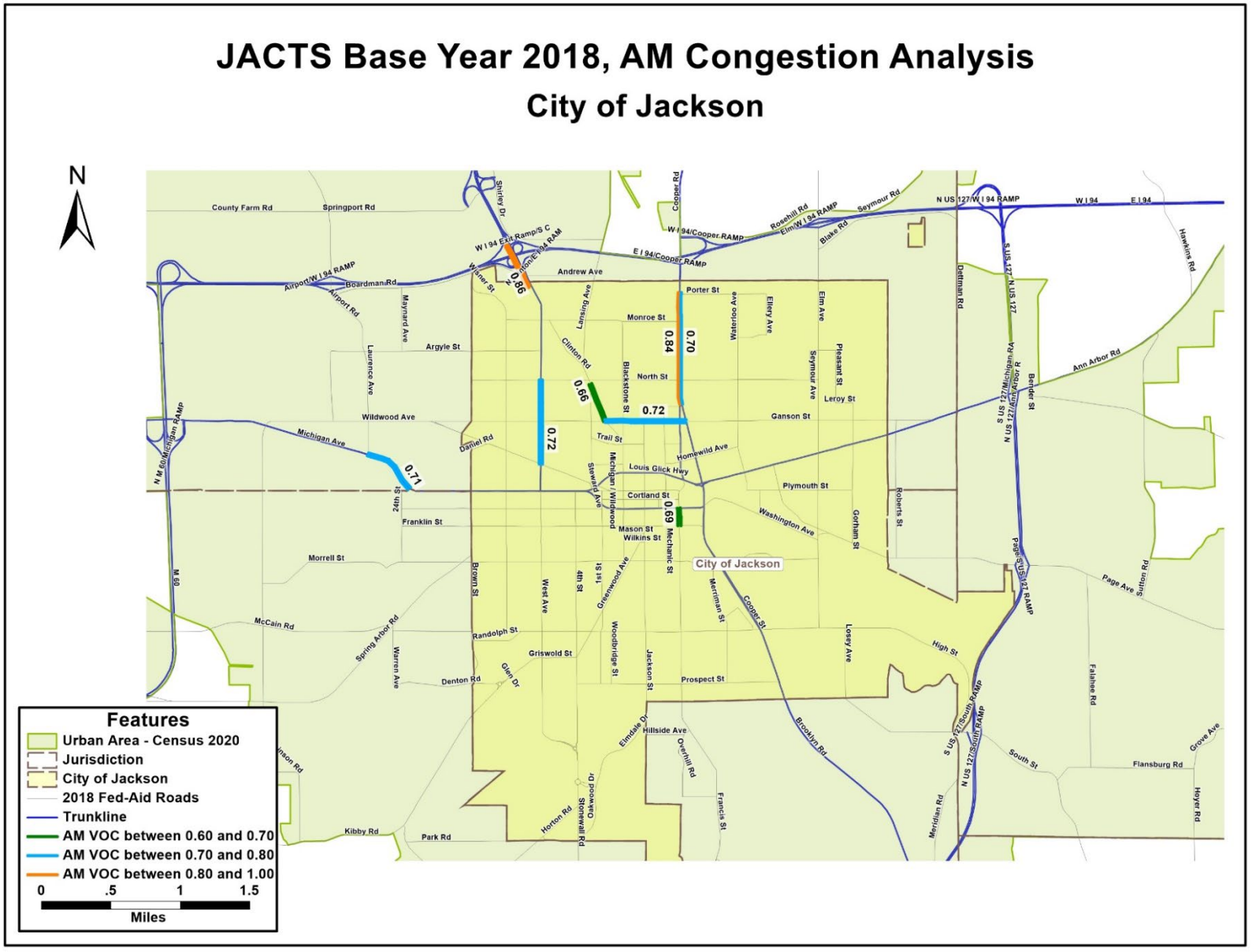


Figure 9-6: Base Year PM Peak Congestion – Jackson County

