DEPARTMENT OF TRANSPORTATION

To:	494 Visioning Study Technical Advisory Committee
From:	494 Team
Date:	November 30, 2020
Subject:	I-494: Airport to Highway 169 Project Phasing Evaluation Memo

Contents

Introduction

The following memo summarizes the evaluation completed to develop the sequence of projects to implement the full vision for the 494 corridor. The evaluation criteria summarized in this document include:

- **Constructability** - How the corridor segments are either independent or interdependent to each other for construction. Will include considerations of traffic management and throwaway/re-do work.
- **Community Support** - Considers the support from both corridor advocacy groups and the local government agencies. Will look to TAC and PAC representatives to provide input.
- **Equity** - Ensures fair distribution of mobility options and transportation investments. Will analyze based on review of the Benefit-Impact mapping to determine specific benefits and impacts to underrepresented communities.
- **Cost -** This criteria is defined as the construction cost for separate elements along the corridor vision which leads to the development and setting of the budgets for each independent project to build the vision.
- **Asset Management** – Considers life cycle management of the assets, including new construction, maintenance, minor preservation repairs, major rehabilitation, and reconstruction.
- **Operations** – Will look at the expected operations based on implementation of the different corridor elements.
- **Funding –** Based on current dollars available and the future funding programs for the vision. Current funding includes Corridors of Commerce.

To shape/ease this analysis, the elements will be grouped by geographic locations in relation to the corridor, assuming major system to system interchanges as logical termini for segment construction. Therefore, the discussions will consider elements in the west i.e. from highway 169 to I-35W; east from I-35W to 24th St, and the South on I-35W from 82nd St to 76th.

In detail, the elements in the west segment are:

1. MnPASS lanes in westbound direction from Hwy 169 to Hwy 100
2. MnPASS lanes in eastbound direction from Hwy 169 to Hwy 100 & auxiliary lane from East Bush Lake Rd to TH 100
3. MnPASS lanes in westbound direction from Hwy 100 to I-35W & Turbine Interchange– I-35W NB to 494 WB directional ramp and WB 494 to Penn Ave braid bridge
4. MnPASS lanes in eastbound direction from Hwy 100 to I-35W & Turbine Interchange Penn Ave to EB 494 braid bridge and auxiliary lane from Hwy 100 to I-35W
5. 82nd St Bridge Replacement including NB and SB I-35W bridge braids

The elements in the east segment are:

6. RR bridge replacement between Lyndale Avenue & Nicollet Avenue
7. Access reconfiguration (bridge and ramp work) at Nicollet, Portland & 12th Avenue and the Pedestrian bridge
8. MnPASS lanes in westbound direction from I-35W to Hwy 77
9. MnPASS lanes in eastbound direction from I-35W to Hwy 77

The recommendations developed through this analysis will be used as guidance for future project work. There may be funding opportunities or other locally led projects that may change the prioritization of elements. MnDOT will continue to work with the corridor partners to continue phasing and project timing discussions.

Constructability

For these criteria, the focus is on how independent or interdepend the different corridor elements are to each in terms of physical construction and their influence on traffic diversions on adjacent highways and the local arterial system. Secondly, the influences of the corridor geometrics i.e. alignment and profile implications to the rest of the highway and which elements should tie into each other. Lastly, the criteria also consider the minimization/optimization of project elements to minimize throwaway/re-do work as subsequent elements are constructed.

West Segment Review

In general, construction work on the west segment can be accomplished by keeping 3 lanes of traffic open in each direction in this segment. To accommodate the MnPASS lanes from highway 169 to east of I-35W; only the 494 bridges over I-35W need to be replaced. This means there's minimal to no impact on the rest of the bridges in this segment i.e. Penn Avenue, Xerxes/York Avenue, France Avenue, and I-494 over Hwy 100 bridges.

In general, traffic diversions in this segment will have most influence on the west segment of Hwy 62 from Hwy 169 to I-35W. Further review of Hwy 62 has also been done to determine the physical capacity of this highway to accommodate additional lanes in either direction; the hurdles to overcome on Hwy 62 are:

- Need for temporary bridge widening of the Valley View Rd bridge
- Reduced inside shoulder widths, specifically at bridge piers, present safety concerns especially when the temporary staging is anticipated to span 2 or 3 construction seasons.
- The multi-year staging season also raises the risk of drainage solutions that may be required to meet water quality rules. However, the lack of adequate right of way, makes these temporary drainage solutions expensive.
- TH 62 is an existing bus route, so busses will be losing their transit advantage by repurposing the shoulders to accommodate the temporary widening.

Therefore, with the background listed above, constructability of the individual elements is discussed below.

Elements 1 & 2: MnPASS in both directions from Hwy 169 to Hwy 100

The following constructability items need to be taken into consideration for these two elements.

1. The existing corridor in this area has a grass median/ditch. Construction/widening will be done by converting the grass median into paved surface and installing a concrete barrier. Therefore, the inside lanes in both directions will be sharing the same storm sewer trunk line.
2. The existing inside shoulder width in this segment is 10 feet or wider, therefore, the addition of a lane in either direction can be done by cordoning off the inside shoulders with jersey barriers but leaving the rest of the lanes operational. This would have little to no effect on traffic diversions to Hwy 62.

Elements 3 & 4: MnPASS lanes in both directions from Hwy 100 to I-35W

The following constructability items should be taken into consideration for these two elements.

1. In the full vision, the existing WB auxiliary lane is re-assigned as the WB MnPASS lane
2. The eastbound MnPASS lane will also trigger a lane re-purposing because, to add this lane, widening/construction will be done on the outside shoulders, and there after the existing east bound inside lane will be repurposed to a MnPASS lane
3. All construction in this area will need to be staged due to the reconstruction of I494, the alignment shift of I494, and the width constraints at France Ave.
4. The WB 494 to Penn Ave ramp and the Penn Ave to EB 494 ramp will need temporary closures while bridge braid and retaining wall construction takes place.
5. Staging of the I494 over I35W bridges and the I494 over NB I35W to WB I494 directional ramps need to be looked at together to optimize construction.
6. Likely will need mitigation on TH 62 during construction of these elements.
7. Building the turbine directional ramp first will allow a 3-lane staging configuration to be implemented during construction.

Auxiliary lane from East Bush Lake Rd to Hwy 100: This element fixes an existing lane drop/continuity issue in this stretch of the corridor. Construction/widening to add the new lane would be done on the outside shoulders, therefore, the outside shoulders can be cordoned off with jersey barriers but leave the rest of the mainline lanes operational. This would therefore have little to no effect to traffic diversions to Hwy 62.

Auxiliary lane from Hwy 100 to I-35W: This section is interdependent with other corridor elements. In order to minimize throw away work, it's preferred the auxiliary lane element be combined with other elements in this segment.

1. Though construction/widening to add the auxiliary lane in this segment would be done from the outside shoulders, this lane cannot be placed in a final/vision configuration without constructing the MnPASS elements in this segment of the corridor.

Turbine Interchange - I35W NB to 494 WB directional ramp, NB 35W bridge braid from 82nd St: This element can also be achieved by further breaking out/separating the construction of NB directional ramp to WB 494 from the 82nd St bridge braid.

1. The work adjacent to I-35W, south of I-494 would be done by working from the outside shoulders of NB 35W. The frontage road on the east side of 35W north of 82nd will also be closed for the duration of construction. There's anticipated minimal/no impacts on mainline 35W, as no lane reductions are anticipated to do this work.
2. To cross under I-494, temporary lane shifts will be required to keep traffic lanes open on 494. To set up the staging would require short term weekend closures, therefore, this wouldn't be counted as an impact to Hwy 62.
3. 82nd St bridge braid to NB 35W: There's interdependency of this element to the replacement of the 82nd St bridges and the extension of the directional ramps south of 82nd St to complete the corridor vision.

Construction of the I35W SB to 82nd St bridge braid is interdependent to the replacement of the 82nd St. bridge and subsequent raising of mainline I-35W. This would minimize throwaway work by placing the alignment of bridge braid at its final location as proposed in the interchange vision.

WB 494 to Penn Ave Bridge braid: This element is triggered by the construction of the WB MnPASS & the 2 new auxiliary lanes from the flyover ramp elements to WB 494. Even though the physical construction of this bridge braid can be accomplished by closing the outside lane on WB 494 and the exit ramp to Penn Avenue, due to the alignment shift proposed in this stretch of the corridor, this bridge can only be constructed with the I35W NB to I494 WB directional ramp.

Penn Ave to EB 494 Bridge braid: This element is triggered by the construction of the EB MnPASS & the new auxiliary lanes EB from Hwy 100 to I-35W. Similarly, due to the alignment shift proposed in this stretch of the corridor, construction of this bridge braid should only happen with the construction of the EB MnPASS and auxiliary lanes through I-35W for the alignment to be placement at its final location in the vision.

South Segment Review

The work proposed on 35W south of I-494 completes the 35W/494 interchange reconstruction vision by the elements discussed below.

Element 5: 82nd Street interchange and grade raise on 35W

This bridge needs to be raised to accommodate the two bridge braids. The bridge raise will also complete the vision of the 35W/494 interchange re-construction by allowing for the extension of the directional ramp lanes and the merging lanes to SB I-35W from 82nd to the south.

Secondly, the drainage solution needed to accommodate the I-35W/I494 interchange vision utilizes the loops at the interchange for surface ponds to meet water quality standards. However, because of existing highway profiles and ground water elevations, the profile of mainline 35W is proposed to be raised at least 2 feet to make the loops usable for water quality.

The staging required to raise 35W & replace the 82nd St bridge would require a temporary reduction of traffic lanes to at least 2 in each direction for the duration of construction. The traffic diversions would be felt mainly on I-494 and the parallel routes to I-35W which are Hwy 77 & Hwy 100.

East Segment Review

In general, construction work on the east segment can be accomplished by keeping a minimum of 2 lanes of traffic open in each direction in this segment. The 2-lane configuration allows for the construction of bridge center piers plus the widening of pavement on the outside for the additional lanes. To accommodate the MnPASS lanes from I-35W to TH 77, there are a number of bridges whose spans need to be lengthened i.e. Progressive Rail overpass, Nicollet Avenue, Portland Avenue, and 12th Avenue plus the regional trail bridge. For the rest of the bridges in this stretch of the corridor i.e. Lyndale Avenue and the 2nd St pedestrian bridge and the 24th Avenue bridges, there's minimal to no impact on them.

