I-494: Airport to Highway 169

Freight, Safety and Multimodal Improvements

Joint Application by the Minnesota Department of Transportation and Metropolitan Council

2021 Infrastructure for Rebuilding America (INFRA) Program

Project Name **I-494: Airport to Highway 169 Projects 1 and 2**
Total Project Cost **$324M**
2021 INFRA Funds Requested **$84M**

Primary Contact:
Amber Blanchard,
Major Projects Manager,
MnDOT Metro District
1500 West County Road B2
Roseville, MN 55113
651-234-7770
amber.blanchard@state.mn.us

Joint Applicant Contact:
Nick Thompson
Director Metropolitan
Transportation Services
390 North Robert Street St. Paul, MN 55101
651-602-1754
nick.thompson@metc.state.mn.us

Supporting Information can be found at:
https://www.srfconsulting.com/i-494-infra/

DEPARTMENT OF TRANSPORTATION

METROPOLITAN COUNCIL

I-494: Airport to Highway 169

Freight, Safety and Multimodal Improvements

Joint Application by the Minnesota Department of Transportation and Metropolitan Council

BASIC PROJECT INFORMATION	
Project Name	I-494: Airport to Highway 169 Projects 1 and 2
Project Sponsor	Minnesota Department of Transportation
Was a INFRA application for this project submitted previously?	No
If yes, what was the name of the project in the previous application?	N/A
PROJECT COSTS	
INFRA Request Amount	$84,000,000
Estimated federal funding (excluding INFRA)	$21,000,000
Estimated non-federal funding	$219,000,000
Total Project Cost	$324,000,000
Previously Incurred Project Cost	$7,000,000
Future Eligible Cost	$317,000,000
Are matching funds restricted to a specific project component? If so, which one?	No
PROJECT ELIGIBILITY	
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on NHFN?	$317,000,000
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the NHS?	$317,000,000
Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?	$12,600,000
Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	$12,600,000
PROJECT LOCATION	
State(s) in which project is located	Minnesota
Small or large project	Large
Urbanized Area in which the project is located, if applicable	Minneapolis--St. Paul, MN--WI
Population of urbanized area	2,650,890 (INFRA Urbanized Area, 2020)
Is the project located (entirely or partially) in Federally designated community development zones?	No
Is the project currently programmed in the: • TIP • STIP • MPO Long Range Transportation Plan • State Long Range Transportation Plan • State Freight Plan	 Yes Yes Yes Yes Yes

I-494: Airport to Highway 169

Freight, Safety and Multimodal Improvements

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Table of Contents

I. PROJECT DESCRIPTION 1

Proposed Improvements 2

Project History 4

II. PROJECT LOCATION 4

III. PROJECT PARTIES 5

Grant Recipient 5

Project Partners 5

IV. GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS 6

Project Budget 6

Non-Federal Funding Source 6

Other Federal Funding Sources 7

INFRA Funding Need 7

V. MERIT CRITERIA 7

1. Support for National or Regional Economic Vitality 7

2. Climate Change and Environmental Justice Impacts 10

3. Racial Equity and Barriers to Opportunity 13

4. Leveraging of Federal Funding 16

5. Potential for Innovation 16

6. Performance and Accountability 17

VI. Project Readiness 18

Technical Feasibility 18

Project Schedule 18

Required Approvals 19

Risks and Mitigation Strategies 19

VII. Large Project Requirements 19

VIII. Benefit Cost Analysis 20

No Build Alternative 20

Build Alternative 20

BCA Methodology 20

Project Costs 21

BCA Results 21

IX. Supporting Documents 21

List of Figures

Figure 1. Project Location in Regional Context . . . 1
Figure 2. Implementation Plan of Project Phases . . . 2
Figure 3. Elements for Project 1 . . . 3
Figure 4. Elements for Project 2 . . . 3
Figure 5. Project History . . . 4
Figure 6. Project Location . . . 4
Figure 7. Project Location . . . 5
Figure 8. Project Partners . . . 5
Figure 9. Project Funding Sources . . . 6
Figure 10. Percent of Freight Trip Generation by NAICS Industry . . . 8
Figure 11. MnDOT Urban Freight Perspective Study – Freight Zone Profiles Dashboard for the Project Corridor . . . 8
Figure 12. Crash rates along the Project corridor . . . 9
Figure 13. Fortune 500 Headquarters in Project Vicinity . . . 10
Figure 14. Benefit-Impacts Analysis . . . 11
Figure 15. Electric Vehicle Charging Stations along the Project . . . 12
Figure 16. Equity Analysis Overview Map . . . 14
Figure 17. SPACE score for I-494 . . . 15
Figure 18. Project Schedule . . . 19

List of Tables

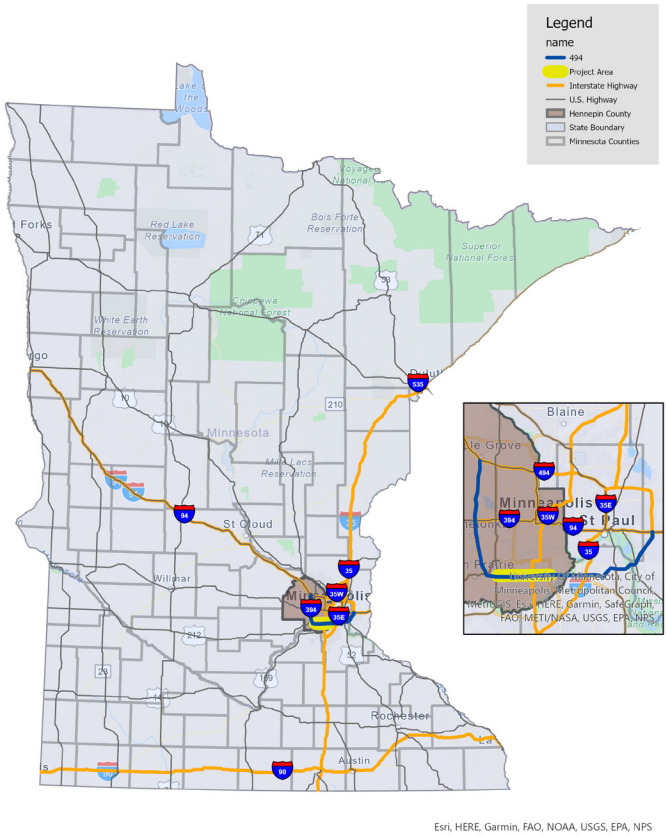
Table 1. Project Corridor Demographics . . . 5
Table 2. INFRA Grant Project Budget . . . 6
Table 3. Three-Year (2018-2020) Crash History . . . 9
Table 4. Results from EJ Analysis using EJSCREEN Data . . . 11
Table 5. Operation and Maintenance Schedule for Project Components . . . 17
Table 6. Large Project Requirements . . . 19
Table 7. Total Project Results . . . 21

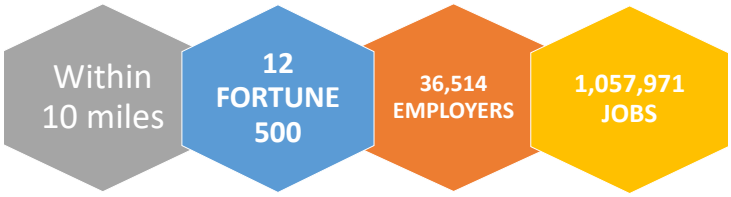
I. PROJECT DESCRIPTION

Minnesota Department of Transportation (MnDOT), in joint application with the Metropolitan Council (Met Council), is submitting this 2021 INFRA grant request for $84 million in funds. MnDOT and the Met Council will partner with the US DOT to improve highway safety, increase freight efficiency, and build equitable and sustainable communities in the Twin Cities region. The Project's total future eligible project cost is $317 million and complies with the requirements of a large project.

MnDOT's vision I-494: Airport to Highway 169 is a 9.5-mile reconstruction of Interstate 494 (I-494) to increase capacity and improve safety along the interstate to better serve the growing freight and multimodal needs of the region. This INFRA grant application is seeking funds for the proposed improvements towards Projects 1 and 2 of the vision and is herein referred to as the Project. The goals of the Project are to **address traffic mobility** in the freight corridor, **improve safety** by reducing the high crash rates, **preserve infrastructure and increase sustainability** by restoring pavement and replacing/preserving existing bridges, and provide an **improved and equitable multimodal experience** including a new pedestrian bridge for transit users, pedestrians, and bicyclists. This will create sustainable and equitable growth in the region as detailed in Section V below.

Figure 1. Project Location in Regional Context





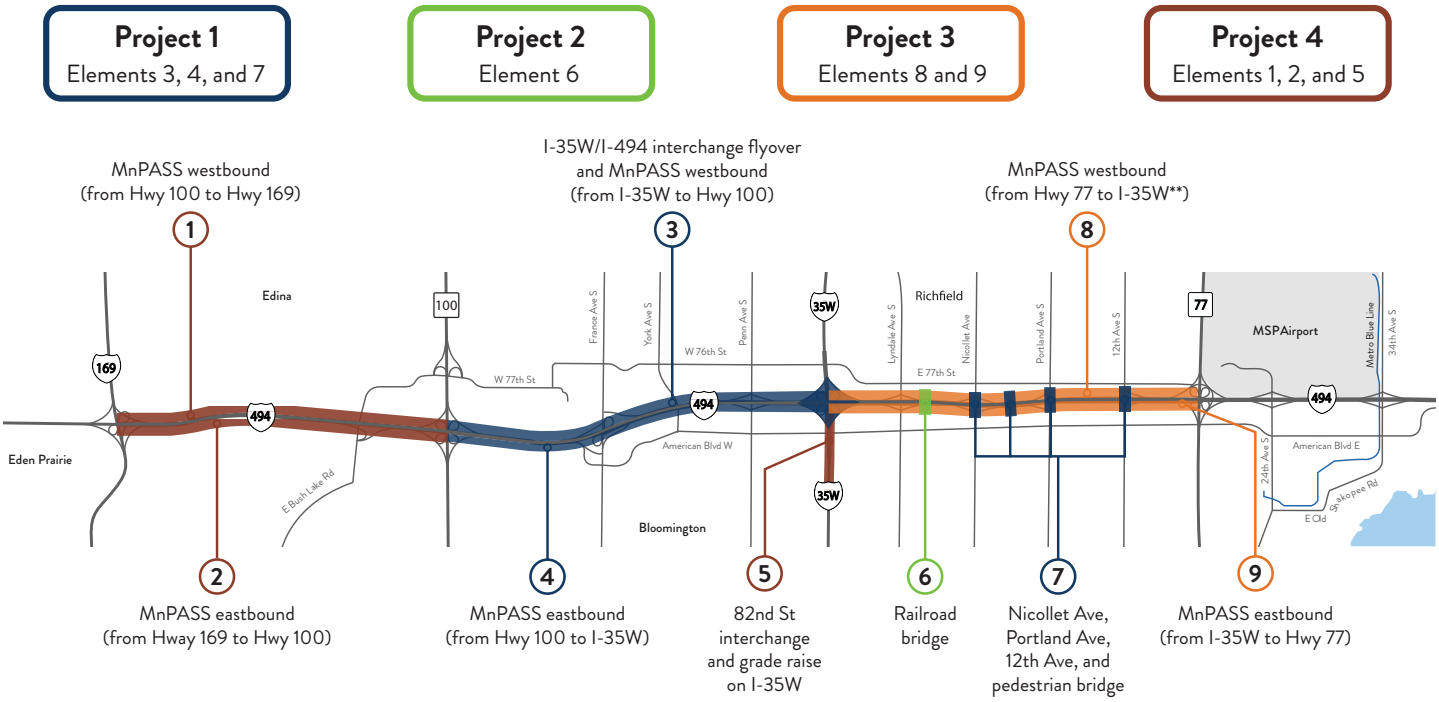
I-494 is part of a loop route to Interstate 94, circling through the southern and western regions of the Minneapolis – Saint Paul (MSP) metropolitan area in Minnesota (Figure 1). The southwest stretch of the corridor provides direct access to major destinations such as the **Minneapolis-St. Paul International Airport** (a major Delta hub, which served over 38 million travelers in 2018) and the **Mall of America** (Minnesota's most visited tourist destination with over 40 million annual visits), cross city access for commuters and freight, and local access for the numerous businesses and residents along the freeway. I-494 also provides critical connectivity from the MSP Airport to the 15 **Fortune 500 companies** in the MSP metropolitan area through a regional and interstate network of several principal arterial routes including I-35W, U.S. Highway (US) 169, Trunk Highway (TH) 100, and TH 77.

