



m DEPARTMENT OF
TRANSPORTATION

Rethinking I-94

PHASE 1 REPORT

08.01.2018

Welcome

In the summer of 2015 during the Rondo Healing Ceremony in St. Paul, I joined with my colleagues former St. Paul Mayor Chris Coleman and Congresswoman Betty McCollum to make a formal public acknowledgement and apology to the Rondo community for the impact of the past policies and practices that disrupted and dismantled the community. This acknowledgement recognized that the decision-making process in the 1960s led to the destruction of a vibrant community.

With the support of many partner agencies, MnDOT subsequently initiated the Rethinking I-94 effort, a new way of understanding and engaging with communities for the long-term benefit of the highway and the communities. The implicit promise of Rethinking I-94 to the Rondo community – and all the communities in the I-94 corridor – was to do better.

After two and a half years, I am proud of what our Rethinking I-94 team and partner agencies have learned and accomplished. Some highlights include:

- Directly engaged with hundreds of stakeholders in the corridor, developed new relationships and opened new lines of communication
- Learned that our stakeholders want more transparency and partnership from MnDOT, and that their issues with I-94 go beyond just transportation
- Began training our staff in new methods of engagement that they will bring to future projects in the I-94 corridor
- Developed a rich understanding of the state of the I-94 freeway that will inform our development of solutions going forward
- Created a set of guiding principles for working with communities along I-94
- Initiated Rethinking I-94 Phase 2: Environmental Document to develop and evaluate transportation improvement actions for I-94

Despite these achievements, I believe MnDOT and our partners can and should do even more to enhance the transportation and community assets in the I-94 corridor. To that end, I have laid out a draft vision for the I-94 corridor (see next page) that I hope to advance in collaboration with a regional partnership.

In the meantime, I hope you will carefully read this summary of our work to date and watch for our next steps on I-94, including how you can participate.

Sincerely,



Charles A. Zelle

Commissioner, Minnesota Department of Transportation

WHY THIS VISION?

During the first phase of Rethinking I-94, people frequently described I-94 as a “main street.” The freeway is a vital connection and a front door for residents and visitors alike to many of the corridor communities. When we asked I-94 community members what their concerns were, here is what we heard most commonly, in no particular order:

- Congestion issues
- Safety issues
- Improved health and environment
- Identity or sense of place
- More job opportunities
- Better connections across the freeway
- More inclusivity in planning

While clearly transportation was a common issue, so were jobs, sense of place, health and environment. It has become clear that Rethinking I-94 is about more than the freeway. As a result, I am challenging our agency – and our partner agencies – to reach beyond our usual roles and try to help.

WHAT IF?

With this experience in mind, here are some questions my staff and I are thinking about for the future:

- What if we developed a regional coalition of public agencies, private businesses, and nonprofit and philanthropic organizations?
- What if that coalition could do things that none of us individually can do?
- What if this transformation could lead to new community and economic activity, and serve as a model for urban living where people of all backgrounds and income levels can thrive?
- What if we could do all this while making sure new investment in the corridor benefits the current residents and minimizes gentrification?

WHY NOW?

I-94 needs new investment and we are actively planning the 20-year future for the corridor. Now is the time to make sure new investment works not just for the highway itself, but for neighbors too. Minneapolis and St. Paul are experiencing continued population growth as more people seek the benefits of urban living. Now is the time to capitalize on this trend for the benefit of I-94 corridor neighborhoods and the region. Finally, unchecked economic growth in our neighborhoods can displace the people it is intended to benefit. Now is the time to apply best practices to harness economic growth that benefits the neighborhoods.

WHAT'S NEXT?

Here is what my staff and I will be doing in the months ahead:

- Soliciting interest from local and regional partners to participate in this new collaboration
- Getting initial input on the vision concepts we have developed so far
- Identifying next steps to finalize the vision and move toward implementation



Table of contents

Executive summary I

1 Introduction..... 001

1.1 I-94 past and present.....003
1.2 Phases of Rethinking I-94.....004
1.3 The Rethinking I-94 study process005
1.4 Adaptive approach006
1.5 Engagement tasks.....007
1.6 Technical tasks.....007
1.7 Rethinking I-94 staff & consultants009

2 Rethinking MnDOT's role 010

3 Engagement activities & results.....013

3.1 Engagement activities 014
3.2 Research activities 016
3.3 Baseline survey and updates 018
3.4 Listening sessions 021
3.5 Community culture and history overviews.....022
3.6 Segmentation survey024
3.7 Engagement025
3.8 Products and materials029
3.9 Training materials032
3.10 Related events.....033
3.11 Conclusions.....038