There's also a separate/independent corridor vision need to upgrade the drainage capacity of this segment to meet current hydraulic standards. The proposed drainage solution will install 2 new 36" parallel trunk lines running from Lyndale Avenue to the Hwy 77 loops. The installation of the conveyance system will also require closure of the outside shoulders on 494 and possibly a drive lane in each direction, which will then be the 2-lane configuration in each direction.

Traffic would divert to the east section of Highway 62 from I-35W to Highway 77. The hurdles to overcome on Hwy 62 are:

- In the temporary configuration, there wouldn't be shoulders underneath the Bloomington Avenue Bridge and the 14th Avenue S pedestrian Bridge in order to accommodate temporary widening in this stretch.
- There is existing congestion at the Hwy 77 & Hwy 62 interchange as the NB to WB loop merges on to WB traffic on Hwy 62.
- By repurposing the shoulders to temporary general-purpose lanes, the existing transit advantage for bus services using this corridor will be lost or greatly impacted.

The advantage of the east segment of Hwy 62 (Hwy 77 to I-35W) over the west segment (I-35W to Hwy 169) is since the existing segment has curb and gutter, there will be no additional impervious in this area, which eliminates the need to construct additional structures for water quality.

With the background listed above; constructability of the individual elements is discussed below.

Element 6: RR bridge replacement between Lyndale Avenue & Nicollet Avenue

Replacement of this bridge is needed to accommodate MnPASS in this stretch of the highway. The work on this bridge will also trigger the 2-lane configuration, though the duration for these configurations are 2-3 months.

Element 7: Nicollet, Portland, 12th Avenue and pedestrian bridges

The corridor vision calls for the lengthening/replacement of these bridges. Each of these bridges can be replaced independent of each other. The staging impacts on mainline 494 are similar, 2-lane configuration to construct the center piers. However, the duration of the 2-lane configuration is much shorter compared to MnPASS construction in this stretch i.e. 2 months of closure compared to 7 to 9 months.

It's also worth noting that the construction of these bridges can be independent of the corridor vision drainage need. The proposed access reconfiguration re-aligns the frontage roads to accommodate the proposed MnPASS lanes on the east segment on either side of the highway. These frontage roads will also carry the new storm sewer conveyance system underneath, but the access reconfiguration can be done and not reconstruct pavement on the frontage roads as an interim solution.

To help facilitate movement of traffic through the corridor on both 494 and the arterial system, the 77th Street Underpass connecting 77th Street to 24th Street should be constructed prior to reconstructing these bridges.

Pedestrian bridge (either old 2nd St bridge ADA upgrade and/or new bridge at Chicago Avenue): The staging impacts on I-494 will depend on whether a new bridge is proposed or whether rehabilitating the existing bridge.

1. To construct a new bridge, construction of the center piers will trigger the 2-lane configuration. The duration of the 2-lane configuration will be 2-3 months.
2. To rehabilitate the existing bridge, no traffic impacts are anticipated on mainline 494.

Element 8 & 9: MnPASS in both directions (35W to Hwy 77)

MnPASS in both directions from I-35W to Hwy 77: The construction of the MnPASS lanes in either the EB or WB directions in this stretch of the corridor can be done independent of each other. This is possible once the

four bridges listed earlier are replaced/lengthened. Expansion of the corridor will be done by widening on the outside, and the drainage solutions also are managing the directional flows independent of each other.

The traffic diversion implications will be on the east segment of Hwy 62 as described previously.

Further considerations towards constructing elements per direction (i.e. MnPASS in the EB direction only or MnPASS in the WB direction only) would have a compounding effect in traffic impacts as called out in each of the elements discussed above. Also, interdependency of elements in either direction should be considered i.e. in some instances, to build certain elements in the EB direction needs completion of other elements in the WB direction.

Therefore, to optimize the phased implementation strategy, consideration should be done to reduce/eliminate throwaway work by placing the alignment of the various corridor elements at their final location according to the corridor vision. In other words, the interdependent relationship between elements should be a priority in determining project phases.

Community Support

For this criteria, the focus is on the corridor advocacy groups like the I-494 Corridor Commission, the I-35W Solutions Alliance, plus the local governmental agencies along this stretch of highway including Bloomington, Richfield, Edina, Eden Prairie, Hennepin County and Met Council.

The analysis will consider the legislative priorities of the corridor advocacy groups because all the local governmental agencies mentioned above have representation on the corridor advocacy groups. Therefore, it will be assumed the priorities of the local agencies are aligned with those of the corridor advocacy groups, unless otherwise specifically stated/documented by any one of them.

Secondly, the analysis will also consider project descriptions from the State's Corridors of Commerce program that were submitted on the corridor.

The 494 corridor has seen tremendous growth in both population and commerce for the last 40 years. There have been numerous studies performed on this stretch of highway to recommend solutions to improve mobility, safety and community connectivity in the last 4 decades.

- The 2001 I494 Reconstruction Final Environmental Impact Statement – This laid out a 20 year vision to address the increasing congestion, outdated facility design, declining physical condition of the existing roadway facilities, and environmental issues resulted in the need to initiate roadway improvements along I494 from I394 to the Minnesota River. The 2001 FEIS incorporates the 1992 I494 reconstruction Draft EIS.
- The 2005 City of Richfield I494 Corridor Study - looked at the corridor land use plan for properties along I494 between Hwy 77 and I35W. One of the recommendations in this study showed a full access to I494 at Portland Ave and shows removal of access at Nicollet and 12th Avenues.
- The 2010 I494/35W Interchange Study was done to optimize the scope identified in the 2001 FEIS and reduce the risk that no major improvements will be made in the next 20 years given the high cost for the remaining improvements. It was also undertaken to develop an alternative that incorporates the provisions of an in-line BRT state located at or between American Blvd and 82nd St.

- 2014 I494/35W Interchange Vision Layout - This effort was to further refine the options recommended in the 2010 494/35W interchange study i.e. further reduce right of way impacts and accommodate an I35W bus rapid transit station and/or park and ride facility, and address storm water impacts and develop low cost/high benefit alternatives.
- The 2018 I494 & Hwy 62 Congestion Relief Study looked at what the appropriate mobility improvements should be to address the increasing congestion and safety concerns on both the I-494 and Hwy 62 corridors. The outcome was a recommendation to add MnPASS on the I-494 corridor from Hwy 212 to the Airport and auxiliary lanes on various segments of Hwy 62 corridor from Hwy 169 to Hwy 77.
- The 2018 City of Bloomington Comprehensive Plan – Forward 2040; mentions the I494/I35W interchange project and the I494 MnPASS project.
- 2018 City of Richfield Comprehensive Plan – Richfield 2040; mentions the I494/I35W interchange project and the I494 MnPASS project. Also mentions Hwy 62 improvements as a priority for the City.

The Met Council, the metropolitan planning organization where the 494 corridor lies, in their 2040 Transportation Policy Plan (2020 update) prioritize the construction of managed lanes facilities (i.e. MnPASS lanes) between France Avenue and Highway 77, and the directional ramp from northbound I-35W to westbound I-494 in this corridor. It is also worth noting, the proposal to construct MnPASS lanes from France Ave to Highway 77 on this stretch of I-494 was awarded 2018 corridors of commerce funds from the state and was submitted by Met Council.

There are also corridor advocacy groups that have been lobbying the state legislators and other government entities to shape policy but also fund safety, mobility, address congestion and multi-model improvements on the 494 corridor for decades. The 35W Solutions Alliance was established in 1989, with a multi-jurisdictional Joint Powers Agreement among the cities of Bloomington, Burnsville, Elko New Market, Lakeville, Minneapolis, Richfield, Savage and Dakota, Hennepin and Scott Counties. Looking at the last 5 years (2015-2019) of legislative priorities as it relates to the 494 corridor, priority projects for highways have been the following:

- 35W & 494 Interchange reconstruction (phase I and phase II)
- 494 Eastbound Auxiliary Lanes from Hwy 100 to 35W
- Underpass of Hwy 77 at 77th Street
- The Nicollet Ave, Portland Ave, 12th Ave interchange improvements (added in the in the 2020 legislative priority list)

The I-494 Corridor Commission was established in 1986 is also a multi-jurisdictional Joint Powers Agreement among the cities of Bloomington, Richfield, Edina, Eden Prairie and Minnetonka. Looking at the last 5 years of legislative priorities as it relates to the 494 corridor:

1. Consistently the commission's highest priority has been the reconstruction of the I-494/35W interchange.
2. Other projects that have also been consistently listed include:
    a. The construction of 77th Street underpass beneath Hwy 77,
    b. Addition of westbound auxiliary lane to the 494 corridor between Hwy 77 and 35W, and
    c. Addition of an east bound auxiliary lane on I-494 between I-35W and France Avenue.

Equity

The TAC reviewed benefits and impacts associated with the full vision for the 494 corridor based on the roadway system users including statewide users, commuters, local users. The local users benefits and impacts were based on census block data and geographic locations of the benefits or impacts. The goal was to determine if there were disproportional impacts to these users or additional benefits for certain corridor elements.

Another analysis that considered areas of highest need for pedestrian and bicycle mobility improvements (high priorities for populations of low-income) was MnDOT's SPACE analysis. The analysis creates heat maps that take into consideration different community needs and demographics and shows the greatest demand for biking and walking facilities. The heat maps emphasized the need at similar segments as the benefit/impact mapping exercise, with majority of needs in Elements 6 through 9. The maps in Appendix A and B provide the details of this analysis and is summarized below.