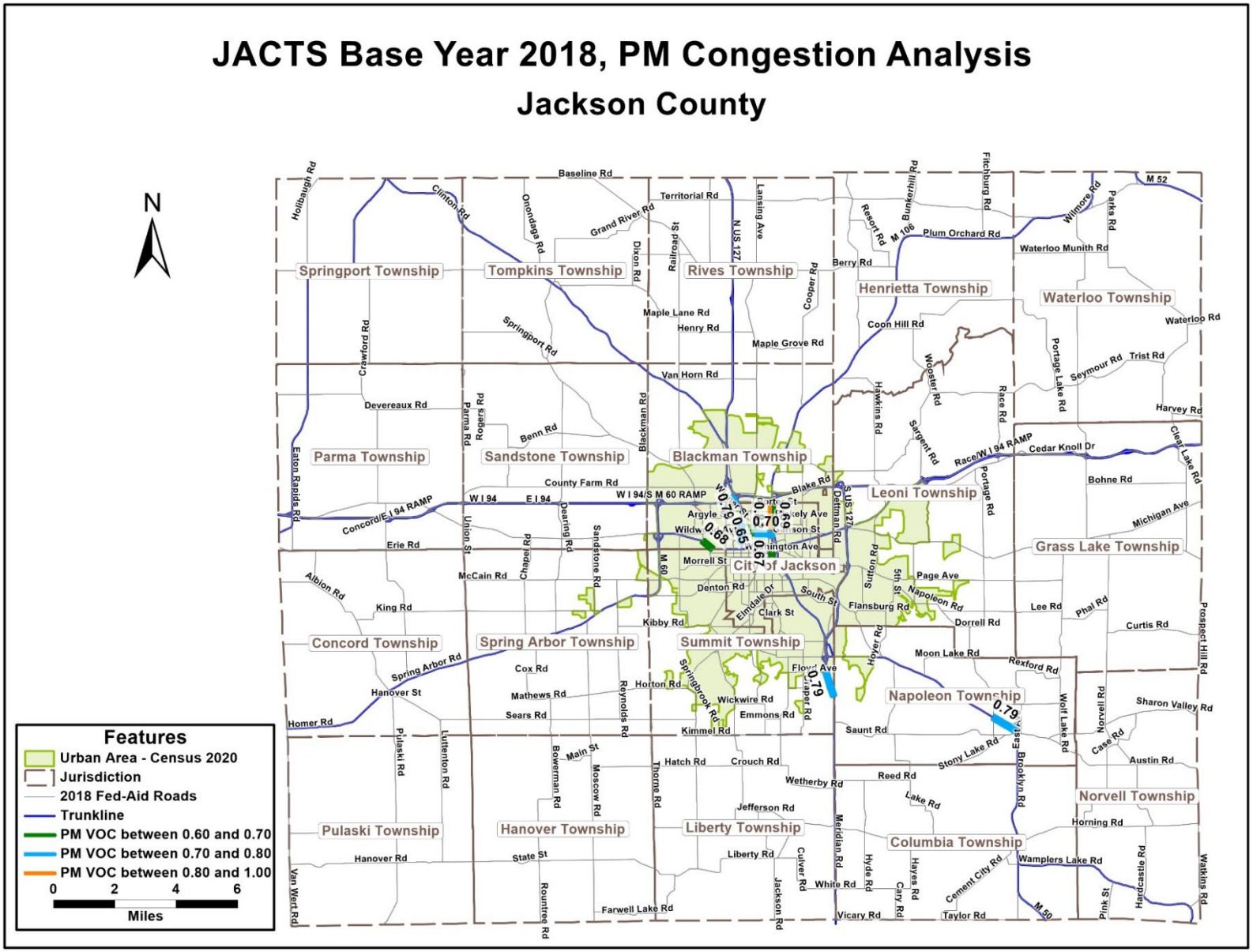
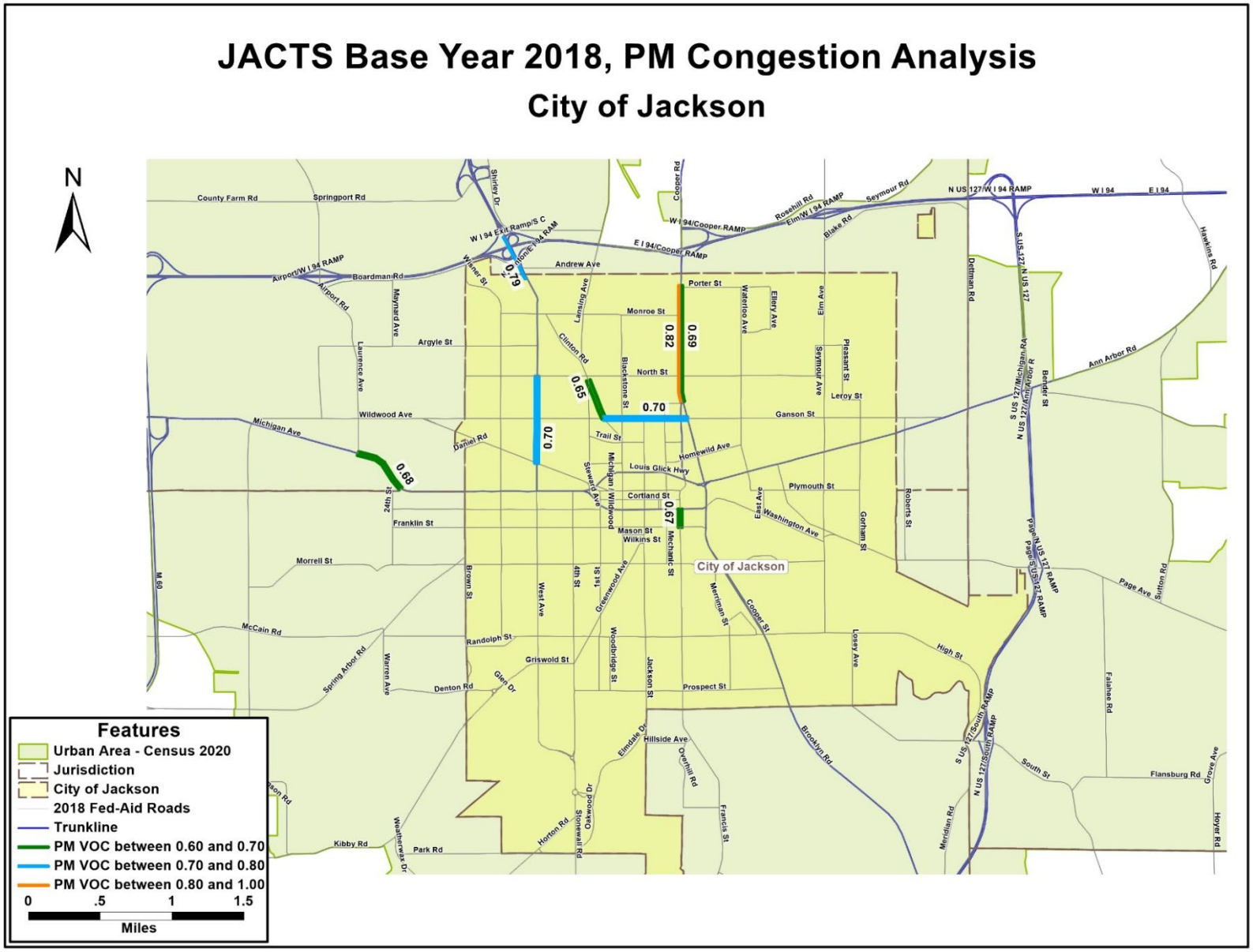