4 Transportation context 039

4.1	Study area	040
4.2	Physical characteristics	041
4.3	Geometric attributes	043
4.4	Asset condition	044
4.5	Traffic volumes	048
4.6	Travel time reliability	052
4.7	Travel patterns	054
4.8	Freight	055
4.9	Safety	057
4.10	Potential freeway connections	058
4.11	Conclusions	060

5 Concepts for further consideration 061

5.1	Non-motorized opportunities	062
5.2	Freeway concepts	067
5.3	Conclusions	072

6 Accomplishments & next steps 073

6.1	Next steps: Phase 2	074
-----	---------------------------	-----



Engagement appendices

e

- 1 Corridor Summary Graphic
- 2 Desk Research
- 3 Baseline Survey Results
- 4 Community Culture and History Overviews
- 5 Market Segmentation Survey Common Themes
- 6 Visioning Workshops Report
- 7 Interactive Map Overview
- 8 Zone Profiles
- 9 Engagement Methods, Guiding Commitments, and Livability Framework
- 10 Community Comments Database
- 11 Public Engagement Toolkit
- 12 Public Engagement Toolkit Training Guide

Technical appendices

t

- 1 Asset Conditions, Map and Program Schedule
- 2 Geometric and Traffic Conditions Summary
- 3 Vertical Constraints Analysis
- 4 Air Quality Overview
- 5 Existing Traffic Volume Data Summary
- 6 Assessing the Effects of Automated Vehicles on I-94
- 7 Travel Time Reliability Summary
- 8 Origin-Destination Data Summary
- 9 Urban Freight Study
- 10 Crash Data Summary
- 11 Freeway Connections Study
- 12 Non-motorized Crossings Analysis
- 13 Parallel Pedestrian and Bicycle Facility Opportunities
- 14 Spot Mobility Improvements Study
- 15 MnPASS Concepts Study
- 16 MnPASS Connections CORSIM Analysis
- 17 Bus on Shoulder Reliability Analysis
- 18 MnPASS Downtown Connections Study
- 19 Downtown Connections Modeling Results
- 20 Evaluation Framework Tool



EXECUTIVE SUMMARY

Rethinking I-94

Construction of Interstate 94 in the 1960s destroyed homes and disconnected neighborhoods, including the Rondo neighborhood in St. Paul. This led to a pattern of community distrust with the Minnesota Highway Department, which would later become the Minnesota Department of Transportation. More than 50 years later in the summer of 2015, MnDOT Commissioner Charles Zelle joined a group of community members and elected officials at a healing ceremony in the heart of the Rondo community. Commissioner Zelle publicly acknowledged past transportation policies and practices that disrupted and dismantled the neighborhood, and formally apologized to the community. This acknowledgment recognized the decision-making process in the 1960s that led to the destruction of a vibrant community. As a result, MnDOT formed Rethinking I-94 as part of a promise to the Rondo community — and all the communities in the I-94 corridor — to do better. This report documents the activities and results from the first phase of Rethinking I-94, which took place between 2016 and mid-2018. It also outlines next steps leading into the second phase of the study.



What is Rethinking I-94?

Rethinking I-94 is a long-term effort to improve MnDOT's engagement and relationships with communities along a 15-mile stretch of I-94 between Broadway Avenue in Minneapolis and Highway 61 in St. Paul. The geographic limits of Rethinking I-94 reflect both portions of the two cities most impacted by the freeway's initial construction and areas where traffic, safety and highway improvements are most needed.

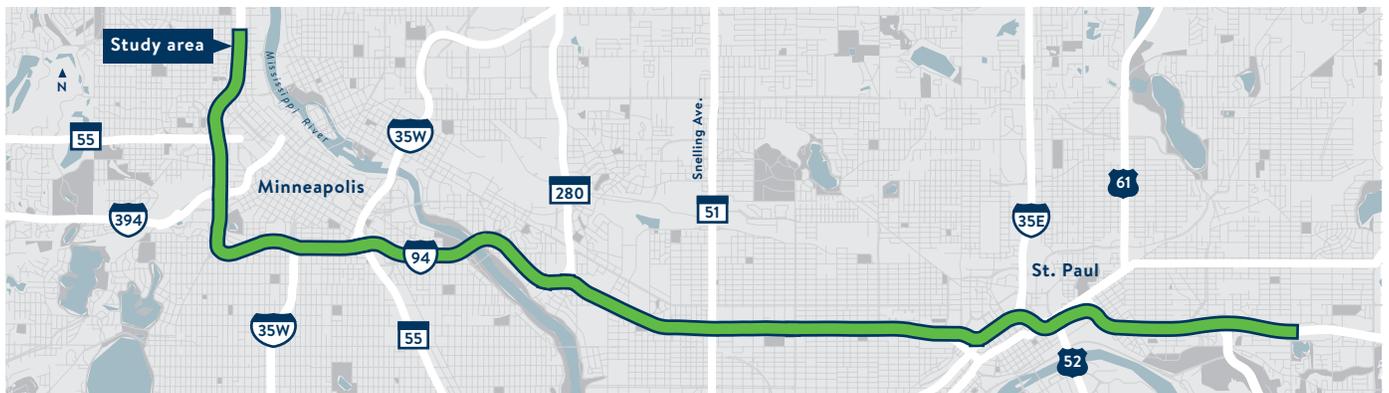
Rethinking I-94 began as a two-year study to develop a new vision for I-94 between Minneapolis and St. Paul. Through public engagement, stakeholders and MnDOT partners would help define and develop a plan for the corridor. MnDOT's responsibility is to preserve and repair bridges, walls, tunnels and pavement along the corridor, with the goals of enhancing mobility, safety and interconnectivity. However, Rethinking I-94 also prioritizes the well-being of those who live, work and play along the corridor.