Corridor Element	Minority or Low-Income Benefits	Minority or Low-Income Impacts
1) MnPASS Westbound (Hwy 100 to Hwy 169)	Benefits in safety and operations for I-494 users	
2) MnPASS Eastbound (Hwy 100 to Hwy 169)	Benefits in safety and operations for I-494 users	
3) 35W Interchange flyover and MnPASS in westbound (35W to Hwy 100)	Benefits in safety and operations for I-494 users	
4) MnPASS in eastbound (35W to Hwy 100)	Benefits in safety and operations for I-494 users	
5) 82nd Street interchange and grade raise on 35W		
6) Railroad bridge		
7) Nicollet, Portland, 12th Avenue and pedestrian bridges	Benefits in safety and operations for I-494 users Pedestrian and bike benefits with less traffic on Nicollet/12th and upgrade/new pedestrian bridge crossing Transit service improvements	Increase in traffic on Portland ROW impacts along Portland

8) MnPASS Westbound (35W to Hwy 77)	Benefits in safety and operations for I-494 users	Possible increase in highway noise levels
9) MnPASS Eastbound (35W to Hwy 77)	Benefits in safety and operations for I-494 users	Possible increase in highway noise levels

Cost

This criteria is defined as the construction cost for separate elements along the corridor vision which leads to the development and setting of the budgets for each project to build the vision. Costs include anticipated inflation, risk, and contingency. MnDOT Project Teams are expected to manage their projects within the set budget. Budgets are set once scoping is completed on a project.

Corridor Element	Estimated Cost
1) MnPASS Westbound (Hwy 100 to Hwy 169)	
2) MnPASS Eastbound (Hwy 100 to Hwy 169)	
3) 35W Interchange flyover and MnPASS in westbound (35W to Hwy 100)	
4) MnPASS in eastbound (35W to Hwy 100)	
5) 82nd Street interchange and grade raise on 35W	
6) Railroad bridge	
7) Nicollet, Portland, 12th Avenue and pedestrian bridges	
8) MnPASS Westbound (35W to Hwy 77)	
9) MnPASS Eastbound (35W to Hwy 77)	

Asset Management

This criteria is defined as the life cycle management of infrastructure assets along the corridor that need to be taken into consideration as part of implementing the vision. MnDOT is responsible for maintaining and preserving its assets to serve the users. The life cycle of the assets, including new construction, maintenance,

minor preservation repairs, major rehabilitation, and reconstruction, are considered during any project development process.

Pavements

Pavement Section 1 - 0.5 miles west of East Bush Lake Rd to 0.6 miles west of France Ave (RP 9+0.003 to 7+0.532)

Full reconstruction took place in 2005 under SP 2785-301. Grading consisted of 36" select granular modified material followed by 4" aggregate base. Mainline pavement consisted of 13" jointed non-reinforced concrete. The shoulders were constructed with bituminous pavement, 7" on the outside and 4" on the inside. The pavement surface is in very good condition and the pavement performance trend is projected to stay that way for a considerable length of time. No work is proposed to the mainline pavement in this segment. Any widening in this segment should be constructed with the same 13" concrete pavement structure. There is currently no preservation project programmed in the CHIP for this segment.

Pavement Section 2 - 0.6 miles west of France Ave to 0.2 miles east of 24th Ave to (RP 7+0.532 to 2+0.166)

Originally constructed in 1958. Multiple rehabilitation activities have been performed over the years since the original construction. The surface rating (measure of distress) deteriorated rapidly throughout the 1980s, leading to a number of concrete pavement repair and joint sealing projects performed in 1983, 1986, and 1988. Only two years after this last major CPR project, a 3.5" bituminous overlay was placed in 1990 to restore the ride quality and structural integrity of the pavement. In 1998 another bituminous mill & overlay was needed due to early failure of the longitudinal construction joints and raveling/debonding of the bituminous surface.

In 2007 a major crack repair was performed on the longitudinal joints throughout the segment, consisting of micro surfacing 2 ft wide over the longitudinal joints. In 2009 internal maintenance forces performed a thin mill & overlay on westbound I-494 under the Penn Ave Bridge due to deteriorating pavement from a failing subsurface drainage system. The most recent mill & overlay occurred in 2013, in which a number of innovative construction techniques were implemented in an attempt to achieve better performance along the longitudinal joints.

The three major mill & overlay activities mentioned above occurred at rather close intervals of 8, 9, and 6 years, respectively. In addition to the rapidly deteriorating pavement over the years, there has been a documented history of drainage failures under Penn Ave that have led to sinkholes in the mainline and shoulder pavement. Multiple fixes of the pavement and underlying drainage system have been performed on both the eastbound and westbound roadways by both internal maintenance forces and contractors. The most recent fix was in 2017, and the pavement is already failing again in the same location.

Currently, there is a proposed mill and overlay preservation project for this section in the CHIP in FY 2025 for $19M.

Pavement Section 3 -0.2 miles east of 24th Ave to MN River bridge (RP 2+0.166 to 0+0.000)

Constructed between 1982 and 1984 with only minor rehab work (joint sealing and maintenance patching) having been performed on this pavement since the original construction. The pavement condition is deteriorating with some potholes, cracked panels, and deteriorated joints. The proposed work is to perform concrete pavement rehabilitation (CPR) to mainline pavement and the NW and SW ramps at 34th Ave. Include diamond grinding on the mainline after the CPR. The bituminous shoulders should receive a 2" mill and overlay. This treatment is expected to last approximately 15 years before the next pavement rehabilitation is needed. Any widening in this segment should be constructed to match the existing mainline, with the same 9.5" concrete pavement structure. Currently, this section is programmed for preservation in the CHIP in FY 2024 for $7.6M.

Pavement Section 4 – 35W

Originally constructed in 1960 with multiple rehabilitation activities performed over the years since the original construction including mill and overlays in 1978, 1982, 1992 and 2008. Maintenance patching was performed in 2015. This highway segment's pavement is in good to very good condition with a remaining service life of 10 years. A medium bituminous mill and overlay has been identified as a need in FY 2024 to coordinate with this Corridors of Commerce Project. This section was isolated from the pavement section just to the south of this project (106th St to .1 mi S of 82nd St) scheduled for a medium bituminous mill & overlay in 2023.

Corridor Element	Pavement Area Description
1) MnPASS Westbound (Hwy 100 to Hwy 169)	Pavement Section 1
2) MnPASS Eastbound (Hwy 100 to Hwy 169)	Pavement Section 1
3) 35W Interchange flyover and MnPASS in westbound (35W to Hwy 100)	Pavement Sections 1 and 2
4) MnPASS in eastbound (35W to Hwy 100)	Pavement Sections 1 and 2
5) 82nd Street interchange and grade raise on 35W	Pavement Section 4
6) Railroad bridge	Pavement Section 2
7) Nicollet, Portland, 12th Avenue and pedestrian bridges	Pavement Section 2
8) MnPASS Westbound (35W to Hwy 77)	Pavement Sections 2 and 3
9) MnPASS Eastbound (35W to Hwy 77)	Pavement Sections 2 and 3

Bridges

The following section provides a summary of the bridges within each corridor segment along with current anticipated work or future projects in the current STIP or CHIP.

West Segment Review

Elements 1 & 2: MnPASS Westbound and Eastbound (Hwy 100 to Hwy 169)

Bridge #27W18 East Bush Lake Rd Ramp over I494 – Built in 2018 and in very good condition. No work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27V33 East Bush Lake Rd over I494 – Built in 2003, with an epoxy-coated deck and 2" low slump overlay. BRIM shows this bridge will need a re-overlay in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27V34 CP Railroad over I494 – Built in 2003. No deficiencies identified. BRIM information is not available for this bridge. No projects are currently programmed in the STIP or CHIP.

Bridge #27X07 I494 over 9 Mile Creek – Built in 2003. No work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27V35 West Bush Lake Rd over I494 – Built in 2002 with a 9" epoxy coated bar deck and a 2" low slump overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27V03 US 169 SB over I494 – Built in 1997 and in good condition. No work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27V04 US 169 NB over I494 – Built in 1997 and in good condition. No work is anticipated. No projects are currently programmed in the STIP or CHIP.

Elements 3 & 4: 35W Interchange directional ramp and MnPASS in westbound and eastbound (35W to Hwy 100)

Bridge #27V45 Penn Ave over I494 – Built in 2001 with a 10" epoxy coated bar deck with a 2" low slump overlay. BRIM shows the bridge will need a re-overlay in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27408 Xerxes over I494 – Built in 2013 with a 9" monolithic mixed bar deck. BRIM shows only preventive maintenance is needed. No projects are currently programmed in the STIP or CHIP.

Bridge #27892 France Ave over I494 – Built in 1985 with a 9" mixed bar deck and a 2" low slump overlay. Possible in-fill walls needed at pier due to shear cracks in pier cap. BRIM shows this bridge will need a re-overlay in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27V38 I494 over Hwy 100 – Built in 2003 with a 10.5" epoxy coated bar deck and a 2" low slump overlay. BRIM shows this bridge will need a re-overlay in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #6850 I494 WB over I35W – Built in 1956, it was connected to its twin bridge in 1965. The existing vertical clearance is 15.6'. Any widening of this bridge will result in less vertical clearance. The bridge was redecked in 1995 with a 9" monolithic epoxy deck. The substructure has concrete patching and cracking. BRIM shows this bridge will need to be replaced in the 2028-37 timeframe. No projects are currently in the STIP or CHIP.

Bridge #6851 I494 EB over I35W – Built in 1956, it was connected to its twin bridge in 1965. The existing vertical clearance is 15.6'. Any widening of this bridge will result in less vertical clearance. The bridge was redecked in 1995 with a 9" monolithic epoxy deck. The substructure has concrete patching and cracking. BRIM shows this bridge will need to be replaced in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

South Segment Review

Element 5: 82nd Street interchange and grade raise on 35W

Bridge #27R05 American Blvd over I35W – Built in 2004 with an epoxy coated bar deck. No projects are currently programmed in the STIP or CHIP.

Bridge #9213 82nd St over I35W – Built in 1957. It was redecked in 1996 with an epoxy coated bar deck. The minimum vertical clearance is 15.1' and has a history of being hit. No projects are currently programmed in the STIP or CHIP.

East Segment Review

Element 6: Railroad Bridge

Bridge #9289 CP Railroad over I494 – Built in 1959. The bridge is in fair condition and needs to be replaced. The minimum vertical clearance is 14.9'. No projects are currently in the STIP or CHIP.