Figure 9-7: Base Year PM Peak Congestion – City of Jackson



Horizon Year 2050 with Committed Projects Results

The Horizon Year 2050 includes all the capacity-related committed projects listed in the FY 2020-2023 TIP and FY 2023-2026 TIP as well as the projects listed on the FY 2017-2020 TIP that were not concluded before 2018. It also includes the projected changes in socio-economic data through 2050 approved by the JACTS Technical Advisory and Policy Committees. Traffic volume results were also compared to the expected capacities for the road system in 2050. The 2050 model shows SB Cooper St. between Porter St. and Leroy St. as the only corridor with daily traffic volumes that result in a Level of Service E or F (VOC>0.80). However, to be consistent with the thresholds adopted for the base year, this document also presents the daily traffic volumes that result in Level of Service C (0.60<VOC<0.70) and Level of Service D (0.70<VOC<0.80) for the area. These thresholds for the horizon year 2050 result in the thirteen roadways listed below.

1) SB M-106 (Cooper St) between Porter St & Leroy St
2) SB West Ave between I-94 West entrance ramp & Commonwealth Ave
3) NW & SE M-50 (Brooklyn Rd) between Napoleon Rd & Austin Rd
4) NB & SB West Ave between Wildwood Ave & North St
5) EB & WB Ganson St between Lansing Ave & Cooper St
6) EB & WB Michigan Ave between Laurence Ave & Main St
7) NB & SB Francis St between Franklin St & Washington Ave
8) NB & SB US-127 between Floyd Ave & Hart Rd
9) NB M-106 (Cooper St) between Leroy St & Porter St
10) NW & SE Lansing Ave between Steward Ave & Ganson St
11) WB I-94 between Airport Rd and Parma Rd
12) EB I-94 between Parma Rd and Airport Rd
13) EB I-94 between US-127 South and Race Rd

Comparing the results of corridors with VOC>0.60 in the base and horizon model scenarios, it is noticeable that many of the same corridors appear in both lists. However, EB/WB I-94 between Parma Rd and Airport Rd and EB I-94 between US-127 South and Race Rd (that did not have a moderate VOC in the base year) are expected to have VOC>0.60 in the horizon year of 2050 with the projected conditions.

A detailed table of the highest VOC roadway corridors, including the AM and PM Peak periods VOCs, can be found in Table 9-2. Maps for the Horizon Year 2050 with Committed Projects results are found in Figures 9-8 through 9-13.

Table 9-2: Horizon Year 2050 Scenario Capacity Limitations

Jackson Area Comprehensive Transportation Study (JACTS) Horizon Year 2050 Scenario Congestion										
Rank	**Road Name**	**Direction**	**From**	**To**	**Jurisdiction**	**Maintaining Road Agency**	**Length (Miles)**	**Average AM Peak VOC**	**Average PM Peak VOC**	**Average Daily VOC**
1	M-106 (Cooper St)	SB	Porter St	Leroy St	City of Jackson	MDOT	0.81	**0.89**	**0.86**	**0.82**
2	M-50/BUS US-127 (West Ave)	SB	I-94 West Entrance Ramp	Commonwealth Ave	Blackman Twp/City of Jackson	MDOT	0.30	**0.90**	**0.84**	**0.74**
3	M-50 (Brooklyn Rd)	NW/SE	Napoleon Rd	Austin Rd	Napoleon Twp	MDOT	0.88	**0.81**	**0.80**	**0.70**
4	West Ave	SB/NB	Wildwood Ave	North St	City of Jackson	MDOT	0.60	**0.75**	**0.74**	**0.68**
5	Ganson St	E-W	Lansing Ave	Lansing Ave to Cooper St	City of Jackson	City of Jackson	0.58	**0.72**	**0.70**	**0.66**
6	Michigan Ave	E-W	Laurence Ave	W Main St	Blackman Twp	MDOT	0.41	**0.75**	**0.72**	**0.65**
7	Francis St	N-S	Franklin St	Washington Ave	City of Jackson	City of Jackson	0.13	**0.70**	**0.69**	**0.65**
8	US-127	N-S	Floyd Ave	Hart Rd	Summit Twp	MDOT	0.80	**0.76**	**0.79**	**0.64**
9	M-106 (Cooper St)	NB	Leroy St	Porter St	City of Jackson	MDOT	0.81	**0.71**	**0.73**	**0.64**
10	Lansing Ave	N-S	Ganson St	North St	City of Jackson	City of Jackson	0.32	**0.70**	**0.67**	**0.62**
11	M-50/BUS US-127 (West Ave)	NB	Commonwealth Ave	I-94 West Entrance Ramp	Blackman Twp/City of Jackson	MDOT	0.30	**0.68**	**0.71**	**0.60**
12	I-94 West	WB	Airport Rd	Parma Rd	Blackman Twp/ Sandstone Twp	MDOT	7.22	**0.63**	**0.70**	**0.60**
13	I-94 East	EB	Parma Rd	Airport Rd	Sandstone Twp/ Blackman Twp	MDOT	7.20	**0.64**	**0.69**	**0.60**
14	I-94 East	EB	US-127 South	Race Rd	Leoni Twp	MDOT	4.92	**0.63**	**0.72**	**0.60**