I-494 is identified by MnDOT as one of **Minnesota's Principal Freight Corridor** on the designated **National Highway System** in the Minnesota Statewide Freight System and Investment Plan. It is also designated by the Met Council as a Tier 1 Freight

Corridor in its Long-Range Transportation Plan for the region. The existing highway mobility on the I-494 corridor is considered unacceptable based on congestion levels, safety, and operational issues during the peak as well as the off-peak travel periods as large amounts of freight moves from and through Minnesota and beyond. Current annual average daily traffic (AADT) on I-494 ranges from 150,000 (west of TH 100 intersection) to 131,000 (east of I-35W intersection) and can experience up to 10 hours of congestion in a day. The American Transportation Research Institute (ATRI) recognizes I-494 Project corridor as the **worst bottleneck in the State of Minnesota** and the **40th most congested interstate in the nation** for the year 2020.

MnDOT's vision I-494: Airport to Highway 169 will develop and construct long-term solutions that will improve the severe congestion issue and provide better quality of life to local communities. However, the vision cannot be constructed all at once due to funding constraints. The project team evaluated several criteria to determine likely scenarios for implementation of project phases. The corridor is divided into four projects which are prioritized based on the evaluated criteria (Figure 2). As mentioned above, this application seeks funding for Projects 1 and 2. **Project 1** includes widening and reconstruction of approximately three miles of roadway between TH 100 and I-35W, along with the construction of six new bridges including a new pedestrian bridge, replacement of five existing bridges, addition of retaining walls and noise walls, and improved drainage elements. **Project 2** includes replacement of the existing grade separated railroad bridge over I-494 to accommodate the future addition of MnPASS on I-494 between I-35W and TH 77. Project 3 will further construct MnPASS on I-494 between I-35W and TH 77 in both directions. Project 4 will reconstruct the 82nd Street interchange, raise grade on I-35W, and construct MnPASS on I-494 between US 169 and TH 100.

Figure 2. Implementation Plan of Project Phases



**Added capacity begins at 24th Ave with MnPASS designation just west of TH 77

PROPOSED IMPROVEMENTS

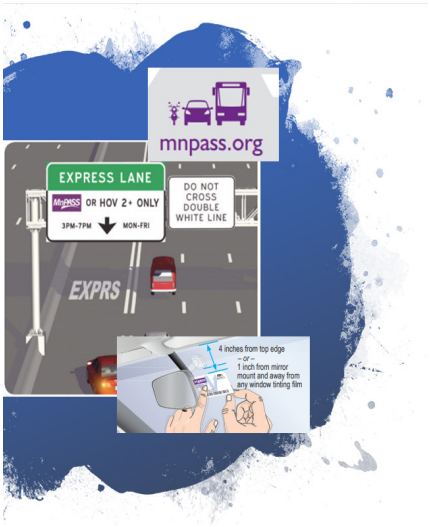
MnDOT's criteria evaluated for the implementation of project phases were constructability, operations/safety, equity, asset management, funding cost, and community support. The project phases were then prioritized based on these criteria to help guide not only the initial project but to help plan for future phases of construction, ultimately to achieve completion of the corridor vision. The project enhancements will

- improve safety
- ensure a smoother ride
- decrease congestion
- improve trip time reliability
- provide regional roadway system access for economic generators
- reduce localized stormwater flooding and run-off
- enhance bicycle and pedestrian movement across the corridor
- provide a regional transit advantage

Project 1

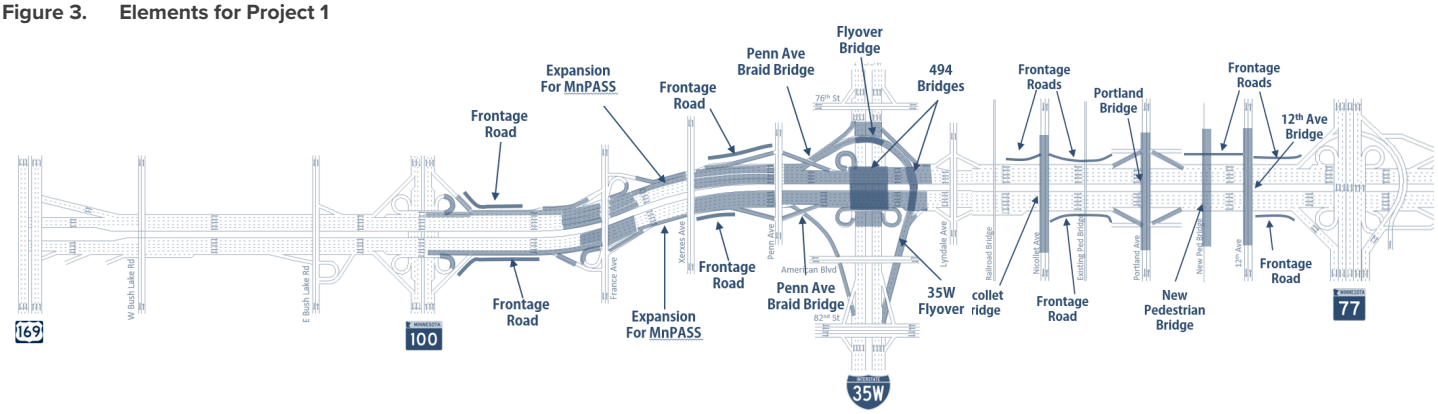
Project 1 improvements include:

- Construction of MnPASS lanes (managed, high occupancy vehicle (HOV) toll lanes) on I-494 between TH 100 and I-35W in both directions to improve the flow of traffic along the I-494 corridor.
- Connections to I-35W northbound to I-494 westbound directional ramp to reduce weaving conflicts and increase mobility.
- Reconstruction of a single full access interchange at Portland Avenue by constructing a new bridge at Portland Avenue and removing ramps at Nicollet Avenue and 12th Avenue to consolidate access along I-494. Existing entrance and exit ramps are too close in proximity to adjacent interchanges which causes congestion and safety issues on I-494.
- Construction of a new pedestrian bridge near Chicago Avenue to remove barriers to opportunity and provide improved connectivity for the underserved community in the area.
- Modifying the existing I-35W/82nd Street interchange to provide access to the new I-35W northbound to I-494 westbound directional ramp to enhance connections to the economic generators.



- Several pedestrian and bicycle enhancements with ADA upgrades along Portland Avenue, Nicollet Avenue, and 12th Avenue to improve connectivity and safety for non-motorized users traveling throughout the project area.
- Replacement of stormwater infrastructure to expand capacity to mitigate flooding along the corridor.

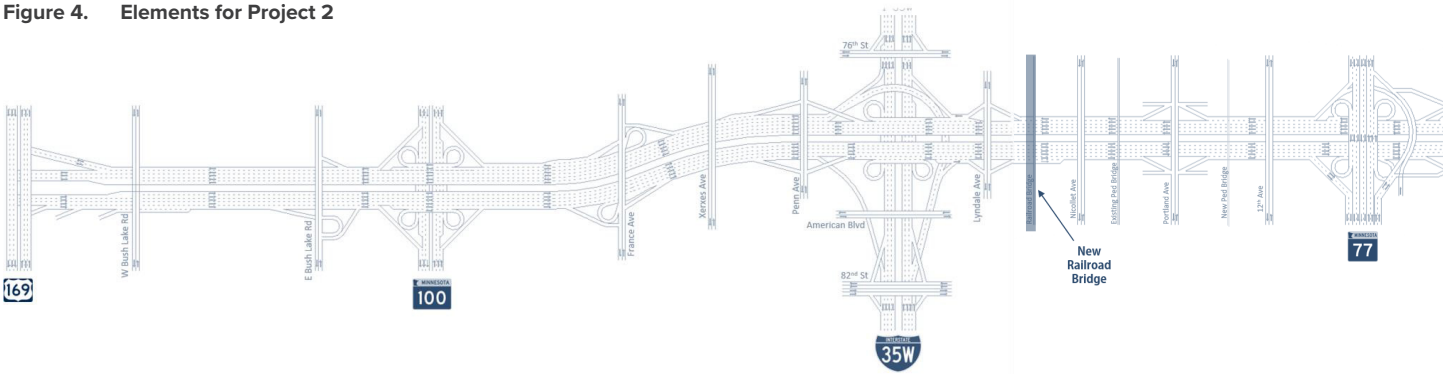
Figure 3. Elements for Project 1



Project 2

MnDOT's vision includes expansion of the I-494 corridor east of I-35W interchange to TH 77 for the future construction of eastbound and westbound MnPASS lanes. Project 2 will replace the existing Canadian Pacific (CP) Railroad bridge over I-494. The bridge improvements will advance the proposed transportation improvements as well as preserve the aging structure. The reconstruction of the bridge is key to adding future MnPASS improvements and potential transit service along the I-494 corridor.