MnDOT initiated Rethinking I-94 in 2016 in cooperation with partner agencies and the participation of many corridor community groups and individuals. Partner agencies include the Federal Highway Administration, Metropolitan Council, Hennepin County, Ramsey County, city of Minneapolis and city of St. Paul. The agency also worked with other non-profit and government agencies who proposed transportation actions within the I-94 corridor. Examples include Seward Redesign, ReConnectRondo and the Capitol Area Architecture and Planning Board.

Rethinking I-94 has three main purposes:

- Make it easier to travel to, along and across the I-94 corridor and establish a sense of place for the communities that live, work and play there.
- Enhance safety and mobility for people walking, biking, driving and using transit.
- Develop a community-based approach focused on reconnecting neighborhoods, revitalizing communities and ensuring residents have a meaningful voice in transportation decisions that affect their lives.

The Rethinking I-94 study team designed an adaptive process that allows them to adjust and pivot their work based on results and lessons learned along the way. This requires the team to listen, reflect and be willing to make changes based on feedback and results.



The Rethinking I-94 study area extends between Broadway Avenue in Minneapolis and Highway 61 in St. Paul.



What we learned

A key outcome of the innovative and comprehensive community engagement conducted during Phase 1 has been a new understanding of what communities in the I-94 corridor want from MnDOT.

People want to be involved early and continuously, and to be respected and provided with accurate, timely information. They want engagement to be inclusive and robust, and their values and visions to be reflected in designs (see figure below).

The extensive engagement efforts conducted during Phase 1 led directly to the development of two sets of guidelines for this corridor. These will guide MnDOT’s interactions with communities along this corridor and how they plan and design projects – both are described in detail in the report:

- **Guiding Commitments for project teams:** The guiding commitments were developed based on what people expect from MnDOT. These commitments will guide how MnDOT works with communities in the future.
- **Livability Framework for communities:** The framework is based on what people expect from MnDOT’s project work. It will guide how MnDOT will design and evaluate projects in the future.

The environmental process to be conducted during Phase 2 bridges the “Planning” and “Preliminary Engineering” steps in the figure below. This proposed engagement process is a more people-centered, adaptable approach to planning and implementing projects that impact where people live, work and play.



Rethinking I-94’s engagement process provides feedback and input opportunities at every step in the process.



Phase 1 accomplishments

Phase 1 of Rethinking I-94 included a wealth of engagement and technical work to develop a baseline understanding of the corridor communities and the highway, both of which will inform subsequent phases of Rethinking I-94.

In Phase 1, MnDOT developed and implemented an innovative, comprehensive and human-centered engagement process to develop a deeper, mutual understanding between the agency and the I-94 communities and users. This included more than 2,200 surveys, 250 meetings and 50 listening sessions preceded by detailed information gathering on the history and demographics of the corridor communities. The results include strengthening of relationships between MnDOT staff and community members, creation of a communications infrastructure to foster ongoing communications and development of a training process for MnDOT staff to continue to apply the Rethinking I-94 engagement process on projects going forward.

Technical work resulted in a rich and detailed understanding of the state of I-94 today and a baseline of information for Phase 2. Details include not just the issues of congestion and safety, but also the magnitude and timing of basic investments to keep the highway functional. Initial ideas for improvements to the freeway corridor include pedestrian and bicycle facilities across and adjacent to I-94, and potential safety and congestion improvements on the freeway itself.



Community members engage with MnDOT staff during visioning workshop.

2,200
Completed
baseline surveys

75
People participated
in listening sessions
from more than
50 organizations

800+
Phone interviews
from segment
surveys

1,200+
Online surveys
from segment
surveys

6
Visioning
workshops

15
Community
events

325+
Comments
from online
interactive map

75+
Participants from
Smart Growth
America

250+
One-on-one
meetings



MnDOT staff and their families walk in the annual Rondo Days Parade.