Element 7: Nicollet, Portland, 12th Avenue and pedestrian bridges

Bridge #9080 12th Ave over I494 – Built in 1958, with a 6" monolithic black bar deck. The bridge was milled and overlayed in 1988 and the east sidewalk and barrier were removed and replaced with a J-type barrier. The minimum vertical clearance is 15.6'. BRIM shows this bridge will need to be replaced in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27W19 Ped Bridge over I494 – Built in 2014. The bridge is in good condition and no work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #9079 Portland Ave over I494 – Built in 1958 and was redecked in 1997 with an epoxy monolithic deck. The bridge has a minimum vertical clearance of 15.3'. BRIM shows the bridge will need to be replaced in the 2022-27 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #9078 Ped Bridge over I494 – Built in 1960 the bridge is in good condition. Stairs are on either end of the bridge and needs to be upgraded to ADA standards. No projects are currently programmed in the STIP or CHIP.

Bridge #9077 Nicollet Ave over I494 – Built in 1959 with a 6” black bar monolithic deck. A 3” low slump overlay was added in 1984 and 2011. The bridge has a minimum vertical clearance of 14.9’. BRIM shows this bridge will need to be replaced in the 2022-2027 timeframe. No projects are currently programmed in the STIP or CHIP.

Element 8 & 9: MnPASS Westbound and Eastbound (35W to Hwy 77)

Bridges listed in Element 7 along with the following:

Bridge #27763 Hwy 5 EB on ramp over I494 and WB off ramp – Built in 1982 with a 10” thick mixed bar deck and a 2” low slump overlay. BRIM shows the bridge will need a re-overlay in the 2022-27 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27764 Hwy 5 EB on ramp over from 34th Ave – Built in 1983 with a 9.25” mixed bar deck and a 2” low slump overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27766 Hwy 5 NB over Hwy 5, 494, Connector Ramps – Built in 1983 with a 9.75” mixed bar deck and a 2” low slump overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27767 I494 over WB 494, Hwy 5 to EB 494 and Hwy 5 – Built in 1982 with a 9.75” mixed bar deck and a 2” low slump overlay. BRIM shows the bridge will need a re-overlay in the 2022-27 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27769 I494 WB Off Ramp over to 34th Ave – Built in 1983 with a 9.5” mixed bar deck and a 2” low slump overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27983 Hwy 5 WB over I494, WB Off Ramp – Built in 1982 with a 9” mixed bar deck and a 2” overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27984 Hwy 5 EB over I494, WB Off Ramp– Built in 1982 with a 9” mixed bar deck and a 2” low slump overlay. No projects are currently programmed in the STIP or CHIP.

Bridge #27765 I494 over 34th Ave – Built in 1983. BRIM shows this bridge will need a re-overlay in the 2022-27 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27A78 Runway Lights over I494 – Built in 2002. The bridge is in good condition and no work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27820 24th Ave over I494 – Built in 1989. BRIM shows this bridge will need a re-overlay in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #27709 24th Ave over I494 WB Ramp – Built in 1989. The bridge is in good condition. Possible mill and overlay with joint repairs is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27712 24th Ave over I494 EB Ramp – Built in 1989. The bridge is in good condition. Possible mill and overlay with joint repairs is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27052B Hwy 77 Ramp over I494 – Built in 1989. The bridge is in good condition and no work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27052D Hwy 77 Ramp over I494 – Built in 1989. The bridge is in good condition and no work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #9081 Hwy 77 SB over I494 – Built in 1958, with the superstructure replaced and widened in 1988 with a 9" monolithic epoxy deck. The bridge has a minimum vertical clearance of 15.2'. BRIM shows this bridge will need to be replaced in the 2028-37 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #9082 Hwy 77 NB over I494 – Built in 1958 and redecked in 2014 with an epoxy coated bar deck. The bridge has a minimum vertical clearance of 15.3'. BRIM shows this bridge will need a re-overlay in the 2038-43 timeframe. No projects are currently programmed in the STIP or CHIP.

Bridge #9081A Hwy 77 SB Collector over I494 – Built in 1958 and redecked in 1987. The bridge is in good condition and no work is anticipated. No projects are currently programmed in the STIP or CHIP.

Bridge #27V63 Lyndale Ave over I494 – Built in 2009 with a 9" epoxy deck and 2" low slump overlay. Possible in-fill walls needed at pier due to shear cracks in pier cap. BRIM shows this bridge will need only preventive maintenance. No projects are currently programmed in the STIP or CHIP.

Lighting/ITS

There are numerous lighting systems on the 494 corridor including cabinets, towers, and roadway lighting. Upgrades and replacements will be determined with the vision implementation.

Intelligent transportation systems exist throughout the corridor including cameras, ramp meters, handholes, shelters, cabinets, vaults, boxes, power poles, sensors, fiber, conduit, etc. These systems tend to get upgraded and replaced as necessary through reconstruction projects. Maintenance is performed when needed.

Drainage

A 370-acre area directly contributes to MnDOT drainage systems. Of which 13% comes from Bloomington, 24% from Richfield, 5% from Fort Snelling, 1% from Edina, and 56% from MnDOT.

West Section Drainage

Drainage west of I-35W drains to Nine Mile Creek at four major outlets - Penn Avenue, TH 100, East Bush Lake Road, and West Bush Lake Road. The existing MnDOT drainage systems have adequate capacity under the 50-year design discharge. The City of Bloomington systems downstream also has known flooding issues and will require MnDOT to store its water before discharging downstream.

East Section Drainage

The existing 84" trunk line from I35W to the Minnesota River was constructed in 1961 and has an unknown structural and operational condition, however there is known cracking at some pipe joints. The line is also undersized and has the capacity to convey a 10-year runoff event without surcharging.

Corridor Element	Drainage Area Description
1) MnPASS Westbound (Hwy 100 to Hwy 169)	West
2) MnPASS Eastbound (Hwy 100 to Hwy 169)	West
3) 35W Interchange flyover and MnPASS in westbound (35W to Hwy 100)	West
4) MnPASS in eastbound (35W to Hwy 100)	West
5) 82nd Street interchange and grade raise on 35W	West
6) Railroad bridge	East
7) Nicollet, Portland, 12th Avenue and pedestrian bridges	East
8) MnPASS Westbound (35W to Hwy 77)	East
9) MnPASS Eastbound (35W to Hwy 77)	East

Retaining/Noise Walls

All of the retaining walls are reinforced concrete cantilever type walls. All of the retaining walls in the 494 corridor vary in condition from satisfactory to excellent. Only two walls, R-494-002-035 located 0.5 miles east of Hwy 77 and R-494-004-061 located 0.7 miles east of I35W, are in poor and fair condition, respectively. These walls will need repair or replacement.

There are very few noise walls along the 494 corridor. Noise will be evaluated along the entire corridor and addressed with the standard voting process.

Slopes

Stability of slopes in the corridor has been a problem for maintenance forces. Crews continue to dump gravel and rip-rap in an area 600' east of the Portland Ave interchange on the slope adjacent to westbound traffic. Slope failure is often seen on the westbound on ramp to 494 from Portland Ave due to ponding of water.

Operations/Safety

The elements included with the full-corridor vision mentioned above were evaluated from a traffic perspective to assess the impacts and benefits of each element and how they may connect to the other elements. The evaluation included freeway operations, arterial operations, safety, and pedestrian and bicycles operations.

West Segment Review

Element 1: MnPASS Westbound – Hwy 100 to Hwy 169

- There is existing congestion present in the westbound direction of I-494 between Hwy 169 and Hwy 100 occasionally during the p.m. peak. This congestion is caused from downstream events and congestion, including congestion on southbound Hwy 169 and congestion from the I-494/Hwy 212 interchange.
    - Additional capacity in the westbound direction in this element would not provide much benefit until the downstream bottleneck at the I-494/Hwy 212 interchange is improved.
- The causes of the westbound congestion (TH 100 lane drop, France Avenue weaves, Penn Avenue merge, and I-35W weaving traffic) would still be present without improving upstream conditions.
    - Until upstream conditions are improved, the benefits from additional capacity with this element would be minimal because the traffic would not be able to reach this segment efficiently.
- There would be no impact to multimodal facilities with this element.

Element 2: MnPASS Eastbound – Hwy 100 to Hwy 169

- There is congestion present in the eastbound direction of I-494 between Hwy 169 and Hwy 100, but most of this congestion is related to queues spilling back from the lane drop at France Avenue downstream.
    - Improving downstream operations, which Elements 4, 7, and 9 do, will improve operations in this segment.
    - Additional capacity in the segment between Hwy 169 and Hwy 100 will provide limited benefits until the downstream operations are improved because additional traffic would not be able to progress through the corridor due to congestion downstream.
- There would be no impact to multimodal facilities with this element.

Element 3: I-35W Interchange Directional Ramp and MnPASS Westbound – I-35W to Hwy 100

- This element would improve mobility of the heavy regional movement from northbound I-35W to westbound I-494. This movement is a heavy freight movement as well and part of the Twin Cities bypass route for I-35W around Minneapolis.
    - This movement experiences up to eight hours of congestion daily.
- The existing right-lane congestion on northbound I-35W that exists upstream of I-494 spills into the other travel lanes. This element would reduce this congestion and improve travel times for northbound I-35W vehicles.
- This element addresses the existing safety concern that exists at the I-35W/I-494 interchange, which is over the critical crash rate.
- This element adds capacity to westbound I-494, which the operations analysis indicates is needed for the I-35W directional to provide a benefit. Without additional capacity in the westbound direction, I-35W traffic is delivered to I-494 more efficiently with the directional ramp, but then would be in congestion on I-494.

Element 4: MnPASS Eastbound – I-35W to Hwy 100

- This is one of the main locations of congestion along the corridor today, which is related to the lane drop at France Avenue, the two merges on I-494 from France Avenue, and vehicles positioning themselves for downstream movements, such as Penn Avenue and I-35W.
    - Congestion is present in this segment for eight to ten hours a day.