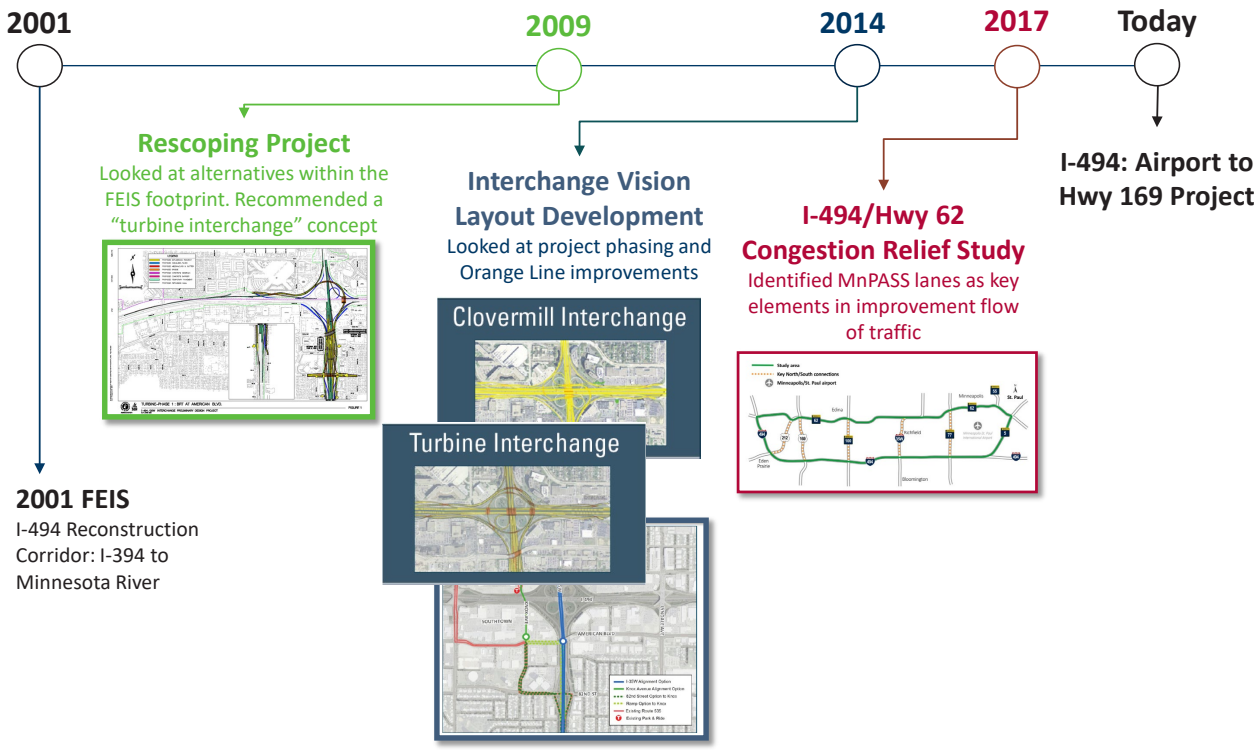
Figure 4. Elements for Project 2



PROJECT HISTORY

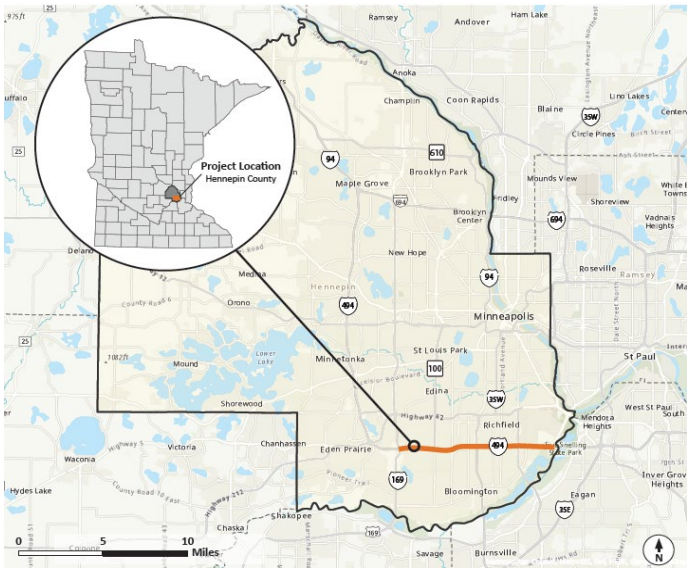
MnDOT and Metropolitan Council have partnered to develop a vision for the I-494 corridor. Over the past 20 years MnDOT has invested over $645M in the I-494 corridor. Since 2001, significant planning and coordination between Hennepin County, local communities, businesses, elected officials, and interested citizens has occurred resulting in a clearly identified and supported vision and phasing. Figure 5 provides a summary of the steps taken leading to moving into Projects 1 and 2.

Figure 5. Project History



II. PROJECT LOCATION

Figure 6. Project Location



I-494 is a 43-mile belt route for I-94, circling the Twin Cities Metropolitan Area. Through the southern suburbs, the I-494 corridor is a major east-west highway connecting major commercial and employment centers and other principle arterial routes, including US 169, TH 100, TH 77, TH 5, and I-35W, which connects to downtown Minneapolis. The project limits extend from TH 100 to TH 77 near the Minneapolis-St. Paul International (MSP) Airport. Within these limits, the I-494 corridor passes through the Cities of Bloomington and Richfield and is in the vicinity of Cities of Edina and Eden Prairie. The project is located within the Minneapolis-St. Paul, MN-WI (Twin Cities) Urbanized Area, and is designated as an Urban Area.

The I-494 vision team conducted an equity analysis to identify underserved and/or transit dependent populations within the project area, as well as to map residences and destinations for low-income populations, communities of color, immigrant populations, children, the elderly, and people with disabilities. The analysis found one Opportunity Zone at the east end of the project (Figure 7). However, there are census blocks adjacent to the project that are in the 80th-90th percentile for minority populations compared to the national average and in the 90th-95th percentile for low-income compared to the national average.

Figure 7. Project Location

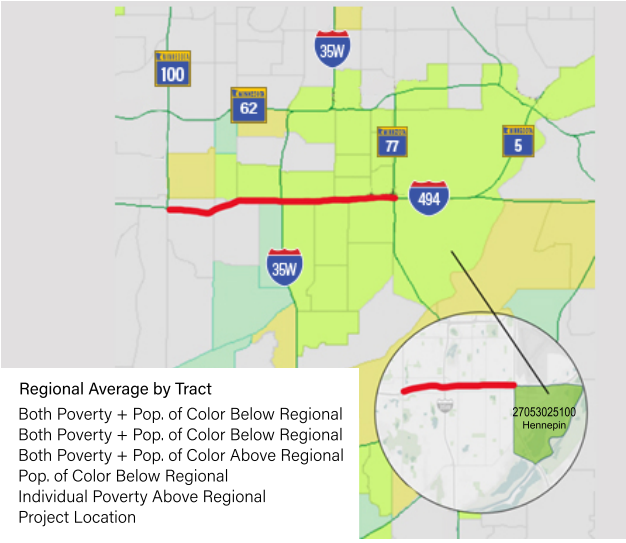


Table 1. Project Corridor Demographics

Location	Population
City of Bloomington	84,943
City of Richfield	36,354
City of Edina	52,857
City of Eden Prairie	64,893

* Based on US Bureau Census estimates, 2019

III. PROJECT PARTIES

GRANT RECIPIENT

MnDOT is submitting a joint application with the Metropolitan Council (details on this organization below). The Minnesota Department of Transportation is the lead applicant and primary point of contact of this INFRA grant application. MnDOT has been a proactive leader and advocate for this Project for several years. MnDOT has extensive experience with procuring and developing transportation improvement projects. With over 11,000 miles of trunk highway (including interstates) and nearly 1,500 bridges under their ownership, MnDOT is experienced and committed to the maintenance and expansion of the roadway system. Within the last ten years, MnDOT and its partners have procured eight federal grants used to increase efficiency and safety on the MnDOT system.

Primary Contact

Amber Blanchard, Major Projects Manager,
MnDOT Metro District

1500 West County Road B2
Roseville, MN 55113
651-234-7770
amber.blanchard@state.mn.us

PROJECT PARTNERS

Metropolitan Council

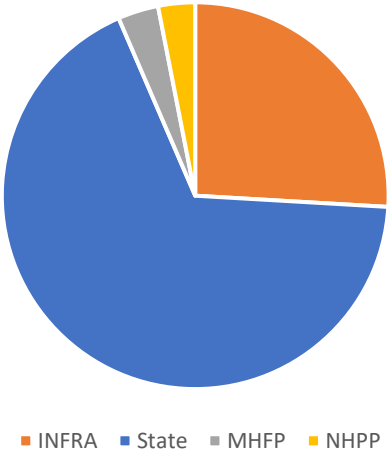
The Metropolitan Council is the Metropolitan Planning Organization (MPO) for the Twin Cities. It is the regional policy-making body, planning agency, and provider of essential services for region and will play a significant role in the success of this project. Met Council's mission is to foster efficient and economic growth for a prosperous region and priorities include creating a financially sustainable 21st century transportation system, promote housing opportunities for all, and invest in infrastructure that supports economic development. Met Council is also the region's primary transit operator, providing 95 percent of the transit trips in the Twin Cities. As the transit operator, they are currently building two transitways that will directly benefit from the I-494 project and connect to jobs within the I-494 corridor. By partnering on this grant, MnDOT and the Met Council will be able to leverage local investments and opportunities to maximize the value of the federal investment in the region. The project involves eleven other project partners. FHWA, Hennepin County, City of Bloomington, and City of Richfield are all funding partners for Projects 1 and 2.

Figure 8. Project Partners

IV. GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS

PROJECT BUDGET

Figure 9. Project Funding Sources



Total Project Cost: $324 million

INFRA Grant Request Amount: $84 million (26 percent of project cost)

Availability and commitment of funding sources: This funding request is the final piece of the total funding for Projects 1 and 2. Matching funds identified below is available and formally committed to the project (see documentation for MnDOT Letter of Support and MHFP Award Letter).

MnDOT has allocated $219 million in state funds to the Project. To date, $7 million in state funds were used for environmental assessment and preliminary design to advance project delivery. Table 2 presents the project budget. Detailed construction cost estimates for Projects 1 and 2 have been prepared.

74 PERCENT FUNDING SECURED TO DATE FOR PROJECTS 1 AND 2

Table 2. INFRA Grant Project Budget

		Project Funding						
		Non-Federal		INFRA		Other Federal		
	Project Element	$	%	$	%	$	%	**Total Cost Estimate**
Past	Environmental assessment / Pre-design engineering	7,000,000	100%	0	0%	0	0%	7,000,000
	Total Incurred Expenses	**7,000,000**	**100%**	**0**	**0%**	**0**	**0%**	**7,000,000**
Future	Preliminary engineering	6,000,000						6,000,000
	Construction engineering	13,000,000						13,000,000
	ROW	5,000,000						5,000,000
	Construction	183,000,000		84,000,000		21,000,000		288,000,000
	SA/Change orders	5,000,000						5,000,000
	Total Future Costs	**212,000,000**	**67%**	**84,000,000**	**26%**	**21,000,000**	**7%**	**317,000,000**
	***Note:** Preliminary engineering, construction engineering and construction subtotals include 6.7% contingency*							
	Federal Participation (INFRA Maximum 80/20)							
	Non-Federal	212,000,000	67%					
	Federal Funding	105,000,000	33%			**Total Project Costs**		**324,000,000**
	Total Future Project Cost	**317,000,000**						

NON-FEDERAL FUNDING SOURCE

State Funding

In 2018 MnDOT secured $204 million through the Corridors of Commerce program, a state road improvement grant funded through the Minnesota State Legislature. The project application was submitted by the Metropolitan Council given its high importance to the region as a Tier 1 MnPASS lane. The award consists of $173 million in construction costs toward the I-494 and I-35W turbine interchange and introduction of MnPASS lanes detailed under Project 1. $31 million from the Corridor of Commerce grant funds will go towards project engineering and post-letting. MnDOT has also committed another $15 million in state funds toward MnPASS construction cost and ROW acquisition. All INFRA dollars and respective match funds will be spent on construction.

DEPARTMENT OF TRANSPORTATION

$219 million/ 67% of Project Costs

Subsequently, the project was added to MnDOT's 2021-2024 State Transportation Improvement Program (STIP), MPO's long range transportation plan (2040 Transportation Policy Plan) and Transportation Improvement Program (TIP) as state project number 2785-424. MnDOT is committed to providing funding for the future ongoing maintenance and operations of the enhanced facility. Section V, Criterion #6 provides additional details about MnDOT's operation and maintenance project commitment.

OTHER FEDERAL FUNDING SOURCES

MnDOT and its partners have previously secured the following funding for additional improvements within the I-494: Airport to Highway 169 corridor.

Minnesota Highway Freight Program (MHFP)

Minnesota Highway Freight Program (MHFP) administers federal funds from the National Highway Freight Program (NHFP) to support local agencies for highway transportation and intermodal projects that benefit freight movement throughout the state. In 2020, through a competitive process, the City of Bloomington was awarded $11 million in federal funding for the construction of I-494 and I-35W turbine interchange.

MHFP
$11 million/ 4% of Project Costs

National Highway Performance Program (NHPP)

MnDOT has committed to providing $10 million in federal funds through the National Highway Performance Program to be invested for infrastructural improvements of bridges along the I-494 mainline. This funding is currently in the 2021-2024 State Transportation Improvement Program (STIP) under the Districtwide Setaside for Mobility Projects (SEQ # 2062, Project Number # 880M-MO-23), and will be programmed with the I-494 project in the upcoming 2022-2025 STIP. This commitment to $10 million in bridge preservation work will continue regardless of the outcome of securing an INFRA grant.