I-94 communities: What we understand

NEIGHBORHOODS AND DEMOGRAPHICS

The 15-mile corridor crosses through 14 Minneapolis neighborhood boundaries and nine St. Paul District Council boundaries. The corridor is economically and racially diverse. In addition to the 58 percent of the corridor population that identifies as white, 28 percent identify as African-American, 8 percent as Asian and 6 percent as “Other.” There are six primary ethnic communities in the corridor, including American Indians, Euro-Americans, African-Americans, Asian-Americans, Latinos and recent African immigrants, largely from Somalia, Ethiopia and Kenya.

ADVICE FROM LISTENING SESSIONS

The study team conducted more than 50 listening sessions and one-on-one meetings with more than 250 residents, business owners and other stakeholders. The team learned that communities along the corridor value the following top priorities:

- Be transparent about projects, and about how and when community input will be used
- When seeking input, provide communities enough time to develop a community point of view
- Help connect communities to MnDOT but also within themselves and to each other
- Meet community members at locations where they already live, work and gather
- There are hard to reach groups across the corridor, not just in under-resourced areas
- Neighborhood association and district council resources vary
- Clarify the role of MnDOT for any given project or issue
- Be present and listen



COMMON THEMES

Through multiple engagement efforts with community members and stakeholders, the team determined the following responses as common themes for Rethinking I-94. These themes – which are not listed in order of priority – reflect the intent to understand communities more fully, and not just in relation to transportation:

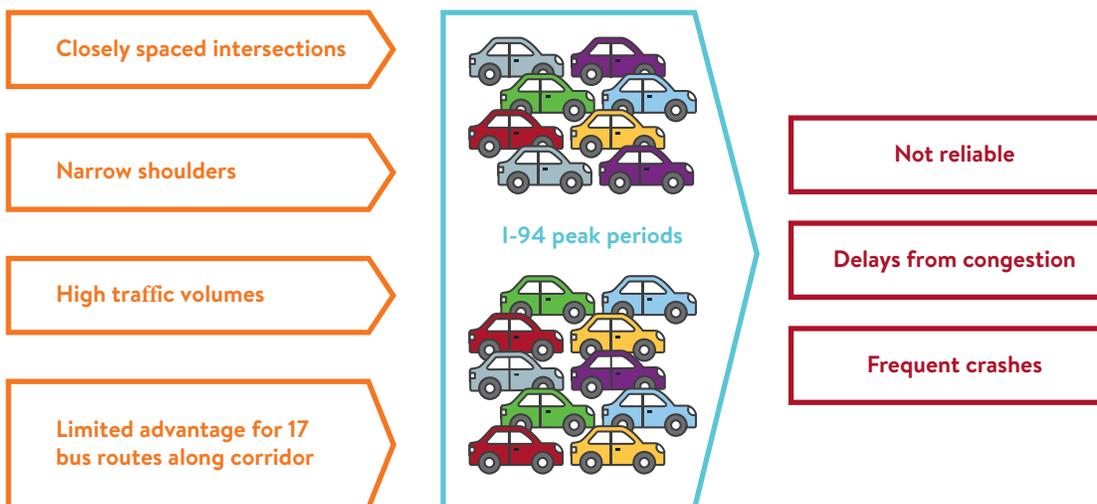
- Congestion issues
- Safety issues – bicycle, pedestrian, motorist
- Improved health and environment – noise, air quality
- No identity or sense of place
- Need for more job opportunities
- Better connections across the freeway
- More inclusivity in planning needed

I-94: What we know about the highway

The Rethinking I-94 study team researched the I-94 freeway to better understand existing infrastructure and transportation conditions.

PHYSICAL CHARACTERISTICS

The physical characteristics of the Rethinking I-94 corridor influence its performance (see figure below). For example, most interchanges are less than one mile apart, which causes congestion. Additionally, there are many on-and off-ramps on the left-hand side of the corridor – some of these may contribute to safety and congestion issues as drivers merge across the highway. While travel lane widths generally meet current design standards for an urban freeway, shoulder widths often do not. Clearance under most bridges is less than the desired 16 to 16.5 feet. The Lowry Hill tunnel near downtown Minneapolis also is a significant bottleneck with no easy solution. I-94 is aging and some components have met the lifecycle for the materials and need to be replaced. I-94’s infrastructure is aging and some components have met the lifecycle for the materials and need to be replaced.



High traffic volumes combined with physical constraints cause poor performance on the highway.



TRAFFIC CONDITIONS AND CONGESTION

This segment of I-94 is one of the most heavily used highways in Minnesota, carrying between 150,000 and 170,000 vehicles per day, including about 8,000 freight trips. Congestion on I-94 is generally considerably higher than in the rest of the Twin Cities metro area. Traffic has not grown much in the last 15 years and this may indicate the freeway is at capacity.