- This element will add the fourth lane in the eastbound direction and compliment the westbound direction that had a fourth lane added from I-35W to Hwy 100 in 2012.
- Mobility in the eastbound direction would be improved with this improvement and the main eastbound bottleneck would be improved.
- Mobility on the adjacent arterials would also likely improve with this element due to fewer vehicles diverting from I-494 to the arterial system to avoid congestion.
- This element would improve the existing safety concern that exists in the eastbound direction between East Bush Lake Road and TH 100 due to congestion spilling back into this segment.
- Pedestrian accommodations would be improved at a couple locations via new sidewalk and ADA ramp improvements.

South Segment Review

Element 5: 82nd Street Interchange and Grade Raise on I-35W

- This element will complete the ultimate vision for the I-494/I-35W interchange by constructing the two bridge braids between 82nd Street and I-35W.
    - Little benefit would be realized from this element until Element 3 is constructed.
- Similar to Element 3, this would help address the existing safety concern that exists at the I-35W/I-494 interchange, which is over the critical crash rate.
- The existing 82nd Street geometry and signal phasing are expected to be able to accommodate the forecasted volumes at the ramp terminals.
    - The improvements to 82nd Street are not necessarily needed from an operations perspective, but rather a safety and multimodal perspective.
- This element will restrict access from 82nd Street to I-494 and from eastbound I-494 to 82nd Street. This will put additional traffic on the "Box" roadways (Penn Avenue, Lyndale Avenue, 82nd Avenue, and 76th Avenue). It is recommended to delay this element until there is an operational or safety need due to the impacts the diverted traffic will have on adjacent roadways.
    - This need would likely arise in the I-35W/82nd Street weave area.
- Multimodal accommodations for pedestrians and bicycles (e.g. sidewalks, on-street shoulders, and ADA ramp improvements) across I-35W at 82nd Street would be improved with this element.

East Segment Review

Element 6: Railroad Bridge over I-494

- This element does not provide any direct impacts or benefits to vehicular, pedestrian, or bicycle traffic.

Element 7: Nicollet Avenue, Portland Avenue, 12th Avenue and Pedestrian Bridges

- There is congestion in the eastbound direction today upstream of the Hwy 77 exit, which is the result of a combination of the number of access locations in the area and vehicles positioning themselves for the downstream movement to Hwy 77.
- This element will improve the regional move from eastbound I-494 to southbound Hwy 77.
    - To realize the full improvements to traffic operations from I-35W to Hwy 77, this element should be completed in conjunction with Element 9 (MnPASS Eastbound – I-35W to Hwy 77).

- This element will address the existing safety concerns in this area, which has several segments above the critical crash rate. The segments above the critical crash rate are Portland Avenue to Nicollet Avenue in the westbound direction, 12th Avenue to Portland in the westbound direction, TH 77 to 12th Avenue in the westbound direction, and Portland to 12th Avenue in the eastbound direction.
    - Safety will be improved by reducing the number of access locations on I-494 and reducing the weaving segments.
    - Safety on the arterial system will also be improved by providing dedicated left-turn lanes for vehicles turning onto I-494.
- This element accommodates the future D-Line arterial BRT line on Portland Avenue.
- Pedestrian and bicycle accommodations across I-494 will be improved by upgrading facilities (e.g. sidewalks, trails, on-street bike facilities, and ADA ramp improvements) on Nicollet Avenue, Portland Avenue, and 12th Avenue. The improved facilities will improve accessibility for pedestrians on both sides of I-494 to access the residential and business areas adjacent to I-494.
- The existing pedestrian bridge at 2nd Avenue is not Americans with Disabilities Act (ADA) compliant. Rehabbing the existing bridge at 2nd Avenue or constructing a new one at Chicago Avenue will provide a dedicated pedestrian crossing over I-494 that meets ADA requirements and is separate from Nicollet Avenue, Portland Avenue, and 12th Avenue.
- A dedicated pedestrian crossing will reduce pedestrian travel distance by a maximum of ½ mile (¼ mile on both sides of I-494) by not requiring pedestrians to divert to either Nicollet Avenue, Portland Avenue, or 12th Avenue.
- This is an independent project that would not impact vehicular operations on I-494 or the arterial system.

Element 8: MnPASS Westbound – I-35W to Hwy 77

- There is existing congestion through this segment of I-494; however, this will be improved with the access reconfiguration in Element 7 and improvements to the I-494/I-35W interchange with Element 3.
    - Elements 3 and 7 improve existing downstream bottlenecks that result in congestion that spills back into this segment.
    - Adding MnPASS in the westbound direction between I-35W to Hwy 77 will not provide much benefit until the downstream bottleneck between Hwy 100 and I-35W (Element 3) is improved.
- Starting the MnPASS lane to east of Hwy 77 with this element will improve mobility by reducing the bottleneck that is forecasted to exist under Hwy 77 in the future.
- To realize the full improvements to traffic operations from I-35W to Hwy 77, this element should be completed in conjunction with Element 7 (Nicollet Avenue, Portland Avenue, 12th Avenue Bridges)
- This element will allow for additional lanes of capacity from Hwy 77 to I-494 and the potential for additional traffic with MnPASS being evaluated on Hwy 77.
- Pedestrian accommodations would be improved along the new frontage roads via new sidewalks and ADA ramp improvements.

Element 9: MnPASS Eastbound – I-35W to Hwy 77

- There is moderate congestion in the eastbound direction today upstream of the Hwy 77 exit, which is the result of a combination of the number of access locations in the area and vehicles positioning themselves for the downstream movement to Hwy 77.
- This element will improve the regional move from eastbound I-494 to southbound Hwy 77.

- To realize the full improvements to traffic operations from I-35W to Hwy 77, this element should be completed in conjunction with Element 7 (Nicollet Avenue, Portland Avenue, 12th Avenue Bridges)

- Pedestrian accommodations would be improved along the new frontage roads via new sidewalks and ADA ramp improvements.

Corridor Element	Operations Impact
1) MnPASS Westbound (Hwy 100 to Hwy 169)	Additional capacity in the westbound direction would provide little benefit until downstream bottlenecks (e.g. I-494/Hwy 212 interchange) are improved. Benefits from additional capacity would be minimal until the upstream conditions are improved in Element 3 (TH 100 lane drop, France Ave weaves, Penn Ave merge, I-35W weaving traffic).
2) MnPASS Eastbound (Hwy 100 to Hwy 169)	Little benefit until downstream bottlenecks (Hwy 100 to I-35W) are improved (Elements 4, 7, and 9).
3) 494/35W Interchange directional ramp and MnPASS in westbound (35W to Hwy 100)	Improves mobility of regional movement from northbound I-35W to westbound I-494 that experiences congestion up to 8 hours a day. Adds capacity to westbound I-494 from I-35W to Hwy 100, which is needed for the directional ramp to provide operational benefits. Addresses the existing safety concern at the I-35W/I-494 interchange. Without additional capacity in the westbound direction, I-35W traffic is delivered to I-494 more efficiently, but then would be in congestion on I-494.
4) MnPASS in eastbound (35W to Hwy 100)	Improves one of the main locations on I-494 that experiences congestion 8 – 10 hours a day. Mobility on adjacent corridors would likely improve due to fewer vehicles diverting from I-494 to avoid congestion. Addresses the existing safety concern in the eastbound direction between East Bush Lake Road and TH 100 due to congestion spilling back into this segment.
5) 82nd Street interchange and grade raise on 35W	Little benefit will be realized until Element 3 is constructed. Recommend delaying this element until there is an operational or safety need due to the impacts the diverted traffic will have on the I-35W/82nd St weave area. Helps address the existing safety concerns at the I-35W/I-494 interchange. Multimodal accommodations across I-35W at 82nd St will be improved.
6) Railroad bridge	No direct impact to traffic. This element needs to be reconstructed prior to being able to construct MnPASS from I-35W to Hwy 77 (Elements 8 and 9).
7) Nicollet, Portland, 12th Avenue	Improves operations in the eastbound and westbound directions by eliminating weaves and access locations. Addresses the existing safety concerns between I-35W and TH 77 due to the weaves and access locations. Safety on arterial system will be improved by providing dedicated left-turn lanes for vehicles turning onto I-494.

	Improves multimodal accommodations across I-494. Full benefits of this element will be realized in conjunction with Element 9.
7B) Pedestrian bridge	Rehabbing the existing bridge at 2nd Avenue or constructing a new one at Chicago Avenue will provide a dedicated pedestrian crossing over I-494 that meets ADA requirements and is separate from Nicollet Avenue, Portland Avenue, and 12th Avenue. A dedicated pedestrian crossing will reduce pedestrian travel distance. Independent project that does not impact vehicular operations on I-494 or the arterial system.
8) MnPASS Westbound (35W to Hwy 77)	Existing congestion in this element of I-494, but this would be improved with Elements 3 and 7. Adding MnPASS in the westbound direction between I-35W and Hwy 77 has minimal benefits until the downstream bottleneck between Hwy 100 and I-35W is improved.
9) MnPASS Eastbound (35W to Hwy 77)	There is moderate congestion in the eastbound direction upstream of Hwy 77. Will improve the regional move from eastbound I-494 to Hwy 77. Full benefits of this element will be realized in conjunction with Element 7.

Funding

This criteria is defined as the current dollars available and the future funding programs available for constructing the vision. Funding can drive the scope of a project due to the constraints of available funding programs. There are many state and federal funding programs available to fund the vision, however many of them are competitive grant programs with limited funds.