Figure 9-8: Horizon Year Daily Congestion – Jackson County

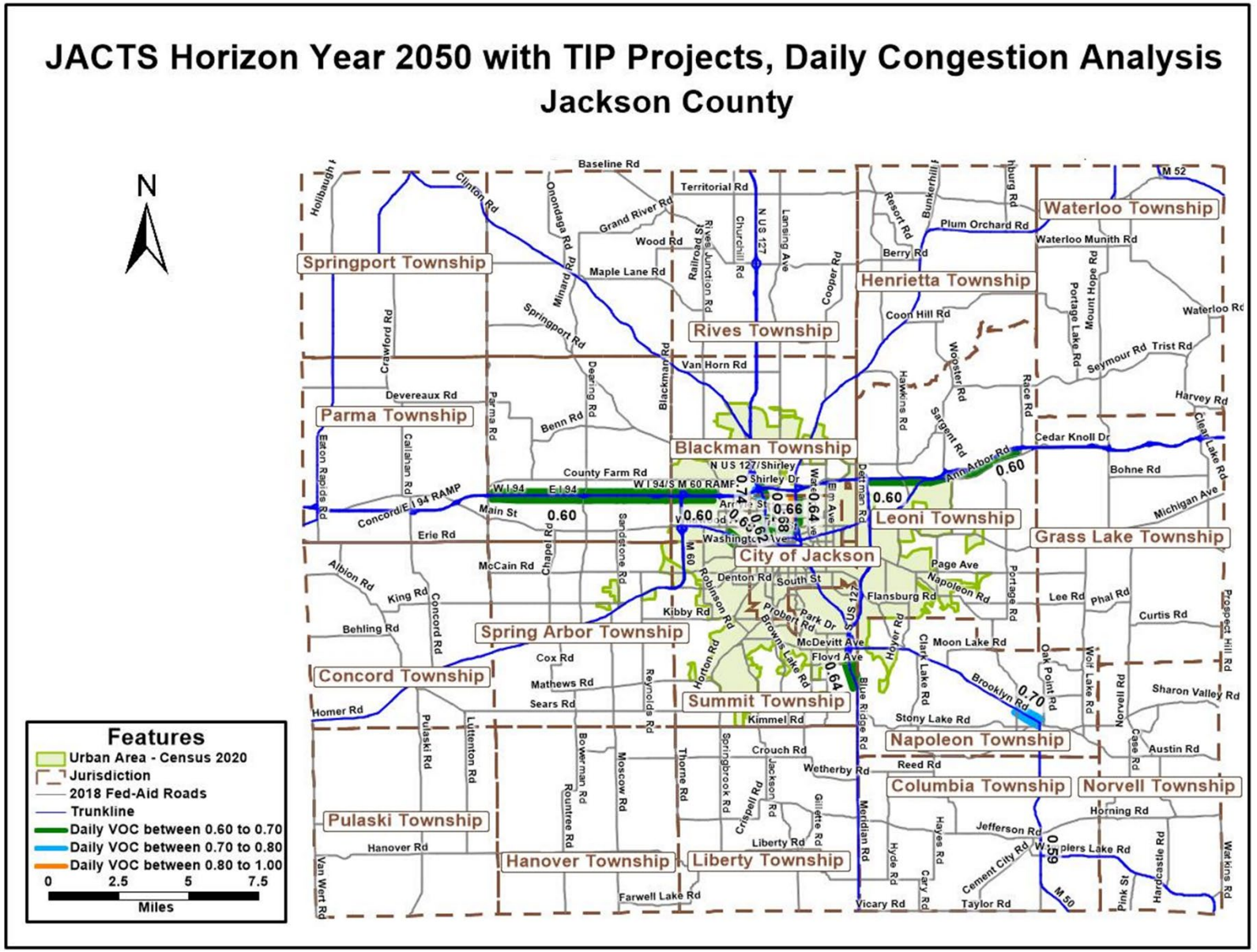


Figure 9-9: Horizon Year Daily Congestion – City of Jackson

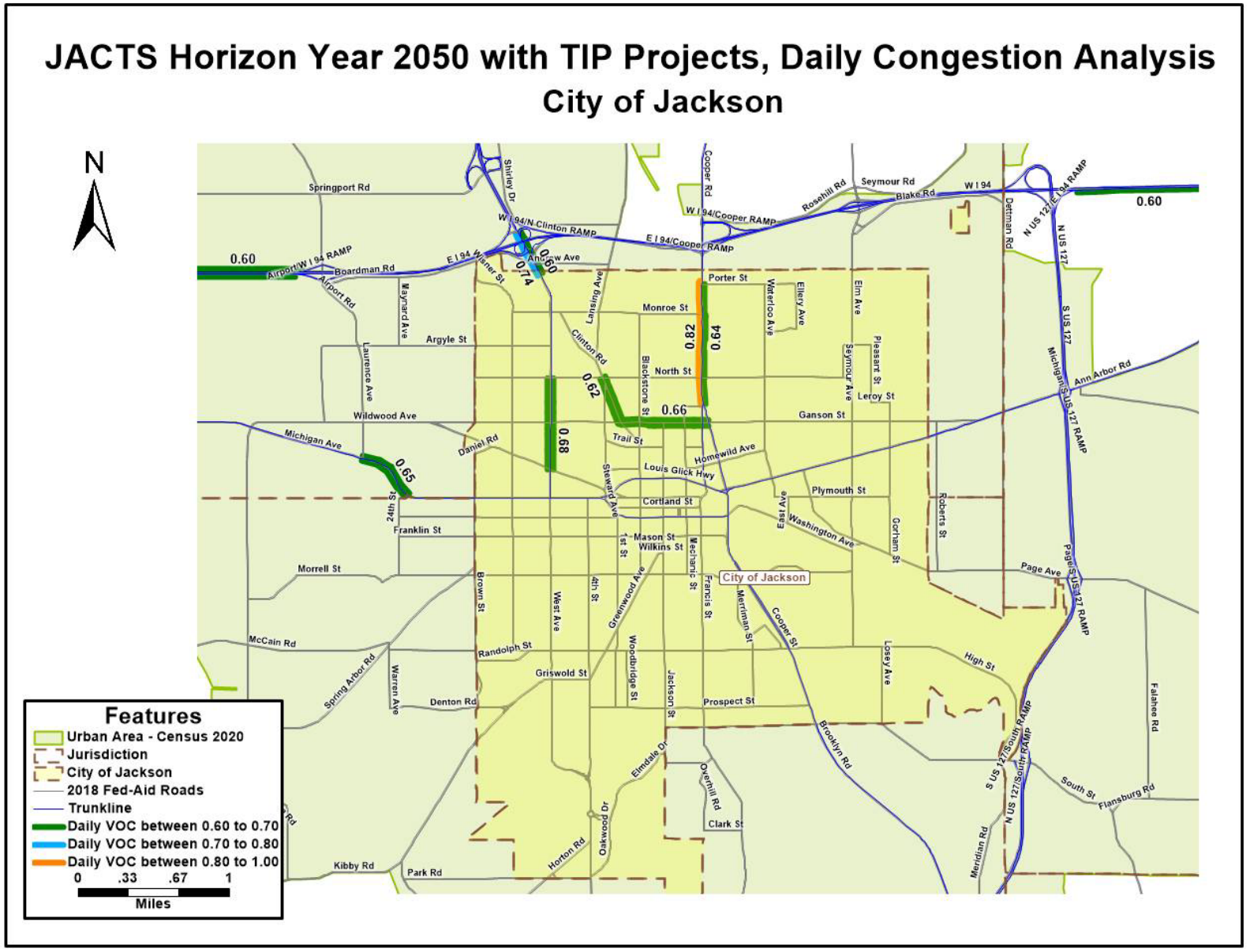


Figure 9-10: Horizon Year AM Peak Congestion – Jackson County