U.S. Department of Transportation Federal Highway Administration
$10 million/ 3% of Project Costs

INFRA FUNDING NEED

If INFRA funding is not awarded, MnDOT would have to exclude construction of several elements of Project 1, all of Project 2, utilities coordination, and railroad agreements. Without the proposed improvements, the corridor will continue to experience congestion and higher than average crash rates. The travelers along I-494 and I-35W would experience construction related congestion over a much longer period. MnDOT may seek alternative funding sources in the future, but project scope will be significantly reduced. The absence of funding and corresponding scope reduction would adversely impact the underserved population in the area.

V. MERIT CRITERIA

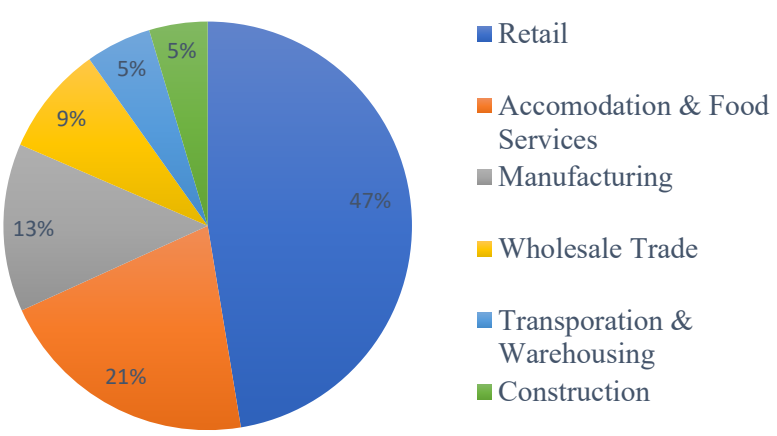
1. SUPPORT FOR NATIONAL OR REGIONAL ECONOMIC VITALITY

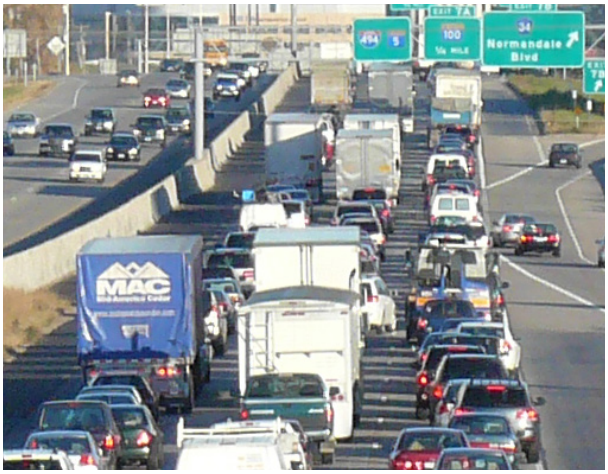
ELIMINATE the freight bottleneck | **IMPROVE** roadway safety | **SUPPORT** American industry | **ENSURE** sustainability and equity

Eliminate the Freight Bottleneck

The I-494 corridor facilitates a high volume of freight traffic between the metropolitan area, western suburbs, and intermodal facilities within Minnesota. Within the project area, 2019 Heavy Commercial Average Annual Daily traffic (HCAADT) counts indicate between **6,000 and 8,500 freight vehicles** use the corridor daily. **During peak hours, the through-traffic travel speed is reduced from 60 mph to an average speed of 33.7 mph, a reduction of 56 percent**. A recent study completed by MnDOT (I-494/TH 62 Congestion Relief Study) found that the Heavy Commercial Vehicle volumes shifted significantly at the I-35W Interchange, indicating most freight haulers utilizing I-494 to the west use I 35W to transport goods to Minneapolis and southern Minnesota. According to Data Axle 2019 (formerly InfoUSA) and StreetLight data analysis performed by MnDOT, most freight related businesses located near the Project are freight receivers; industries that include retail stores, restaurants, and hotels (Figure 10). Additionally, the corridor is used to transfer goods to and from the nearby Minneapolis-St. Paul (MSP) International Airport.

Figure 10. Percent of Freight Trip Generation by NAICS Industry

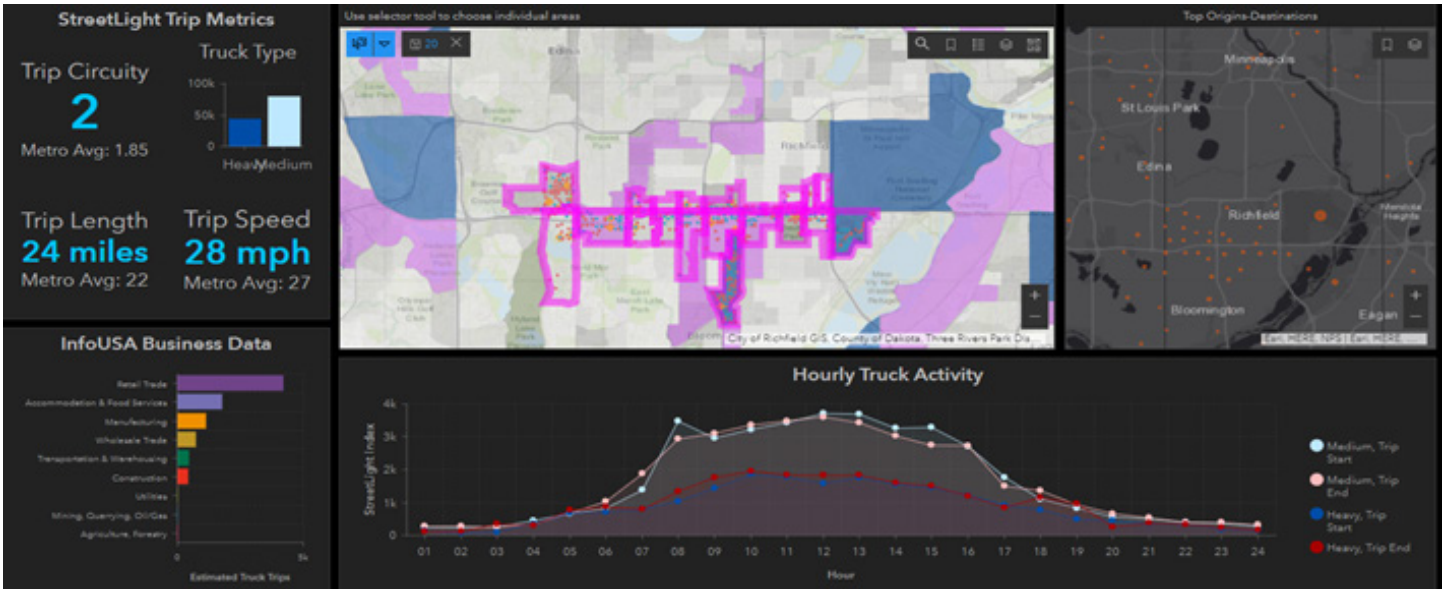




The top three freight industries who utilize the Project corridor are Retail Trade (47 percent of freight traffic), Accommodation and Food Services (21 percent), and Manufacturing (13 percent). According to the I-494 Corridor Freight Study completed in 2019, the I-494 and I 35W Interchange and its immediate neighbors have some of the highest freight business densities in the metropolitan area. Along I-494, there are five distinct clusters with more than twenty freight businesses per square mile.

Based on Federal Highway Administration (FHWA) estimates from 2019, $16.4B of freight is transported along I-494 annually. As the worst commute in Minnesota, I-494 experiences significant congestion in both the AM and PM peak periods in both directions, and split peaks along I-35W (I-494 Corridor Freight Study). At these peak times, **congestion can occur up to ten hours each day**, with one of the primary causes being vehicles merging at the I-35W Interchange. This severe congestion and inadequate ramp spacing causes safety challenges and delays for the many freight haulers who utilize the roadway each day. As development and growth occur along I-494 and I 35W, these safety and congestion issues will worsen given the MPO's regional forecasts of the addition of 500,000 people in next 20 years, leading to more inefficient, unsafe, and unreliable freight transport. **The implementation of strategic improvements of this Project will greatly reduce the present congestion and freight bottleneck along the I-494 corridor**.

Figure 11. MnDOT Urban Freight Perspective Study – Freight Zone Profiles Dashboard for the Project Corridor

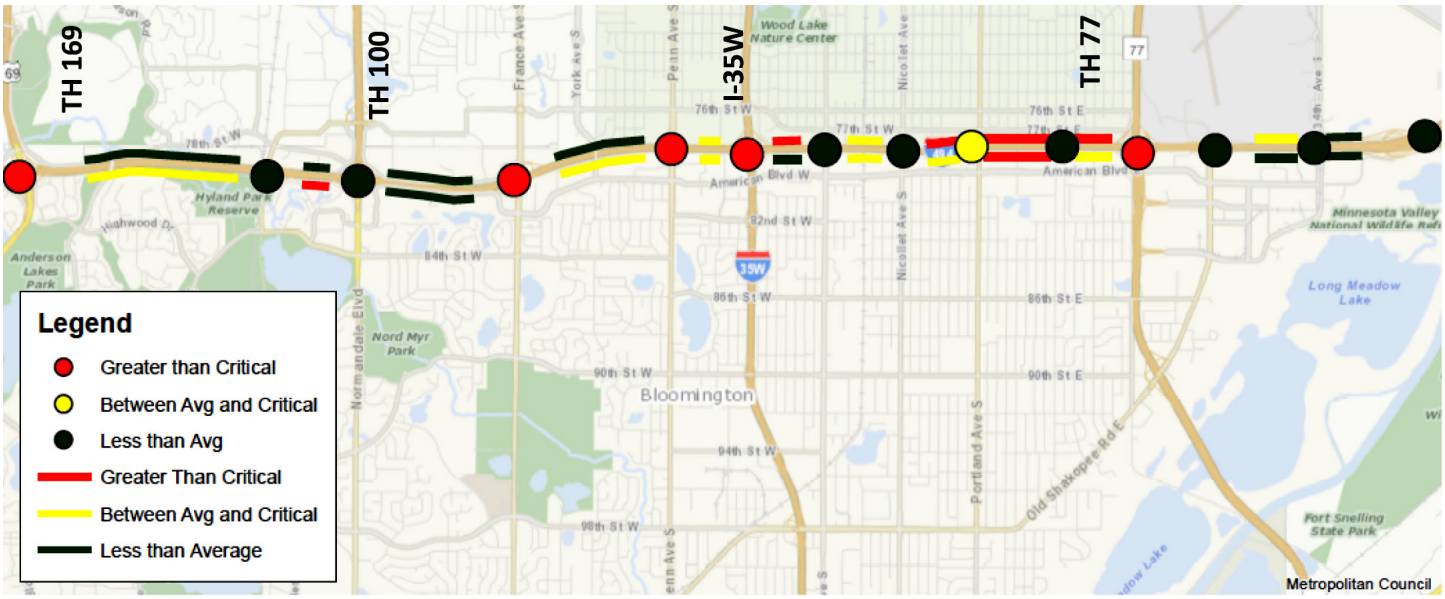


Improve Roadway Safety

An earlier safety analysis was performed on I-494 between TH 169 and TH 5 to identify crash trends for mainline segments and interchanges using three years of crash data (2015-2017) from MnDOT's Minnesota Crash Mapping Analysis Tool (MnCMAT). It was found that five of the 14 interchanges (~35%) have above critical crash rates, while six of the 24 segments (25%) are above critical (Figure 12). Crash rates on eastbound segments generally increase approaching interchanges and drop just downstream of the interchange. Westbound segments, on the other hand, have the highest crash rates between TH 77 and I-35W, with most other segments below average. I-35W interchange has nearly double the number of crashes than the next highest interchange in the Project area.

4	34	85	709
serious injury or fatal crashes	minor injury crashes	possible injury crashes	property damages only

Figure 12. Crash rates along the Project corridor



Eastbound crash rates are largely due to rear-end crashes stemming from congestion bottlenecks at the interchanges. Westbound crash rates are highest between TH 77 and I-35W which is the most congested westbound segment and sees varying queues stemming from the I-35W interchange. Like the eastbound direction, these crashes are largely due to congestion caused by either end-of-queue or stop-and-go rear-end collisions.