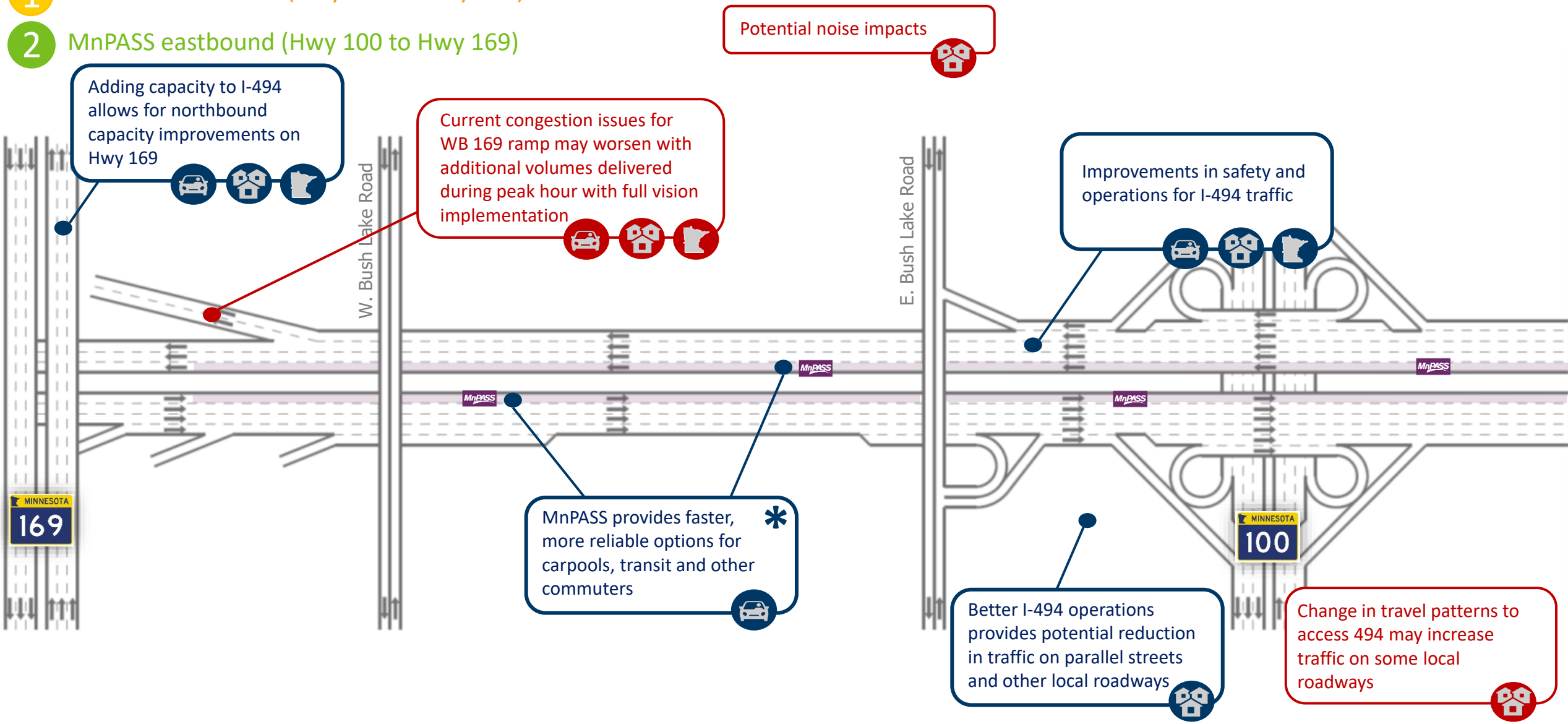
Current funding available for construction of part of the vision is the Corridors of Commerce (COC) funding that provides $134 million to MnPASS on 494 and $70 million to Phase 1 of the Turbine Interchange. MnDOT Metro District committed to finding $10 million to $15 million to replace the I494 over 35W bridges. There will also be local cost participation funding from local corridor agencies.

Appendix A

Benefit/Impact Maps

1 MnPASS westbound (Hwy 100 to Hwy 169)

2 MnPASS eastbound (Hwy 100 to Hwy 169)



LEGEND

ROADWAY SYSTEM USERS

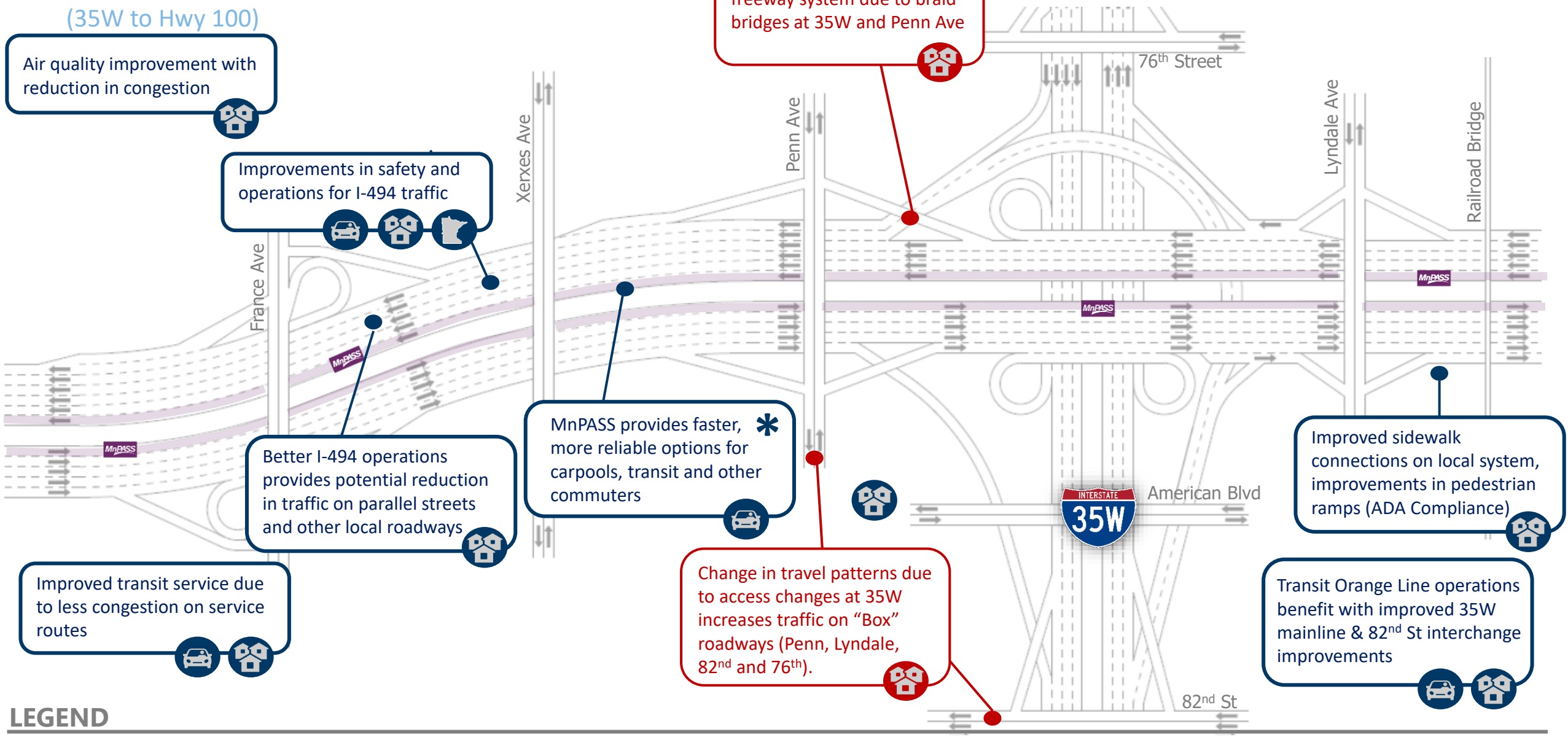
Statewide | Commuters | Local | Local minority or low-income residence

IMPACT

BENEFIT

* Benefit or Impact may only be realized with full vision implementation

3 35W interchange flyover & MnPASS in westbound (35W to Hwy 100)