Most congestion in the study area recurs each day, with considerable delay seen regularly around the Lowry Tunnel. The average crash rate for the Rethinking I-94 corridor is about twice the metro and statewide averages for freeway facilities, largely due to I-94's heavy congestion. While most crashes are not severe, they cause considerable delay to I-94 travelers and should be addressed as part of future freeway improvements.

About half of the trips in the Rethinking I-94 study area originate in the neighborhoods along the corridor. These local trips between I-94 adjacent neighborhoods create congestion as large numbers of drivers merge on and off the highway in a concentrated area. Only a small percentage of trips are “through” trips that begin and end west of downtown Minneapolis and east of downtown St. Paul.

I-94 plays a critical role in connecting area businesses to regional and national markets. Shippers, carriers, receivers and other businesses involved in the freight transportation system rely on the highway, with an estimated 8,000 freight trips per day. Multiple areas of significant freight activity are located near or immediately adjacent to I-94.

There are 67 crossings over or under I-94 that include either a pedestrian or bicycle facility. The condition of these facilities varies widely, as does the spacing of the crossings.

At least 17 bus routes use some portion of the corridor, carrying more than two million passengers per year.

Improving I-94: Potential options

The Rethinking I-94 study team did not develop a comprehensive set of options for improving I-94 during Phase 1; however, the team did develop initial concepts based on identified needs and stakeholder input. The concepts considered are grouped into two categories: pedestrian and bicycle improvements, and freeway improvements.

PEDESTRIAN AND BICYCLE IMPROVEMENTS

During the first phase of Rethinking I-94, community members frequently commented about their desire for improved pedestrian and bicycle connectivity adjacent to and across I-94. These improvements would restore a pedestrian-friendly neighborhood transportation network that existed before the freeway was built.

Although no specific pedestrian and bicycle crossing improvements were identified, the team developed maps that show potential indicators or populations — such as poverty status, low-wage workers and zero car households — that are in greater need of crossing improvements.

Phase 1 identified the goal of improving pedestrian and bicycle facilities parallel to the study area to improve connectivity and use the existing public right-of-way. This information will serve as a starting point for potential improvements that will be discussed during the next phase.



FREEWAY IMPROVEMENTS

Although Phase 1 did not result in a formal evaluation of freeway improvement alternatives, the study team worked to develop concepts for future consideration. The team developed two general types of concepts: spot mobility improvement concepts and managed lane concepts. While these two concept types will be carried forward in Phase 2, others may also be developed.

Spot mobility improvement concepts are potential solutions that can address a mobility and/or safety issue in a specific location. These improvements typically come from a smaller project that delivers benefits at a reasonable cost, such as signing and striping, ramp realignments and interchange improvements. The study team identified potential improvements at 19 locations and analyzed each location for improving safety and reducing congestion. Those with clear benefits are recommended for further analysis in Phase 2, or for possible short-term implementation, if applicable.

Previous studies identified I-94 as a corridor that could potentially benefit from a MnPASS lane – a freeway lane that is restricted during peak travel times to transit, motorcycles, vehicles with two or more occupants or solo drivers who pay a fee. The team did not make any recommendations on the concepts identified in Phase 1.



Rethinking I-94 is planned to continue through multiple phases.



Participants at Smart Growth America workshop.

Lessons Learned

The first phase of Rethinking I-94 has been a learning process, as MnDOT has worked to implement a new way of working with communities. As with any similar large effort, there have been lessons learned along the way. These will be incorporated into the ongoing efforts of Rethinking I-94.

Engagement

Understanding the values and beliefs of communities is extremely important. A significant effort should be put into gaining knowledge about an area's community prior to planning engagement efforts.

Engagement fatigue is real. Partnering with as many agencies as possible that also are working in the community is imperative. This leads to a more collaborative effort; provides opportunities to share knowledge and shows the community that their time is valued.

Providing funding to existing community groups or leaders is well worth the time and effort. These groups already have established the knowledge, trust and respect within their communities. By supporting their efforts, MnDOT can better reach all corridor communities, especially those who are underrepresented.

Technical

Some transportation data ages quickly. With a long, multistep process, continued effort must be applied to make sure data is accurate. MnDOT should consider the best timing for pulling data to minimize rework.

The I-94 corridor is different from other freeway corridors in the Twin Cities due to the very heavy traffic volumes, frequent access points and mix of many different trip patterns.

Planning for the future of a corridor with substantial, underlying investment needs, such as pavement, adds complexity to potential mobility and safety solutions.



Process

Applying a new process like Rethinking I-94 to corridor planning takes more time than “business as usual,” as people and processes need time to change and adapt.

The new process still needs to incorporate existing processes — such as the environmental documentation process — which is highly prescriptive.

Next Steps

Rethinking I-94 is envisioned to have three phases. Phase 1, conducted between January 2016 and August 2018, is the first phase of activity conducted under the Rethinking I-94 initiative. This phase, which is the focus of this report, is intended to help gather information about the corridor.