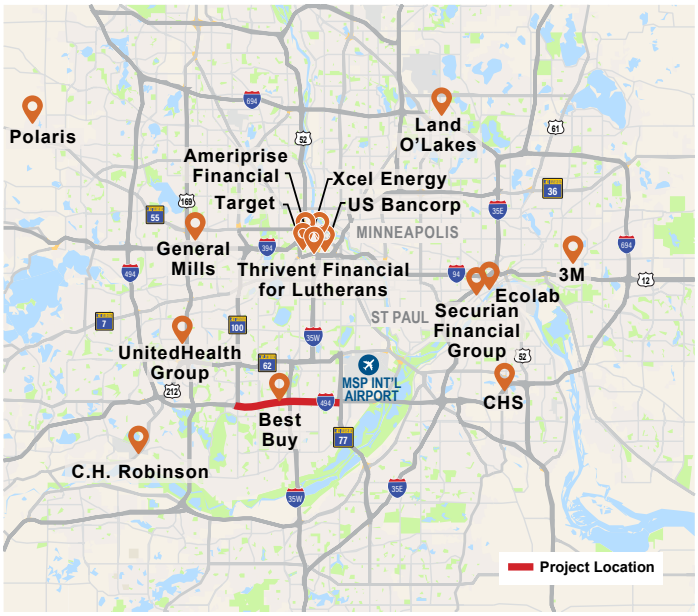
The latest crash analysis using MnDOT's tool MnCAMT2 for the years 2018-2020 reports four fatal and incapacitating injuries on Project 1 (I-494 between TH 100 and I-35W). In addition to serving as a congestion bottleneck, the project area poses safety issues with a total of **832 crashes in the three-year** dataset at an Annual Average Crash Cost of over $12 million (Table 3). The Project is reducing overall crashes by 14% and severe crashes by 29%. The improvements due to this Project will resolve the existing safety issues along the corridor today by reducing congestion, reconfiguring accesses to reduce weaving conflicts, and adding auxiliary lanes and lane capacity in form of MnPASS. **The implementation of strategic improvements will greatly reduce the crash rate occurrence and crash severity along I-494 corridor**. Further details are documented in the Benefit Cost Analysis Section VIII.

Table 3. Three-Year (2018-2020) Crash History

Corridor	Total	Total Crash Cost	Annual Average Crash Cost
I-494 (excludes segments below)	292	$17,066,100	$5,688,700
NB I-35W	148	$2,858,500	$952,833
WB I-494 from I-35W to France (aux lane)	207	$13,601,000	$4,533,667
EB and WB I-494 from Lyndale to Portland	137	$2,461,500	$820,500
EB and WB I-494 from 12th Ave to TH 77	48	$1,036,500	$345,500

Support American Industry

Figure 13. Fortune 500 Headquarters in Project Vicinity



The Project is in an extremely dense employment corridor, with 2,771 employer locations with 90,314 jobs in a 1-mile buffer as per the second quarter 2019 data from MN DEED Quarterly Census of Employment & Wages. Approximately 12 of the 15 Fortune 500 companies have headquarters within 10 miles or less from the project area. The I-494 project corridor acts as a key link for these Fortune 500 companies in terms of employee commutes, freight inputs/outputs, and as the major route leading to and from the Airport for business travel. The Project also strengthens one of the state's competitive advantages, MSP Airport, because it provides airline passengers, whether business or leisure, an option to use a MnPASS lane to avoid severe congestion on I-494 and reduce the risk of missing a flight.

Several of these employers provide a choice to join a union for their employees and hire locally. This project will also generate employment as MnDOT partners with several local contractors and businesses as per their **Equity and Inclusion Programs** detailed in Criteria 3 below.

The benefit-cost analysis (BCA) for the Project resulted in a benefit cost ratio (BCR) of 4.0. The discounted cost of the Project (7 percent discount rate) deflated back to year 2019 was found to be $221.3 million. The Projects improvements will result in benefits worth $876.5 million. The desired improvements that the Project will achieve are cost effective, sustainable, and equitable in terms of economic vitality of the region.

2. CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE IMPACTS

I-494: AIRPORT TO HIGHWAY 169 PROJECTS 1 AND 2 INCORPORATE CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE IMPACT BASED METHODOLOGY IN BOTH PROJECT PLANNING EFFORTS AND PROJECT ELEMENTS.

Project Planning Efforts

Climate Action Plan

In 2007, Minnesota passed the bi-partisan Next Generation Energy Act (NGEA) that established goals for the state to reduce greenhouse gas (GHG) emissions by 15% below 2005 levels by 2015, 30% by 2025, and 80% by 2050 compared to a 2005 baseline. MnDOT was the **first state agency** to apply the Next Generation Energy Act GHG reduction goals to all agency operations, including fleet fuel use and electricity. MnDOT was also the **first state in the country to create GHG reduction goals** for the state highway construction program. Met Council identifies **Sustainability** as the primary goal in the agency's long-range plan for the Twin Cities region, THRIVE MSP 2040. Met Council is actively implementing practices towards climate mitigation, adaption, and resiliency while currently working on developing a Climate Action Plan. The Project is currently going through an extensive NEPA Environmental Review that will be completed by the end of the year.

Equitable Development & Environmental Justice Plans

As part of the Project Development Process and in compliance with Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, the Project underwent an Environmental Justice (EJ) Analysis. The data for the analysis was determined using U.S. EPA's EJSCREEN tool, the 2014-2018 American Community Survey 5-Year Estimates, field review, input from local agency partners[1], and extensive public outreach to identify locations of Section 8 housing[2], and other known concentrations of low-income and/or minority residents. The analysis found that the communities within the project area have strong indicators of minority and/or low-income persons population with many of these at levels higher than the Hennepin County averages (Table 4).

1 A Stakeholder Agency Engagement Team was established in the summer of 2018 to help identify EJ populations and resources within the community to guide outreach.
2 Section 8 of the Housing Act of 1937, as amended, authorizes the payment of rental housing assistance to private landlords on behalf of low-income households. The US Department of Housing and Urban Development manages the Section 8 programs.

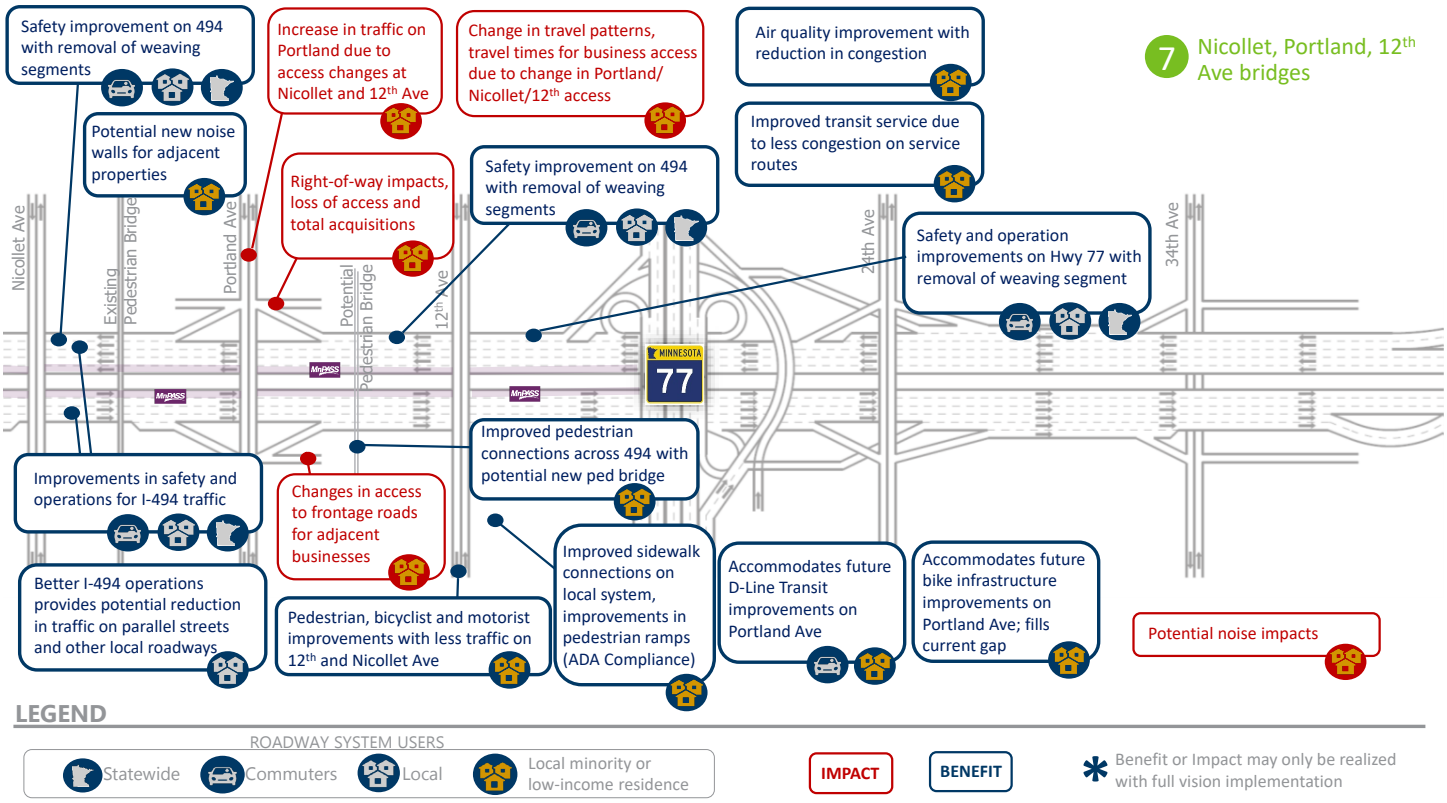
Table 4. Results from EJ Analysis using EJSCREEN Data

Strong Indicator of EJ Population based on EJSCREEN Data		
Location	Minority Population (>10% increase from Hennepin County Average)	Low Income Population (>10 % increase from Hennepin County Average)
Mainline I-494[3]	Y (15%)	N
Access Changes between Penn Ave and TH 77	Y (22%)	Y (12%)
I-494 and I-35W interchange	N	N

Based on these results, public engagement and community outreach activities were initiated to assess whether the potential adverse effects of the proposed project fall disproportionately on low-income or minority populations. Issues that were considered included social impacts, traffic impacts, noise impacts, visual impacts, air quality impacts, and right-of-way impacts, for each element of the project. A Benefit-Impact Analysis was performed for each phase of the Project. A summary of the analysis report is available here.

The Project adopted and prioritized elements, identified in the Implementation Plan, that would bring equitable development through public involvement, collaborative problem solving, and would make a visible difference in underserved, under-resourced, and overburdened communities.

Figure 14. Benefit-Impacts Analysis



3 The Mainline, Access Change (between Penn And TH 77), and TH 77 SB ramp study areas all include Census Tract 9800, Block Group 1 which is almost completely comprised of MSP International Airport and has a population of 291. While this census tract has a high percentage of minority and low-income persons, the residential area within this block group is over 1 mile from the project areas. Because of this, there may be an over estimation of EJ populations within these three project buffers.