LEGEND

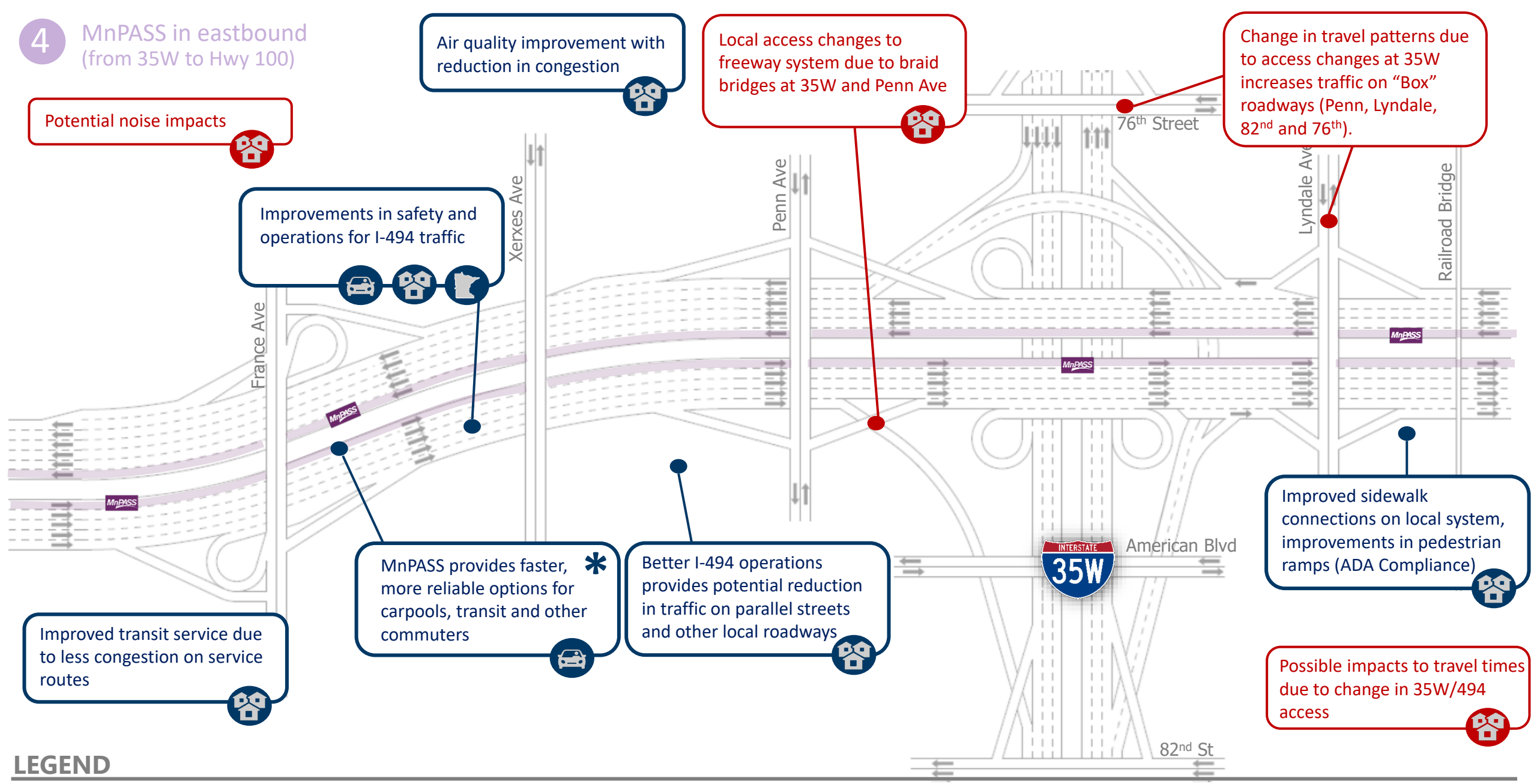
ROADWAY SYSTEM USERS

Statewide | Commuters | Local | Local minority or low-income residence

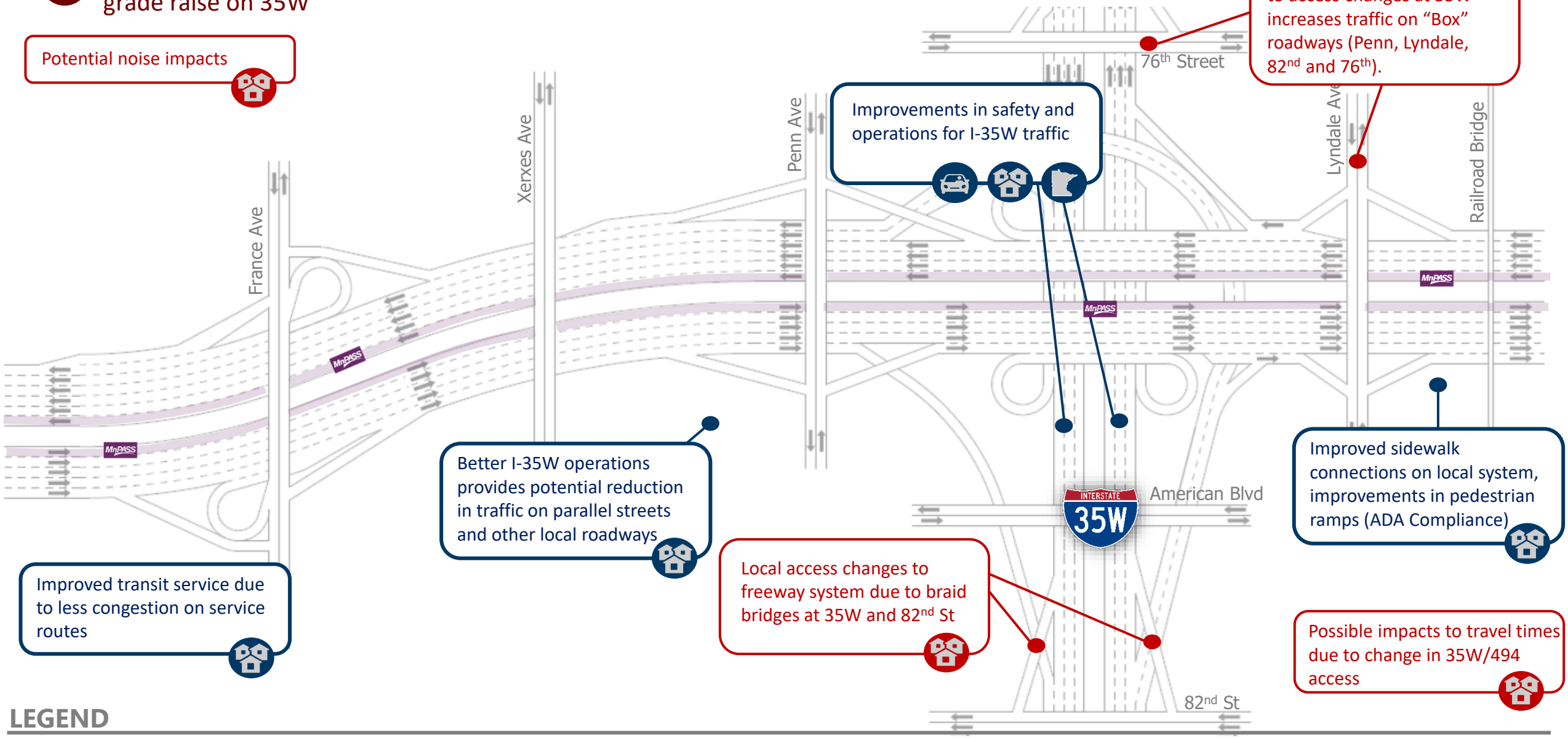
IMPACT

BENEFIT

* Benefit or Impact may only be realized with full vision implementation


4
MnPASS in eastbound
(from 35W to Hwy 100)
Air quality improvement with reduction in congestion
Local access changes to freeway system due to braid bridges at 35W and Penn Ave
Change in travel patterns due to access changes at 35W increases traffic on "Box" roadways (Penn, Lyndale, 82nd and 76th).
Potential noise impacts
Improvements in safety and operations for I-494 traffic
Xerxes Ave
Penn Ave
76th Street
Lyndale Ave
Railroad Bridge
France Ave
MnPASS
MnPASS provides faster, more reliable options for carpools, transit and other commuters *
Better I-494 operations provides potential reduction in traffic on parallel streets and other local roadways
Improved sidewalk connections on local system, improvements in pedestrian ramps (ADA Compliance)
Improved transit service due to less congestion on service routes
INTERSTATE 35W
American Blvd
Possible impacts to travel times due to change in 35W/494 access
82nd St
LEGEND
ROADWAY SYSTEM USERS
Statewide
Commuters
Local
Local minority or low-income residence
IMPACT
BENEFIT
* Benefit or Impact may only be realized with full vision implementation