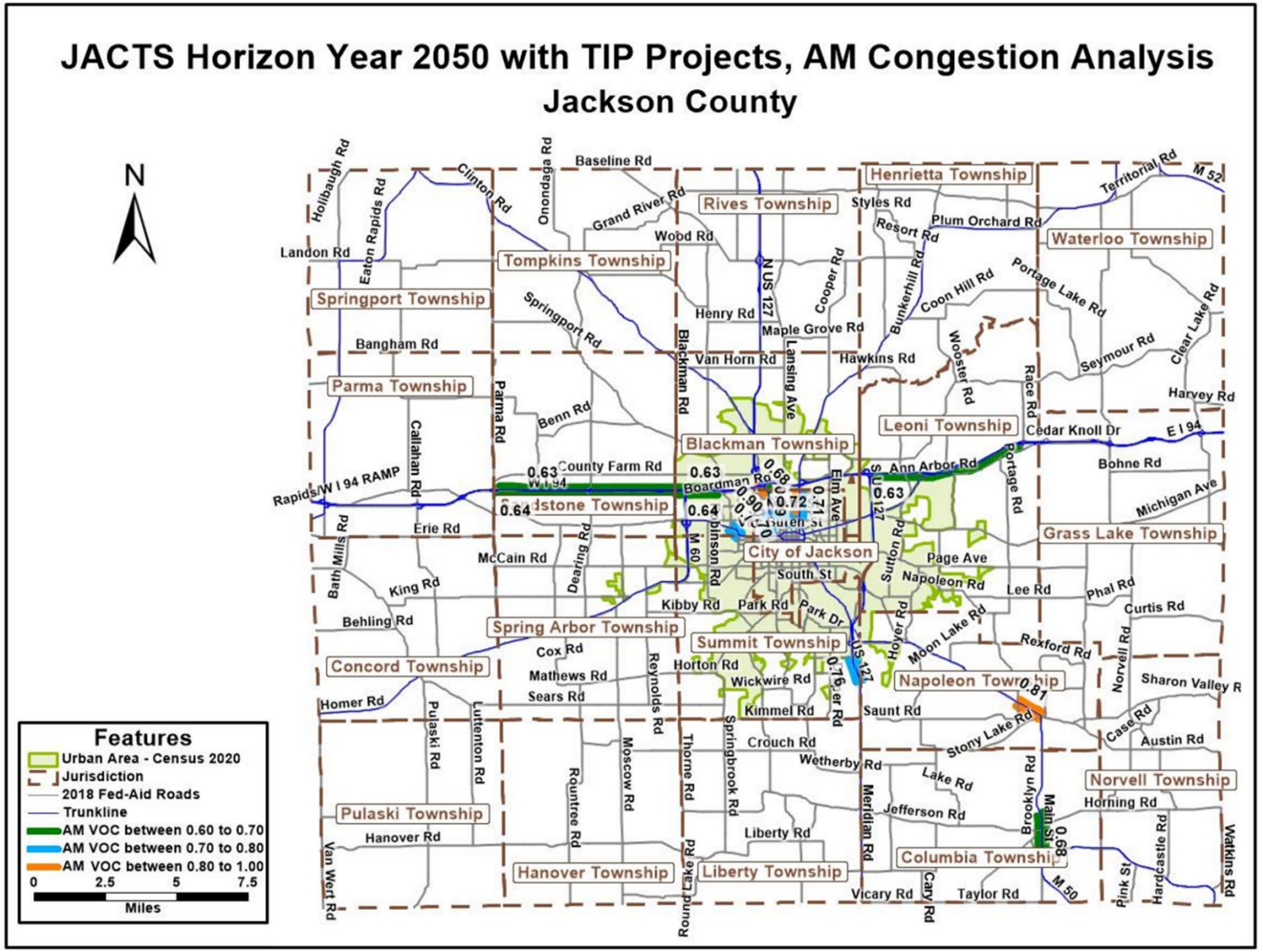


Figure 9-11: Horizon Year AM Peak Congestion – City of Jackson

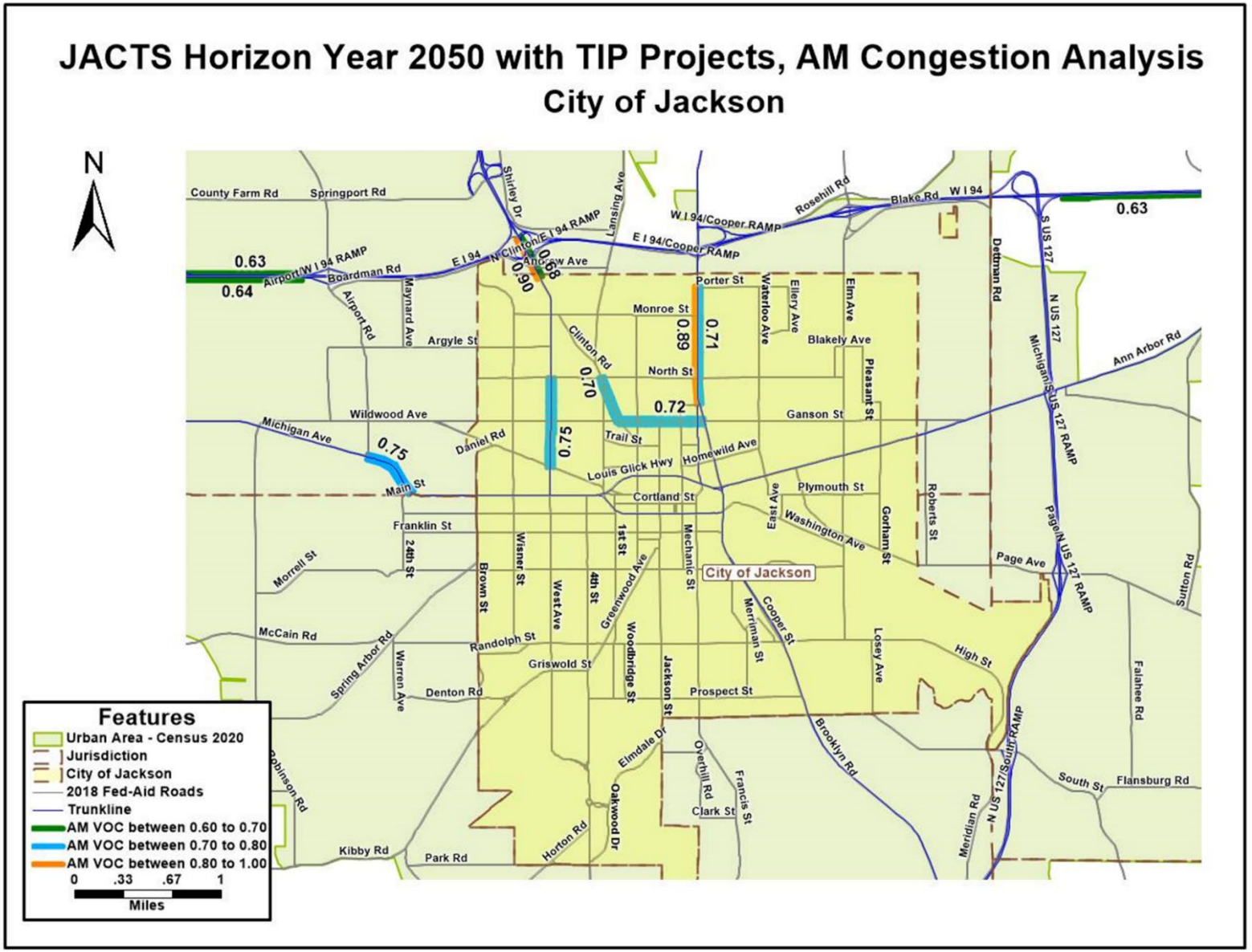