Phase 2 of Rethinking I-94 will center on the preparation of a corridor-level environmental document that complies with both the National Environmental Policy Act and the Minnesota Environmental Policy Act. The purpose of the environmental document is to formally detail the transportation needs in the corridor and then develop and evaluate a range of alternatives to address those needs. This will include ongoing opportunities for corridor stakeholders to be involved.

Work beyond Phase 2 consists of ongoing engagement and project implementation in the corridor as funding allows.

Thank You

Phase 1 of Rethinking I-94 has been a collaborative effort among many people, including MnDOT staff, agency partners, hundreds of community members and outside groups. MnDOT would like to formally thank everyone who participated in Phase 1 for their time and commitment to this effort, and to the future of the I-94 corridor. We look forward to your continued participation in Phase 2 and beyond.

For more information on Rethinking I-94, including how you can get involved, please visit www.dot.state.mn.us/I-94minneapolis-stpaul.



Section 1

Introduction

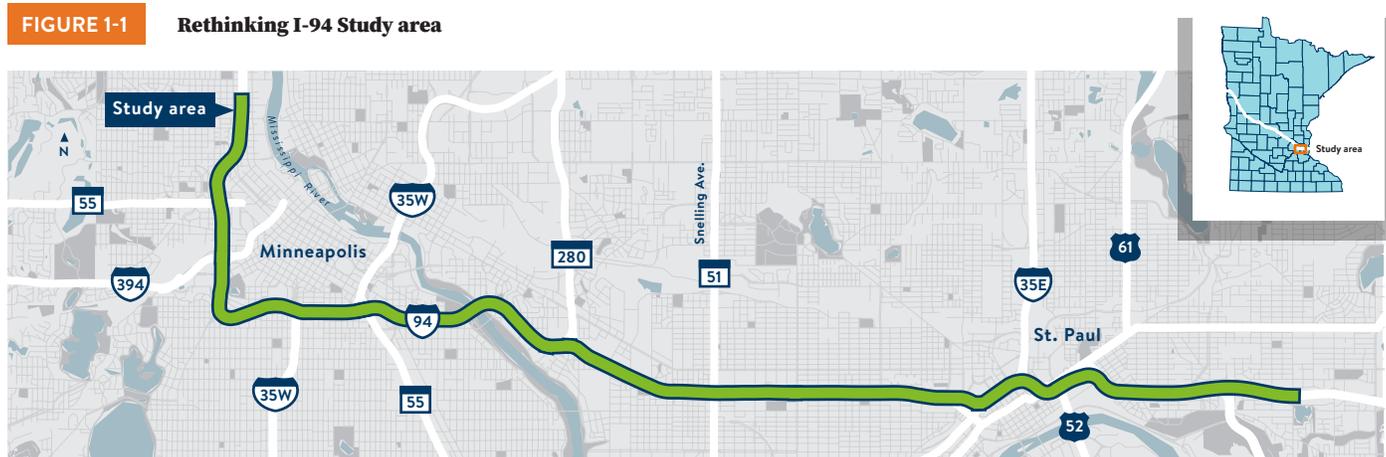


Rethinking I-94 is a long-term effort to elevate MnDOT’s engagement and relationships with the communities of the 15-mile I-94 corridor between West Broadway Avenue in Minneapolis and Highway 61 in St. Paul (**Figure 1-1**). The initiative is focused around changing MnDOT’s relationship with the communities it serves and building trust and partnership between the agency and these communities while developing a long-term vision to address corridor needs, including community livability.

MnDOT initiated Rethinking I-94 in 2016 as a result of Commissioner Zelle’s commitment on behalf of the agency to do better in planning and project delivery along the I-94 corridor. MnDOT invited a range of partner agencies to participate (**Figure 1-2**). The effort grew out of MnDOT’s acknowledgment of the adverse impacts of the interstate on neighborhoods in Minneapolis and St. Paul dating from the original construction in the 1960s and continuing today. The geographic limits of Rethinking I-94 reflect the areas most impacted by the freeway’s initial construction, and those with the most severe traffic, safety concerns, and asset investment needs today.

Rethinking I-94 has three primary purposes:

- Enhance connectivity to, along, and across the I-94 corridor and establish a sense of place for the communities that live, work, and play there
- Enhance safety and mobility for people walking, biking, driving, using transit, and moving goods
- Develop a comprehensive, long-term, and community-based approach to address corridor needs with regard to pavement, bridges, and other infrastructure





1.1 I-94 past and present

MnDOT’s history on the I-94 corridor dates to the origins of the interstate highway program. The idea to connect the Twin Cities with a major roadway began in the 1920s, with more formal development of potential alignments beginning in the 1940s. An alignment published in the Pioneer Press in 1945, which looks almost identical to the finished product, was developed to provide easier access to the University of Minnesota and to the state capitol in St. Paul. In the early 1950s, the desire to redevelop properties near the capitol became part of the justification to build the new freeway in this location.