Project Elements

Reduction in Vehicle Miles Traveled & Greenhouse Gas Emission

MnDOT is making progress toward the 2025 state climate goals to reduce greenhouse gas (GHG) emissions from transportation as outlined in MnDOT's annual sustainability report. Between 2008 and 2019, the agency reduced facility-related greenhouse gas emissions by 28%. MnDOT's Sustainable Transportation Advisory Council (STAC) also recognizes the need to reduce vehicle miles traveled (VMT) to address climate change. Adding **MnPASS lanes**, high occupancy vehicle (HOV) toll lanes, as a major component of Project 1 is a sustainable planning tool to achieve both the climate goals. **MnPASS lanes provide transit advantages to reduce VMT, reduce GHG emissions, reduce congestion, decrease household travel costs, and provide convenient and safe access to underserved communities**. Transit vehicles and carpools use the MnPASS lanes for free always while small and medium commercial vehicles use it for a fee during peak hours or for free during off-peak hours. The added MnPASS lane will help reduce VMT and provide a reliable, congestion-free option.

Effective Travel Demand Management Strategies

It takes,
1,161,692
mature trees to reduce the same amount of CO2 emissions

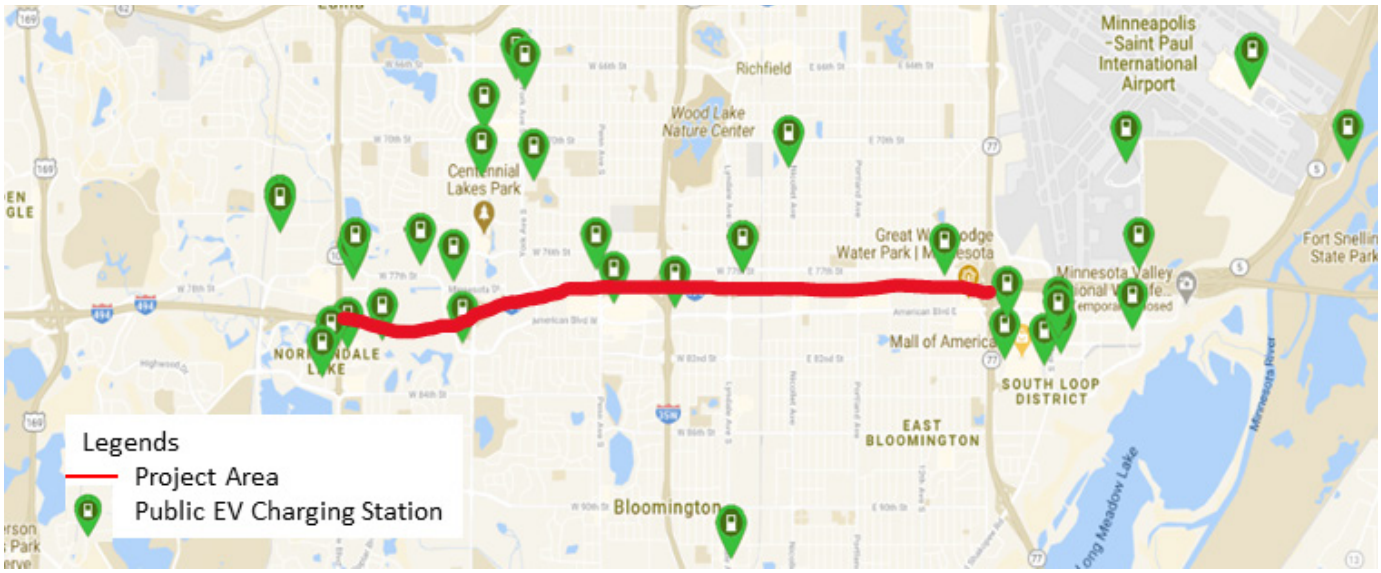
MnDOT's Project partner Commuter Services provides effective travel demand management (TDM) strategies along the I-494 Project corridor through customized travel options to commuters. Community outreach conducted by Commuter Services resulted in switching 5,500 drive alone commuters to a sustainable commute mode after receiving customized commute options. **The outreach achieved a VMT reduction of estimated 56 million vehicle miles and a reduction of 23,234 metric tons of CO2 emissions in 2018 alone**. The City of Bloomington, another Project partner, requires all offices and industrial developments to submit a TDM plan and hold a financial guarantee to ensure the TDM strategies are implemented. Bloomington has been **recognized as a local and national best-practice examples of effective TDM**.

Electrification Infrastructure / Zero-Emission Vehicle Infrastructure

MnDOT began a first in the nation three-year pilot project to give a one-time **MnPASS account credit to eligible Electric Vehicle** (EV) drivers to use MnPASS managed lanes (Sustainability Report). The goals were to increase purchases of EVs and expand use of the MnPASS system. Drivers who purchase or lease a new or used plug-in hybrid electric vehicle receive a $125 credit or a $250 credit for an all-electric vehicle. Vehicles must be purchased or leased between November 1, 2019, and October 31, 2022 to be eligible. 23% of participants said the credit helped make their decision to buy an EV.

Presently, there are several Electric Vehicle Charging Stations along the I-494 corridor. MnDOT, City of Bloomington, and City of Richfield have committed to installing additional charging stations along the Project to reduce barriers to EV adoption and allow EV travel throughout the state.

Figure 15. Electric Vehicle Charging Stations along the Project



Improving Dilapidated Infrastructure & Disaster Preparedness

The Project proposes a comprehensive system of treatment ponds, infiltration basin, and underground storage facilities to retain and treat runoff prior to discharge to downstream waterbodies, including the Minnesota River. This improvement will repair and resolve the existing issue of contaminated groundwater near Penn Avenue and Nicollet Avenue in the Project area. The current bridges at Portland Avenue and Nicollet Avenue were constructed in the 1950s and likely have lead and asbestos contamination. Replacing these bridges will improve the existing infrastructure along the Project corridor. The existing area near Penn Avenue has pavement sinking issues causing unsafe conditions for travelers. Current level of congestion on I-494 impacts the air quality in the region. Improved mobility due to the Project improvements will result in improved air quality/emissions as compared to the No-Build condition. The Project improvements will reduce localized stormwater flooding and as a result improve disaster preparedness along the corridor.

New or Improved Pedestrian/Cycling Connections

A new pedestrian bridge near Chicago Avenue will be constructed to enhance the connectivity in the region for pedestrian and bicyclists. The project also proposes addition of sidewalks along frontage roads on Portland Avenue, Nicollet Avenue, and 12th Avenue. The new and improved connections will have ADA upgrades throughout the corridor that will also improve safety and mobility for persons with disabilities. These improvements will provide a wide variety of benefits for the underserved communities in the Project area.

3. RACIAL EQUITY AND BARRIERS TO OPPORTUNITY

I-494: AIRPORT TO HIGHWAY 169 PROJECTS 1 AND 2 INCORPORATE SOLUTIONS FOR ENSURING RACIAL EQUITY & REMOVING BARRIERS TO OPPORTUNITY IN BOTH PROJECT PLANNING AND PROJECT INVESTMENTS.

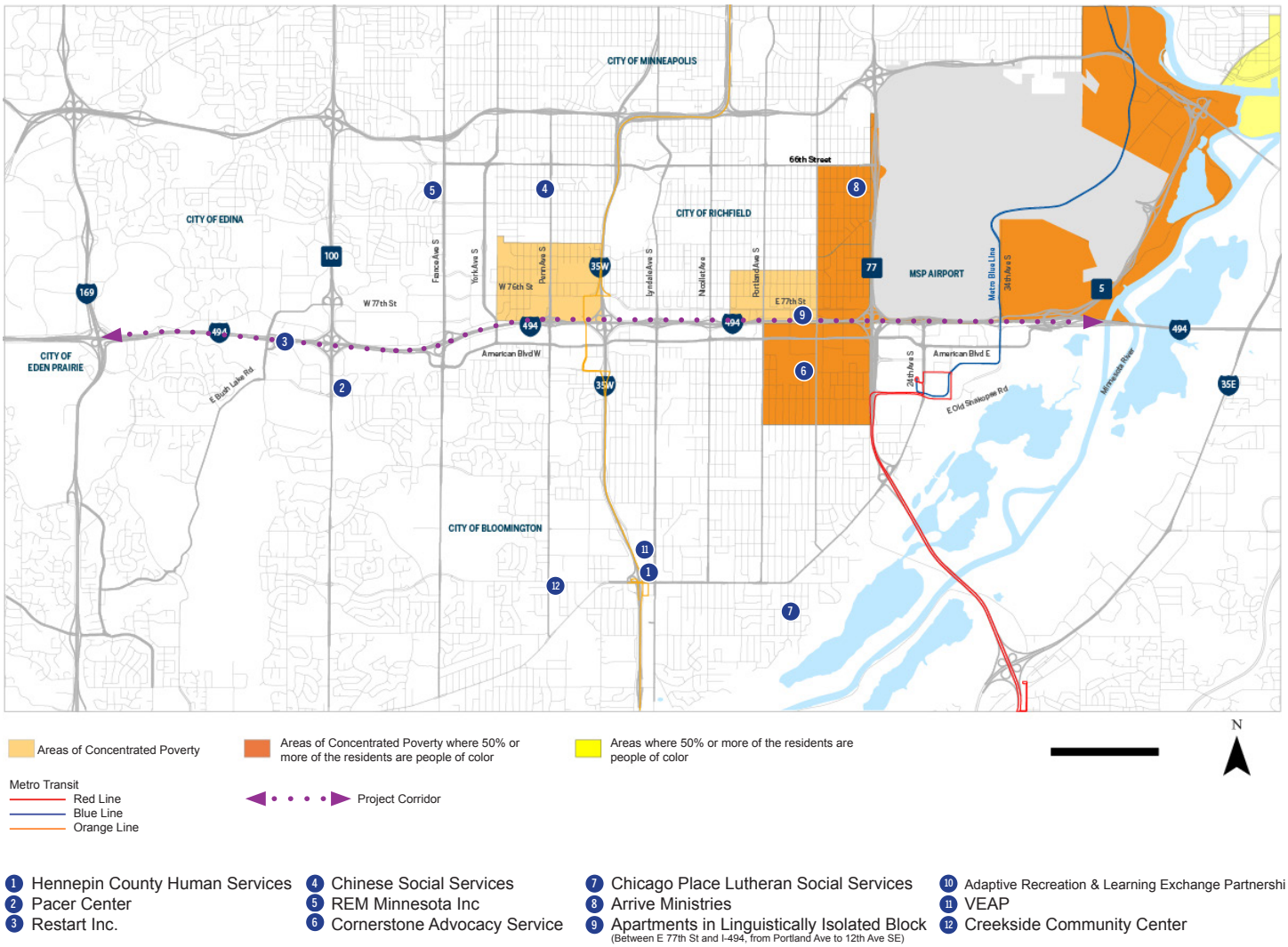
MnDOT's Advancing Transportation Equity initiative helps to better understand how transportation systems, services, and decision-making processes help or hinder the lives of underserved and underrepresented communities in Minnesota in terms of project planning and policy decisions as well as project investments. An Equity Analysis along the project corridor was completed in 2018 to identify impacted populations and most appropriate ways to reach them. Census block group data from the 2014-2018 American Community Survey 5-Year Estimates (ACS) found that nine out of the 38 block groups in the study area had a greater percentage of the population living below the HHS poverty threshold compared to the average HHS poverty threshold of 11.5% for Hennepin County. Of these nine block groups, four had greater than 10% increase in the number of residents living below the poverty threshold. The Project improvements in the I-494 corridor will create a wide variety of benefits for minority and low-income individuals in the area. These improvements will reduce dependency on automobiles and increase access to multimodal transit options - a crucial link in removing barriers to opportunities for underserved communities.

Planning and Policies

Racial Equity Impact Analysis

An initial Equity Analysis was conducted to identify vulnerable and/or transit dependent populations within the project area; to map residences and destinations for low-income populations, communities of color, immigrant populations, children, the elderly, and people with disabilities; and to identify barriers to engagement and ways to overcome these barriers. The results from the equity analysis can be found here. The analysis identified that the Project improvements will not result in disproportionately high or adverse effects to low-income or minority populations.