Figure 9-12: Horizon Year PM Peak Congestion – Jackson County

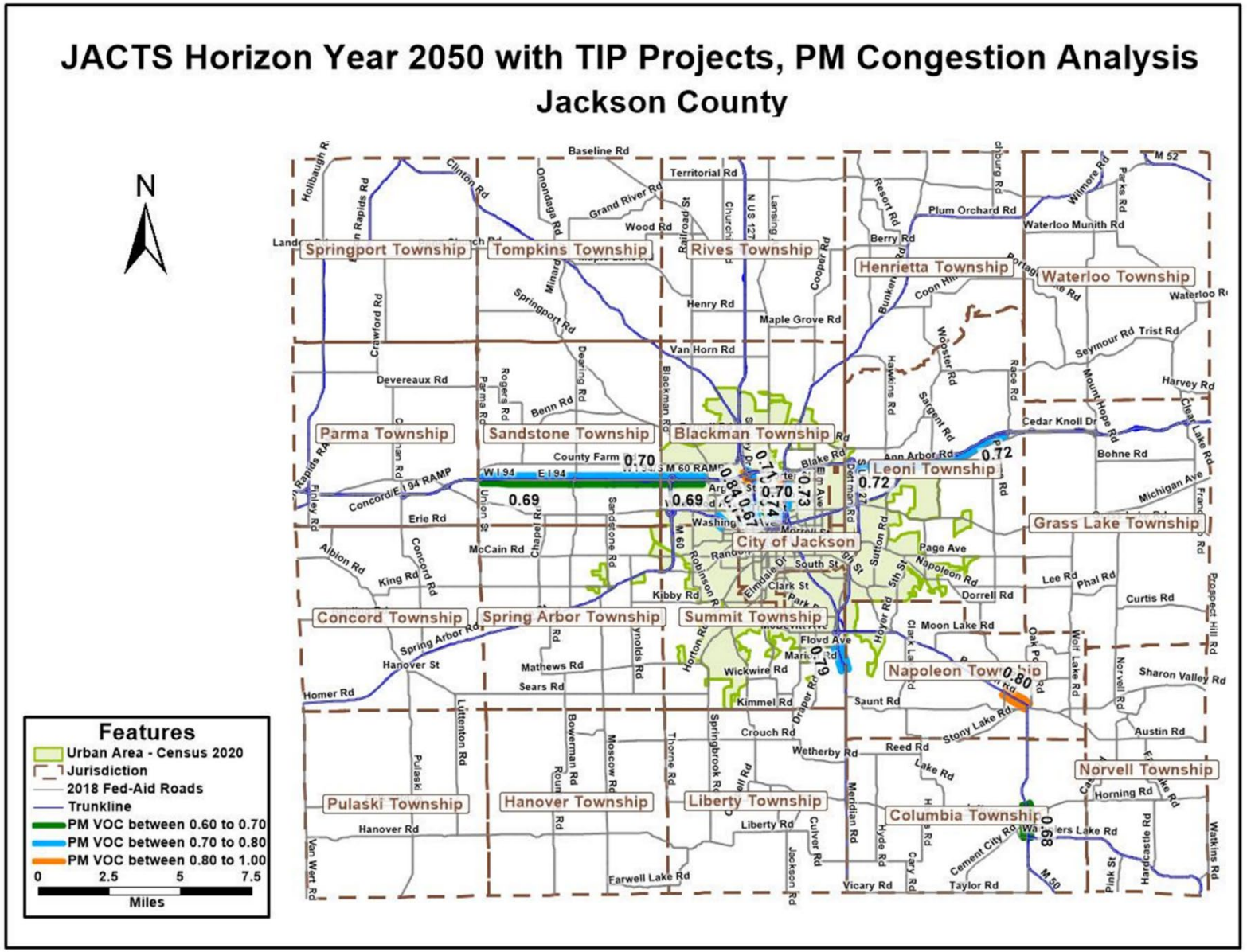
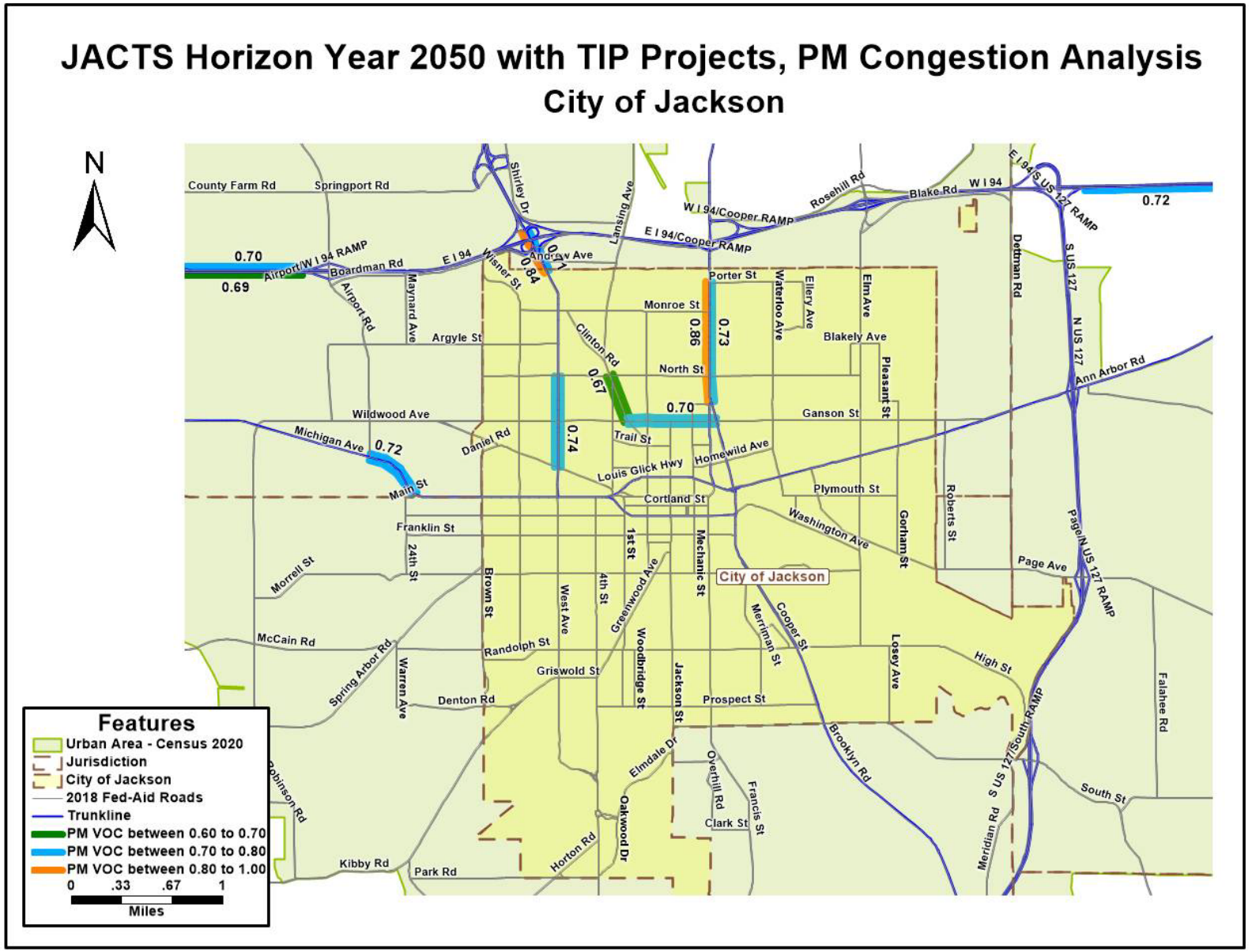