5 82nd St interchange and grade raise on 35W



LEGEND

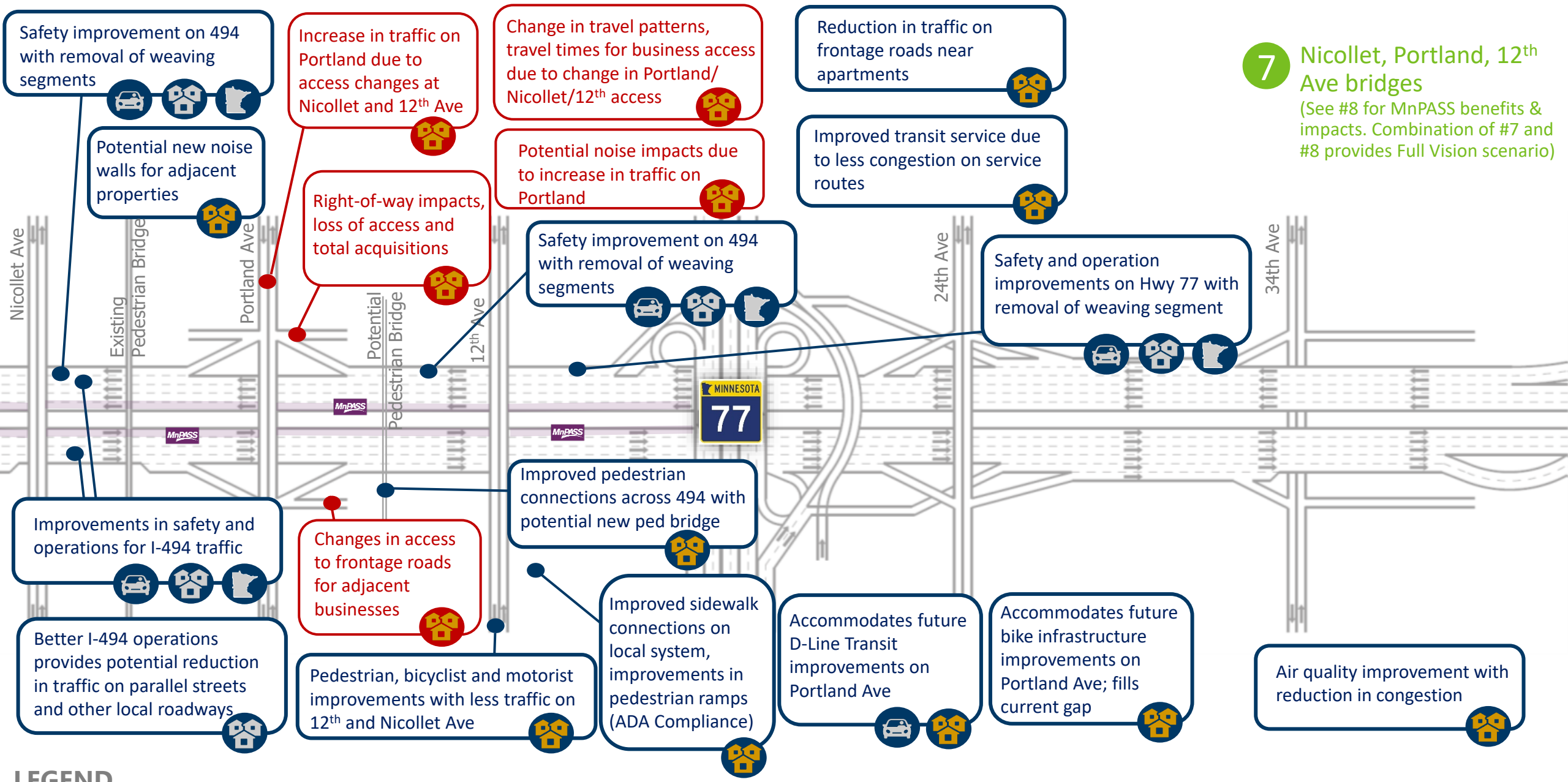
ROADWAY SYSTEM USERS

Statewide | Commuters | Local | Local minority or low-income residence

IMPACT

BENEFIT

* Benefit or Impact may only be realized with full vision implementation



LEGEND

ROADWAY SYSTEM USERS

Statewide | Commuters | Local | Local minority or low-income residence

IMPACT

BENEFIT

* Benefit or Impact may only be realized with full vision implementation

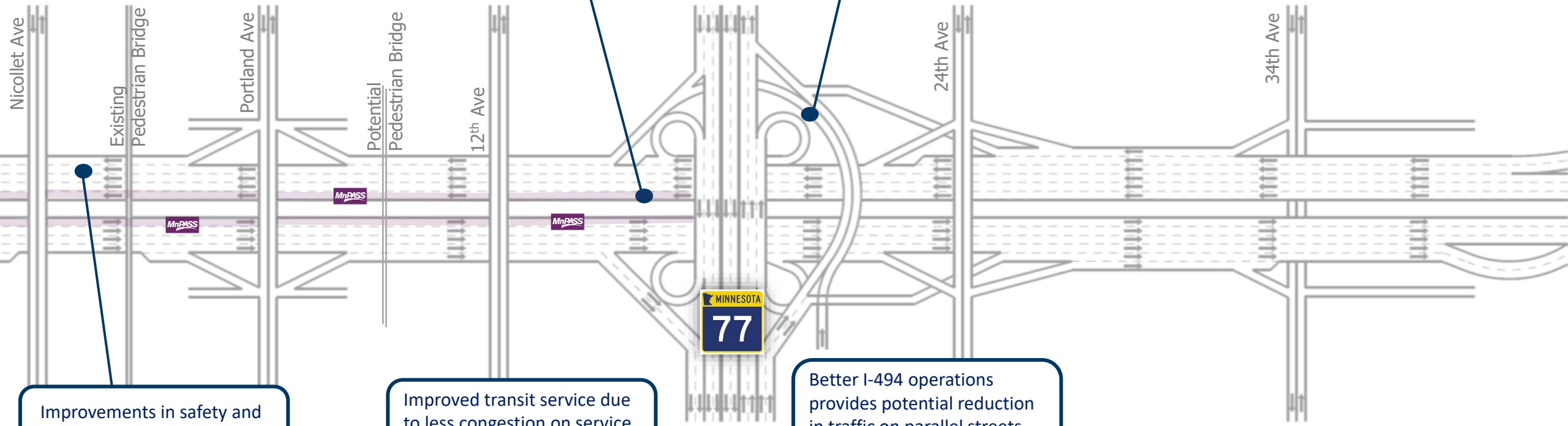
8 MnPASS westbound
(35W to Hwy 77)

NOTE: Eastern limit to be determined based on MnPASS traffic analysis (See #7 for Portland access benefits & impacts. Combination of #7 and #8 provides Full Vision scenario)

MnPASS provides faster, more reliable options for carpools, transit and other commuters *

Allows for additional lanes of capacity from Hwy 77 to I-494

Air quality improvement with reduction in congestion



Improvements in safety and operations for I-494 traffic

Improved transit service due to less congestion on service routes

Better I-494 operations provides potential reduction in traffic on parallel streets and other local roadways

Potential noise impacts

LEGEND

ROADWAY SYSTEM USERS

Statewide | Commuters | Local | Local minority or low-income residence

IMPACT

BENEFIT

* Benefit or Impact may only be realized with full vision implementation

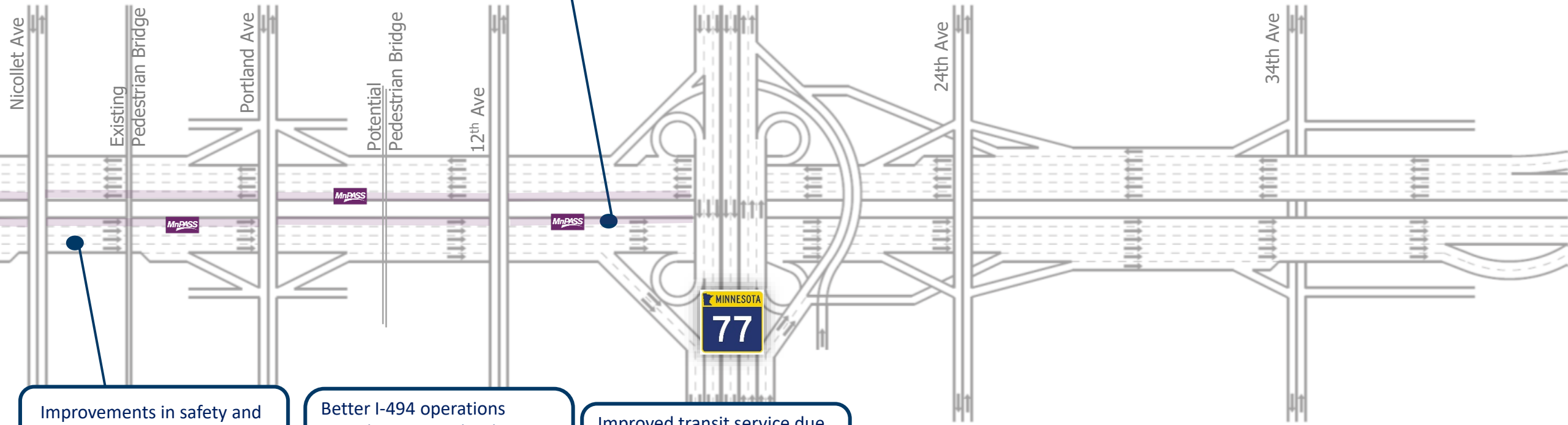
9 MnPASS eastbound (35W to Hwy 77*)

*Eastern limit to be determined based on MnPASS traffic analysis

MnPASS provides faster, more reliable options for carpools, transit and other commuters

Potential noise impacts

Air quality improvement with reduction in congestion



Improvements in safety and operations for I-494 traffic

Better I-494 operations provides potential reduction in traffic on parallel streets and other local roadways

Improved transit service due to less congestion on service routes

LEGEND

ROADWAY SYSTEM USERS

Statewide | Commuters | Local | Local minority or low-income residence

IMPACT

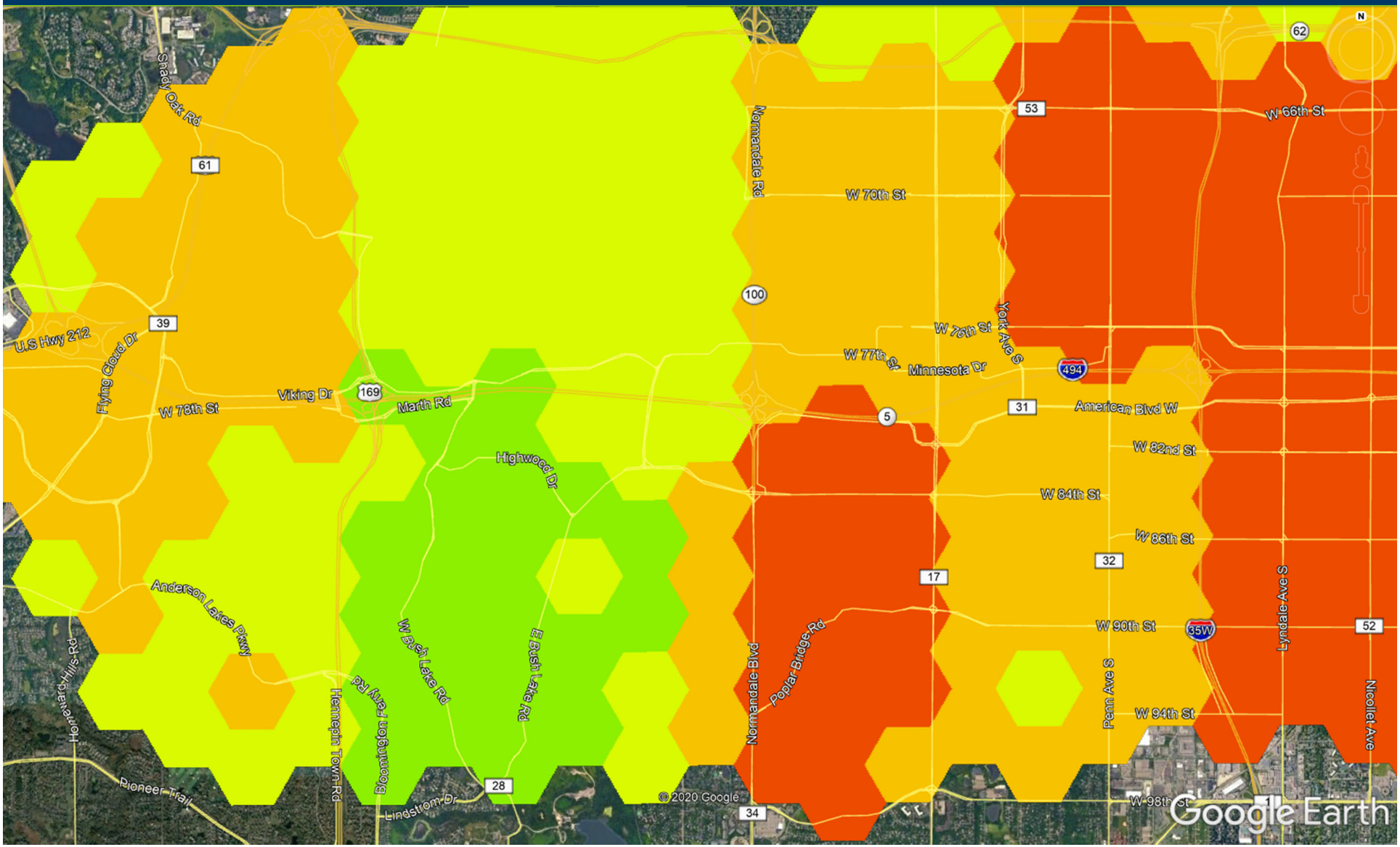
BENEFIT

* Benefit or Impact may only be realized with full vision implementation

Appendix B

SPACE Analysis Results

SPACE Data - Elements 1 - 5



SPACE Data - Elements 6-9