Figure 16. Equity Analysis Overview Map



Equity-Focused Community Outreach and Public Engagement in Underserved Communities

Engaging underrepresented populations is a top priority for this project. Public engagement focused on reaching underrepresented populations was completed between Summer of 2018 and Fall of 2020. The engagement team hosted in-person events (pre-COVID), released an online virtual open house, posted fliers, connected with community leaders and organizations, and used social media platforms to engage the public. The challenges identified by minority or low-income individuals throughout the engagement process were focused on these key themes that are being addressed by the Project:

- Safety on I-494 and the local crossing over I-494
- Exit and entrance highway ramps are too close together between Nicollet Avenue, Portland Avenue, and 12th Avenue
- Traffic congestion on I-494 mainline and ramps
- Pedestrian and bicycle connections across I-494

MnDOT's Equity and Inclusion Programs

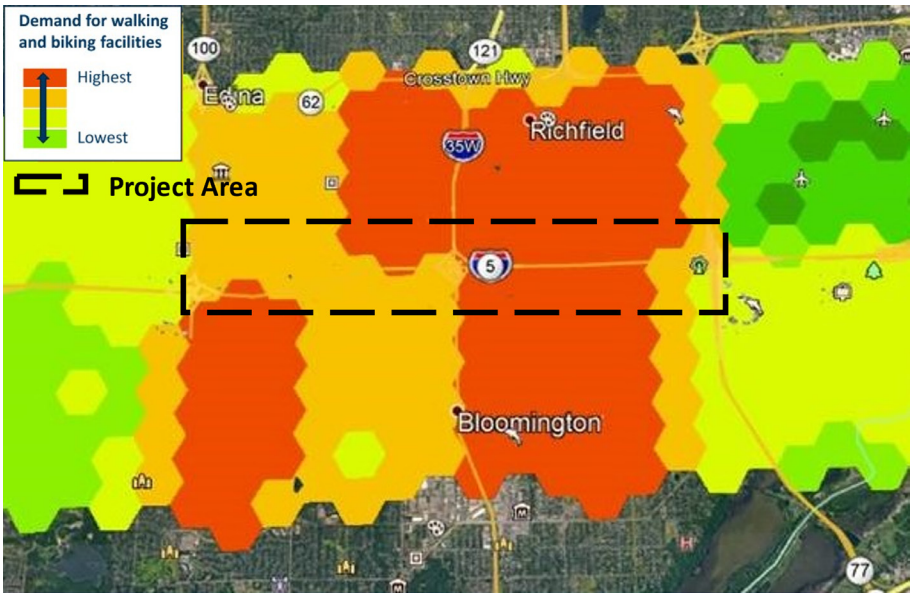
MnDOT has proactively developed a strong portfolio of several Equity and Inclusion Programs such as Disadvantage Business Enterprise (DBE), Targeted Group Business (TGB), Equal Employment Opportunity (EEO) Program, among others. MnDOT encourages and awards private business contracts to minority- or women-owned businesses. MnDOT has awarded more than $173 million in prime contracts and goods purchases with under-utilized businesses in the past 5 years to mitigate its contracting disparity, increasing from $19 million in FY16 to over $38 million in FY20.

Project Investments

New or Improved Connections to Underserved Communities

The I-494 corridor has been viewed as a barrier for local circulation for both vehicle users and pedestrians and bicyclists. The Project will proactively address and eliminate physical barriers with the following proposed enhancements.

Figure 17. SPACE score for I-494



The Project proposes **designated walking and biking** spaces such as sidewalks on local streets and bridges. MnDOT's Office of Traffic Engineering recently developed a spatial tool to evaluate pedestrian and bicycle infrastructure referred to as the "SPACE Score" based on several screening criteria found here. A SPACE score was calculated for an area within one mile of the I-494 corridor (Figure 17). The yellow hexagons indicate a lower SPACE score whereas the red hexagons indicate a higher SPACE score. A need for new or improved pedestrians and bicyclist connections was found to overlap with the underserved communities in the area.

Analysis of pedestrian traffic data[4] and site visits between Nicollet Avenue and Portland Avenue demonstrated a need for **better access** at Nicollet Avenue, Portland Avenue, and 12th Avenue to facilitate travel from places of employment and retail to affordable housing and transit stations near Portland Avenue. Removal of interstate access at Nicollet Avenue and 12th Avenue, upgrades to bridges throughout the corridor vision study area, and addition of sidewalks along frontage roads will provide safer pedestrian/bicycle travel for the minority and low-income users in this area. Both Portland Avenue and 12th Avenue are listed as Tier 1 Regional Bicycle Transportation Network (RBTN) alignments in the MPO's long range transportation plan. This is the highest priority level for planning and investment across the region and both will be improved by the Project. The Project includes a **new grade separated pedestrian bridge** near Chicago Avenue that will fill a key gap in the multimodal network in the area.

Low-income and minority populations make up a larger share of transit ridership than the population as a whole[5]. **Transit users and carpoolers**, including low-income and minority populations that travel by bus or carpool, will benefit by having a faster, more reliable trip in the **MnPASS lane** at no additional cost. The Project provides **improved access to transit opportunities** as a network of existing and planned future Metro Transit routes and stations will provide connections to the underserved communities in the region. This connection to transit is especially true for two transitways currently under construction. The state's busiest bus route is currently being improved to the D-Line Arterial Bus Rapid Transit route. D-Line crosses the I-494 corridor at Portland Avenue. The enhanced pedestrian elements of the Project will greatly improve the D-Line by making it easier to get to the D-Line stations just north and south of I-494. The D-Line will connect to major job centers, Mall of America, downtown Minneapolis, and major medical facilities. The Orange Line Bus Rapid Transit on I-35W will use the I-35W/82nd interchange which will also be improved as part of the project.

4 2018 Streetlight Analysis

5 According to Metro Transit Equity Statistics (2020), people of color make up 44% of transit ridership and those with an annual household income below $25,000 make up 43% of ridership.

Other benefits of the Project include **ADA upgrades** throughout the corridor that will also improve safety and mobility for persons with disabilities. **Noise mitigation/barriers** will be considered, and local residents/business owners will get the opportunity to approve the installation of the noise abatement/barriers, which would improve quality of life conditions for individuals living and working in close proximity to the I-494 corridor.

Direct Partnership with Underserved Communities

In accordance with the goals of MnDOT's Equity and Inclusion programs, MnDOT actively seeks to grant small contracts well-suited for under-utilized businesses and hire from the local communities for the Project. MnDOT plans to employ DBE companies for planned demolition on this Project.

4. LEVERAGING OF FEDERAL FUNDING

MnDOT has secured $219 million in state funding to support the Project. This non-federal share represents approximately 70 percent of the anticipated total project costs estimate. Federal funding, both MHFP, NHPP dollars and the requested INFRA grant, enable MnDOT to make improvements that increase the Project's mobility and safety benefits when compared to lower-cost alternatives possible with only state resources. Federal funding also enables MnDOT to coordinate state and local investments made as part of the Project, thus reducing both traveler disruption and construction costs. Finally, this grant application leverages MnDOT investment in National Highway Freight Network infrastructure, enabling MnDOT to make asset management improvements that reduce maintenance needs and lower life-cycle costs. The details underpinning these statements are provided in the benefit-cost analysis Section VIII.

5. POTENTIAL FOR INNOVATION

Innovative Technology

MnDOT will implement both **dynamic signaling or pricing** and **support for autonomous/semi-autonomous vehicles**. MnDOT prices the MnPASS lanes by the amount of congestion during the peak hour periods (typically 6-10 am and 3-7 pm). These prices vary as congestion increases or decreases. The striping and fiber will be installed as a part of this project to accommodate the future use of these types of vehicles. MnDOT is utilizing larger pavement stripes on the Project for this reason.

Innovative Project Delivery

MnDOT implements a **Design Build (DB) program** which is part of FHWA's Every Day Counts initiative. MnDOT's process includes opportunities for innovation through the use of the Alternative Technical Concept process for the contractors to propose an equal or better solution to the contract requirements in the RFP. MnDOT utilizes a best value process to determine the successful contractor. The RFP may include an alternate bidding process for pavements depending on the comparative prices of bituminous and concrete using the Life-cycle cost analysis (LCCA) process.

Due to the complexity and scale of the I-494 Project, MnDOT and the FHWA-Minnesota Division Office have decided to utilize a new and innovative environmental review approach for the Project. A **Hybrid EA** document is being prepared which combines many concepts and steps of a Tiered Environmental Impact Statement (EIS) and the traditional environmental assessment (EA) process. This innovative process has legal standing and utilizes existing federal processes resulting in the identification of one preferred alternative and Finding of No Significant Impact (FONSI) that includes the two levels of detail. As part of the I-494 Hybrid EA process, the FHWA-MN Division has been actively involved and provided concurrence at the following points of project development:

- Determination of the Study Purpose and Outcomes
- Preparation of Project Purpose/Need and Alternatives Evaluation Criteria
- Selection of Preferred Alternative for the Corridor Vision
- Selection of the first Construction Phase Preferred Alternative (Project 1 improvements)

It is also believed that the concurrence points will reduce the risk of having to revisit previous work and decisions later in the process, while also maximizing the chances of delivering the project on schedule.

In accordance with the goals of **MnDOT's Equity and Inclusion programs**, MnDOT will issue small contracts well-suited for under-utilized businesses; simplify contracting processes and documents and incorporate equity into reporting systems; track all contracts to identify progress and gaps in terms of equity; train and incentivize offices to identify work well-suited for under-utilized businesses; train small businesses on MnDOT requirements and specifications; and collaborate with tribal and local partners to connect under-utilized businesses to opportunities in the wider marketplace.

Innovative Financing – Corridors of Commerce

The Project includes $204M of Corridors of Commerce funding (2018). Recognizing that transportation investments directly and indirectly foster economic growth through the provisioning of construction jobs, enabling goods to be transported through a commerce friendly network of corridors and providing mobility to citizens; MnDOT is committed to investing in our roads and bridges that contribute to a growing economy and will continue supporting commerce.

6. PERFORMANCE AND ACCOUNTABILITY

Operations and Maintenance Costs

MnDOT estimates life-cycle costs of the Project to be $13,570,00. Table 5 presents key operations and maintenance activities that would be performed on Project roadways and bridges consistent with MnDOT's Bridge Preservation and Improvement Guidelines and Transportation Asset Management Plan. Detailed analysis of the operation and maintenance activity cost estimates is available in Section VIII: Benefit-Cost Analysis.