Figure 9-13: Horizon Year PM Peak Congestion – City of Jackson



Recommended Capacity Improvement Projects

After the completion of the travel demand modeling process and identification of congested or deficient corridors, it is necessary to determine what action should be taken to address the current and anticipated future traffic on the road network. With the knowledge of available federal, state, and local revenues for the 27-year span of the plan, the JACTS Technical Advisory and Policy Committees considered local community concerns and issues, which determine the improvements that should be programmed in the coming years.

The plan provides a vision of Jackson County's transportation system through the year 2050. The transportation improvement projects included in the first years (2023-2026) of the plan are considered firm commitments by the implementing jurisdictions. This means that funding has been assigned to the specific improvements that will be completed, unless unforeseen circumstances prevent completion. The remaining years of the plan (2027–2050) are a vision of how the transportation system may develop based on the existing land use and zoning plans of local communities and the current forecast of available transportation revenues. The transportation improvements in the "out" years (2027-2050) of the Plan represent current priorities for the future. The transportation plan is updated every five years and the priorities listed for the later years may change as conditions warrant.

There are a limited number of congested corridors and no corridors that are currently, or are expected to be, deficient within the Jackson MPO. **R2PC's focus is to maintain the current transportation system. This means that although capacity projects are valid and important for the future of the MPO transportation system, they are viewed to be a lower priority than projects aimed at preserving the existing system.** Preservation projects generally include reconstruction and resurfacing of the road within the existing right-of-way. In most cases, the lane configuration of the road remains the same. These types of projects are not required to be identified within this plan.

Examples of capacity improvement projects may be the addition of traffic lanes, turn lanes, weave lanes, or the construction of a new road. Also, only those roads located on the federal-aid road network are eligible for inclusion in the plan's project list.

I-94 Modernization

Many of the projects currently programmed in the FY 2023-2026 TIP consider several transportation issues outside the focus of the TDFM, in particular the modernization of the Interstate 94 corridor.

MDOT completed the Final Environmental Impact Statement and Final Section 4(f) Evaluation for the I-94 Freeway Modernization Study in November 2006. The Record of Decision (ROD) was approved by the Federal Highway Administration in March 2007. The Re-Evaluation was approved by the Federal Highway Administration in September,

2013, December 2017, and again in October 2020. The project study area is a nine-mile segment of I-94 extending from the M-60 interchange to just east of the Sargent Rd interchange. The project area encompassed approximately nine miles of existing highway, eight interchanges, local frontage roads adjacent to I-94, and 18 distinct bridge structures at 14 locations. The purpose of the project is to:

1) Improve the deteriorating condition of existing bridges and road segments consistent with an overall corridor improvement plan.
2) Improve travel efficiency and road capacity in the I-94 corridor by replacing existing road segments, interchanges, and bridges with modern facilities designed to accommodate projected year 2050 traffic volumes.
3) To improve motorist safety.

The original priorities were determined at the time of the I-94 Modernization Study (2007) in cooperation with an ad hoc committee consisting of local representatives and MDOT experts evaluating the phasing strategy of the elements based on:

1) Safety
2) Operations
3) Condition
4) Under-clearance
5) Funding Availability

With a projected cost of $409 million (in 2005-year dollars), sufficient funding was not available for construction of the entire nine-mile corridor. Instead, MDOT phased project implementation over a span of 5 to 40 years based on conditions, traffic volume needs, congestion, funding availability, and safety needs along the corridor. The Preferred Alternative for reconstructing the I-94 corridor was divided into three separate phases as follows:

Phase 1 - Complete

- Sargent Rd interchange reconstruction, including the closure of the I-94 BL interchange.
- Replacement of the Hawkins Rd and Dettman Rd bridge overpasses.

Phase 2 - Complete

- Cooper St interchange reconstruction and other road improvements as necessary.
- Replacement and widening of the I-94 bridge over the Grand River to accommodate potential future widening of I-94.
- The remainder of I-94 between M-60 and Sargent Rd will receive a major rehabilitation.
- Replacement of the M-60 and Elm Rd interchanges and Lansing Ave and Elm Rd bridge overpasses.

Phase 3

- Reconstruction of US-127/M-50-West Ave interchange to diverging diamond – Complete
- Reconstruct the northern portion of the Sargent Rd interchange
- US-127 South and Airport Rd interchanges reconstruction
- Widen I-94 between M-60 and Sargent Rd – Mostly complete

These unfunded improvements are technically not a part of the JACTS 2050 Long Range Transportation Plan, but instead are included to highlight some of the unmet needs that could be addressed with increased revenues. As future funding is identified and becomes available for implementing the findings included in the I-94 Modernization Study, the JACTS committees will continue to assist MDOT in programming the projects to address the capacity and safety improvements outlined in the study.