When I-94 was finally constructed in the 1960s, nearly 1,000 homes and businesses were lost and communities were disconnected. Those most negatively affected were predominantly lower income, minority, or immigrant communities. It displaced thousands of people at the core of the predominantly African American neighborhood of Rondo. Construction of the freeway resulted in a long history of lack of trust, miscommunication, and misunderstanding between MnDOT and these communities. This early history of I-94 has been documented in the *I-94 Documentary Part One – Interstate 94: A History and Its Impact*. This video focuses on the construction of I-94 in the middle of the 20th Century and the effect it had on the communities it bisected.

Today, I-94 is at the heart of the Twin Cities metro area. The surrounding area is home to nearly 250,000 people representing a diverse range of cultures, languages, and economic levels. In addition to homes, the corridor includes colleges and universities, libraries, art galleries, theaters, parks, museums, schools, places of worship, and a wide range of businesses and industries. The highway itself includes more than 80 miles of pavement, four tunnels, and more than 145 bridges. Traffic volumes exceed 150,000 trips per day – including about 8,000 freight trips, and more than two million transit riders annually.

FIGURE 1-2

Who is involved?



1.2 Phases of Rethinking I-94

Rethinking I-94 is envisioned to have multiple phases, as described below and illustrated in **Figure 1-3**.

Phase 1: Understanding. The Rethinking I-94 understanding phase, conducted between January 2016 and August 2018, is the first phase of Rethinking I-94 and is the focus of this report. As described in detail below, this phase integrated a wide range of engagement and technical tasks to develop an understanding of the corridor and its communities to establish a foundation for future planning and project work.

Phase 2: Environmental. Phase 2 of Rethinking I-94 is the preparation of a corridor-level environmental document — it is anticipated to begin in the summer of 2018 and continue for about two years. The intended result of Phase 2 is specific actions to address transportation and transportation-related needs identified by stakeholders in and along the corridor. This phase will continue the engagement of corridor community members that began in Phase 1.

Ongoing Engagement and Project Implementation. On an ongoing basis, MnDOT will continue the process of engagement and relationship building with community members. MnDOT and local partners also may implement individual actions on or related to I-94 as identified in Phase 2, the environmental document.

Rethinking I-94 Goals

As the project team has learned more about I-94 and its communities and other stakeholders, these goals have evolved — adding additional stakeholders or key issues, for example. As this adaptive effort continues, the goals will likely continue to evolve along with it.

GOAL 1:

Develop a comprehensive, long-term, and community-based approach to address I-94 study area transportation and transportation-related needs.

GOAL 2:

Gain a better understanding of who uses I-94, how they use it, and what parts of the study area do, or do not, require requirement improvements to better serve residents, users, and businesses.

GOAL 3:

Gain a stronger understanding of the condition of I-94 assets in the study area.

GOAL 4:

Determine how to best address mobility and safety needs on I-94.