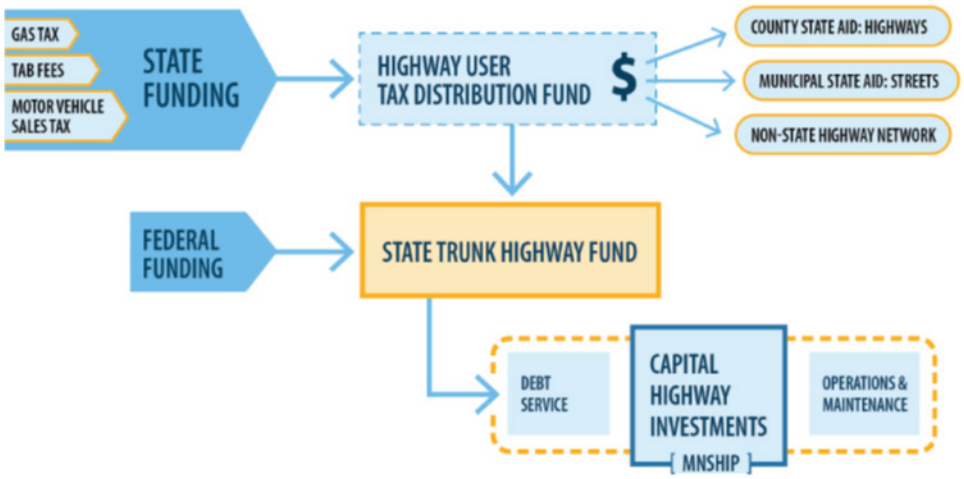
Table 5. Operation and Maintenance Schedule for Project Components

Item	Year	Cost per Unit	Total Cost
MnPASS Readers (10 units)	2036	$22,000	$220,000
Enforcement Beacons or IR Cameras (10 units)	2036	$7,500	$75,000
18-Foot DMS (8 units)	2041	$70,000	$560,000
40-Foot DMS (3 units)	2041	$160,000	$480,000
MnPASS Operations, Enforcement, and Maintenance (Yr 1/2)	2026-2027	$500,000	$1,000,000
MnPASS Operations, Enforcement, and Maintenance (Yr 3)	2028	$550,000	$550,000
MnPASS Operations, Enforcement, and Maintenance (Yr 4+)	2029-2046	$600,000	$10,200,000
Annual MnPASS Pavement Maintenance (20 years)	2026-2046	$24,250	$485,000

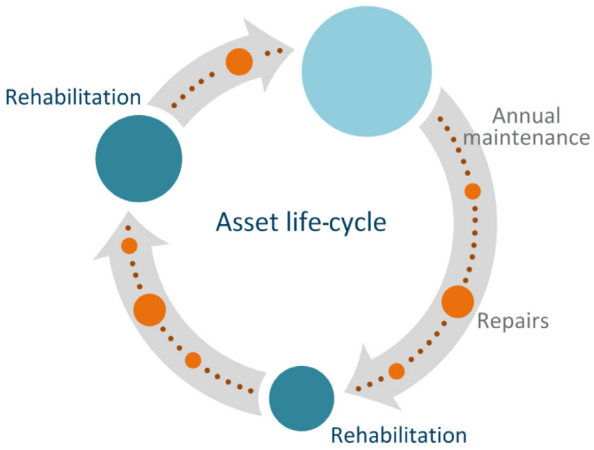
Operations and Maintenance Funding

MnDOT is committed to implementing timely investments in capital and preventative maintenance treatments to extend the service life of assets while reducing lifecycle costs. Ongoing operating and maintenance (O&M) costs on the state highway system are funded by taxes and fees from four main revenue sources:

- State gas tax (motor fuel excise tax)
- State tab fees (motor vehicle registration tax)
- State motor vehicle sales tax, and
- Federal highway funds (highway user tax distributions, flexible highway account, and County State Aid Highway fund).



MnDOT Transportation Asset Management Plan (TAMP)



MnDOT developed its first Transportation Asset Management Plan (TAMP) in accordance with the 2012 Moving Ahead for Progress in the 21st Century Act (MAP-21). TAMP was then extended beyond MAP-21's minimum requirements to include the entire state highway system as well as other infrastructure within the right-of-way corridor. MnDOT's TAMP was a national pilot project and serves as a guide for other states.

MnDOT applies the TAMP as a guide to analyze life-cycle costs, evaluate risks, and develop mitigation strategies, establish asset condition performance measures and targets, and develop investment strategies. The TAMP will serve as a guide to ensure all necessary Project operation and maintenance is implemented.

Accountability Measures

MnDOT is willing to meet specific construction start and completion dates subject to forfeit of up 10 percent or $10 million if not met. As proposed in the detailed Project Schedule, MnDOT intends to begin construction by 2023 and end construction by 2026.

VI. Project Readiness

MnDOT is prepared to deliver the Project in accordance with the project schedule. Additional analysis of project readiness factors is provided below, but in summary, MnDOT assesses minimal project delivery risks for the following reasons:

- **MnDOT is substantially through the Project's preliminary engineering phase.** Design and environmental work done to-date lowers uncertainty around scope, impact and cost. MnDOT anticipates having preliminary engineering completed Spring 2021, which allows the environmental and right-of-way acquisition processes to be completed prior to a late winter/early spring 2023 design-build letting.
- **Project limits are established.** The Project footprint is substantially within state ROW and negotiations with impacted landowners are to begin in the near future.
- **The Project is noncontroversial and supported by Project partners.** MnDOT has maintained ongoing coordination with FHWA, Met Council, Hennepin County, the City of Richfield, the City of Bloomington, the City of Edina, and other Project partners. MnDOT has been collaborating with local agencies to develop a project that meets the needs of all involved partners.
- **MnDOT has secured funding sufficient to cover 74% of project costs**.

TECHNICAL FEASIBILITY

MnDOT has extensive experience delivering large-scale projects completed through the NEPA process. The selected alternative, which will be advanced to begin construction in 2023 via a design-build contract, will conform to all current USDOT, AASHTO, and MnDOT standards for roadway design, bridge replacement, and interchange reconstruction. Preliminary design layouts and typical sections (here and here) have been completed or are close to completion for the Project, which demonstrate the Project can be designed effectively to meet the needs of the corridor and surrounding communities.

PROJECT SCHEDULE

The Project schedule demonstrates that funds can be obligated in advance of the INFRA funding obligation deadline of September 30, 2024. MnDOT anticipates construction will begin May 2023 and be completed by October 2026. All property and right-of-way acquisition will be completed in accordance with 49 CFR Part 24 and other Federal regulations. MnDOT has an experienced ROW acquisition staff who have been actively involved in the project development process.

Figure 18. Project Schedule

REQUIRED APPROVALS

MnDOT has worked in close coordination with federal and local partners throughout the preliminary design phase of the Project. As a result of this coordination, the Project has achieved or is expected to achieve all approvals necessary to begin construction in May 2023.

Environmental Approvals

To date, the I-494 Hybrid environmental assessment (EA) process has completed the concurrence points discussed in Section V above including the identification of a single conceptual preferred alternative for the full I-494 Corridor Vision and the proposed improvements. The hybrid EA being prepared for I-494 will result in the same level of Tier I EIS clearance for the footprint of the Corridor Vision, plus full environmental clearance (Tier II level) for the construction elements. It is expected that the issuance of a FONSI and conclusion of the formal NEPA process will be completed by April 2022.

State and Local Approvals

There is a broad base of state and local support for the project, as shown by the Letters of Support submitted for this application. The local funding has commitment from Metro leadership and will be fully programmed through the next STIP (approved by FHWA/FTA in Oct/Nov 2021). Currently, there is $173 million in state funds programmed in the 2021-2024 STIP. The remaining funds identified in this INFRA application will be listed under programming in the 2022-2025 STIP. MnDOT will also continue to work through the municipal consent process to obtain local approval of project schedule, design, and construction plans.

RISKS AND MITIGATION STRATEGIES

MnDOT has completed an extensive risk assessment for the Project to be able to anticipate and mitigate risks to the Project's schedule and cost. The risk assessment includes identifying the probability the risk occurs, identifying the impact of the risk, and calculating a severity that combines the probability and impact. Based on the risks identified, mitigations have been identified. With the proactive approach taken, MnDOT does not anticipate any of the identified risks to significantly alter the schedule or costs. The results of the completed risk assessment can be found here.

VII. Large Project Requirements

The I-494: Airport to Highway 169 Projects 1 and 2 is a large project that complies with minimum project size requirements and meets the criteria established in D.2.b.vii of the Notice of Funding. Table 6 demonstrates how the Project addresses each of these requirements.

Table 6. Large Project Requirements

Criteria	Response
Does the project generate national or regional economic, mobility, or safety benefits?	Yes – See Section V, page 7-10
Is the project cost effective?	Yes – See Section VIII, page 21
Does the project contribute to one or more of the Goals listed under 23 USC 150?	Yes – See Section V, page 7-10
Is the project based on the results of preliminary engineering?	Yes – See Section VI, page 18, supporting documentation

Criteria	Response
With respect to non-Federal financial commitments, does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?	Yes – See Section IV, page 6
Are contingency amounts available to cover unanticipated cost increase?	Yes – See Section VIII, page 21
Is it the case that the project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor?	Yes – See Section IV, page 7
Is the project reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project?	Yes – See Section VI, page 19

VIII. Benefit Cost Analysis

The objective of a benefit-cost analysis (BCA) is to bring all the direct effects of a transportation investment into a common measure (dollars), and to account for the fact that benefits accrue over an extended period while costs are incurred primarily in the initial years. The primary elements that can be monetized are travel time, changes in vehicle operating costs, vehicle crashes, environmental impacts, remaining capital value, and maintenance costs. The results of the BCA are briefly summarized below. A detailed technical memorandum of the analysis is attached and available to view at the grant application website: https://www.srfconsulting.com/i-494-infra/

NO BUILD ALTERNATIVE

The No Build Alternative included leaving the I-494 project area in its current geometric and operational state. Traffic impacts associated with programmed regional roadway improvements were included in the analysis.

BUILD ALTERNATIVE

The improvements for the Build Alternative considered in the BCA include:

- Construction of MnPASS lanes (managed, high occupancy vehicle (HOV) toll lanes) on I-494 between TH 100 and I-35W in both eastbound and westbound directions.
- Addition of a new directional ramp to facilitate the northbound to westbound movement at the I-494 and I-35W interchange. The existing loop in the northeast quadrant of the cloverleaf interchange and associated loop-to-loop weaving conflicts would be removed.
- Constructing an auxiliary lane on westbound I-494 from I-35W to France Avenue.
- Reconstruction of a single full access interchange at Portland Avenue by constructing a new bridge at Portland Avenue and removing ramps at Nicollet Avenue and 12th Avenue to consolidate access along I-494. Existing entrance and exit ramps are close in proximity to adjacent interchanges which causes congestion and safety issues on I-494.
- Construction of a new pedestrian bridge near Chicago Avenue.
- Modifying the existing I-35W and 82nd Street interchange to provide access to the new I-35W northbound to I-494 westbound directional ramp.

The BCA for the Build Alternative also assumed the same programmed improvements to the regional transportation system that were assumed in the No Build Alternative.

BCA METHODOLOGY

The primary cost and benefit components analyzed in the BCA included:

- Travel time/delay (vehicle hours traveled – VHT)
- Operating costs (vehicle miles traveled – VMT)
- Crashes by severity
- Environmental and air quality impacts
- Initial capital costs
- Remaining Capital Value: The remaining capital value (value of improvement beyond the analysis period) was considered a benefit and was added to other user benefits.
- Operating and maintenance costs

Other analysis considerations included:

- It was assumed that right-of-way acquisition for the Build Alternative would take place in year 2022, and construction would be incurred during years 2023 to 2026. Therefore, year 2027 was assumed to be the first full year that benefits will be accrued.
- The present value of all benefits and costs was calculated using 2019 as the year of current dollars.
- A benefit-cost analysis period of 20 years was used to determine net project costs and benefits.

PROJECT COSTS

The total Project Cost for year 2021 is $324 million. The project cost deflated back to year 2019 (BCA base year) is about $320 million. The 2019 project costs discounted at a rate of 7 percent are approximately $221 million.

BCA RESULTS

The benefit-cost analysis provides an indication of the economic desirability of a scenario, but results must be weighed by decision-makers along with the assessment of other effects and impacts. Projects are considered cost-effective if the benefit-cost ratio is greater than 1.0. The larger the ratio number, the greater the benefits per unit cost. The results of the analysis demonstrate that the combined, large project is the most cost-effective approach, resulting in **benefit-cost ratio of 4.0**. Results of the benefit-cost analysis are included in Table 7.

Table 7. Total Project Results

	Initial Capital Cost (2019 Dollars)	Project Benefits (2019 Dollars)	Benefit-Cost Ratio (7% Discount Rate)	Net Present Value (2019 Dollars)
No Build vs. Build	$221.3 million	$876.5 million	4.0	$655.2 million

IX. Supporting Documents

Links to supporting documents are included throughout this narrative. All supporting documents and the INFRA grant application narrative are available to view at the following webpage: https://www.srfconsulting.com/i-494-infra/