FIGURE 1-3

Phases of Rethinking I-94

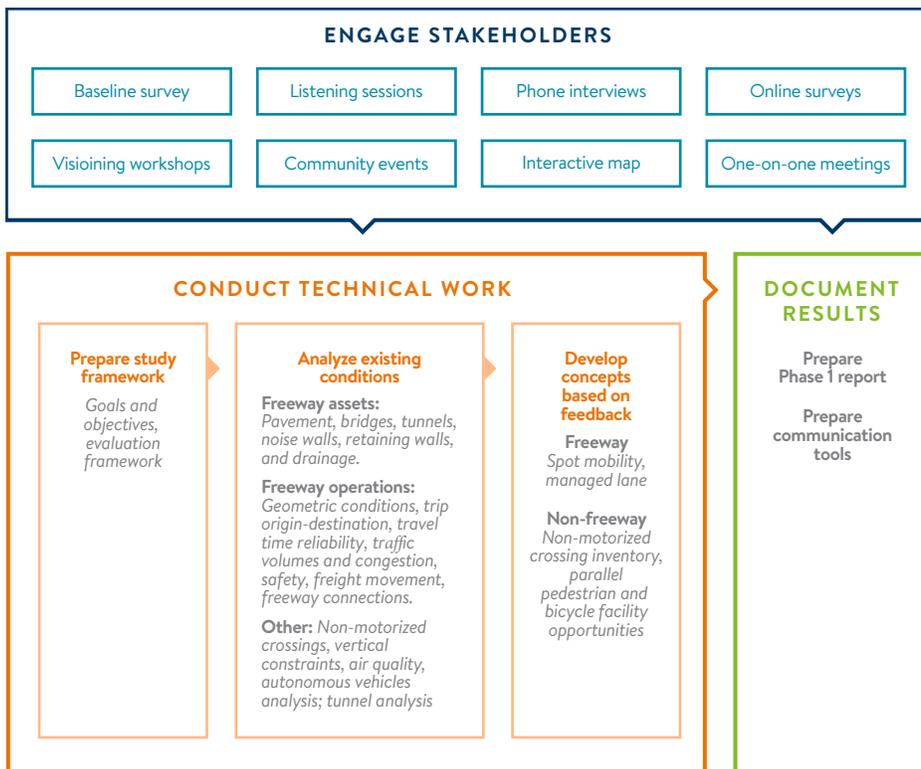


1.3 The Rethinking I-94 study process

Phase 1 of Rethinking I-94 was a two-year effort to develop a deep understanding of the corridor and its community and transportation contexts. This phase was intended to identify issues of importance to the communities through a comprehensive public engagement process. Understanding how transportation investments influence the neighborhoods, communities, and businesses near the highway was a key component of both the engagement and the technical efforts.

Figure 1-4 shows the key engagement and technical tasks conducted during this phase and their integration into a unified effort going forward.

FIGURE 1-4 Phase 1 tasks & timeline





1.4 Adaptive approach

MnDOT is leading Rethinking I-94 with a multidisciplinary team of engagement specialists, planners, and engineers located in the Rethinking I-94 project office near Fairview and University Avenues in St Paul. At the beginning of the initiative, MnDOT intentionally set up this project office and located it near I-94. This location was intended to help staff build and maintain better connections with the community and put “rethinking” into practice on site. The core MnDOT staff was supported by a wide range of staff from other MnDOT divisions and by specialized engagement and technical consultants.

Rethinking I-94 was designed as an adaptive process in which the participants adjust and adapt their work based on feedback, results, and lessons learned along the way. This requires the team to listen, reflect, and be willing to make changes. Examples of the adaptive process in action during Phase 1 include:

- **ENGAGEMENT PROCESS.** The Rethinking I-94 engagement process was adaptive by definition. The process provided the ability to incorporate input from stakeholders as work progressed.
- **NON-MOTORIZED CROSSING INVENTORY AND PARALLEL PEDESTRIAN/BICYCLE FACILITY OPPORTUNITIES.** While crossings of I-94 were assumed to be important at the beginning of the study, the engagement process clearly showed strong interest in non-motorized connections across I-94. As a result, additional work on this topic was conducted. Similarly, the idea of a parallel pedestrian and bicycle facility was not originally assumed in the work tasks. When this concept emerged out of stakeholder discussions, MnDOT began to further explore it.
- **ENVIRONMENTAL DOCUMENTATION.** Because the Rethinking I-94 effort intentionally does not follow a typical MnDOT planning or design process, it was not clear initially how the work would relate to the environmental documentation typically required for improvements to a long highway corridor. While this was a topic of consideration during the Phase 1 effort, ultimately it was decided to focus Phase 1 on developing the baseline understanding and address the environmental process during Phase 2.



1.5 Engagement tasks

Engagement tasks included extensive engagement, research, surveys, and relationship-building between MnDOT and community members to create mutual understanding, a foundation of trust, and communication channels. The team used the following methods and tools to gather input and develop relationships:

- Desk research
- Baseline survey
- Cultural mapping and historical overviews
- Zone profiles
- Visioning workshops
- One-on-one meetings
- Listening sessions
- Phone interviews
- Community events
- Interactive map
- Community comments database
- Public engagement toolkit

These tasks and their results are described in detail in [Section 3](#), with detailed documentation in the [Engagement Appendices](#).

1.6 Technical tasks

Technical work revolved around understanding the I-94 transportation characteristics and needs as well as beginning consideration of future solutions to address those needs. The team’s technical tasks involved:

- Analyzing existing conditions (described in [Section 4](#))
- Developing preliminary concepts (described in [Section 5](#))

Detailed documentation for both are provided in the [Technical Appendices](#).

1.6.1 PARTNER AGENCY INPUT

Technical input to the Rethinking I-94 study teams was provided through regular meetings of a Technical Advisory Committee and Working Groups.

Technical advisory committee (TAC). The TAC was established to provide an opportunity for partner agencies throughout the corridor to contribute input and expertise, represent the perspectives of their respective agencies, communicate known issues, and identify project needs. The TAC included representatives from the following agencies:

- MnDOT (Metro District, multiple offices)
- Federal Highway Administration (Minnesota Division)



- Metropolitan Council (Transportation Services and Metro Transit)
- Hennepin County (Public Works)
- Ramsey County (Public Works)
- Washington County (Public Works)
- City of Minneapolis (Public Works)
- City of St. Paul (Public Works)

The TAC’s charge was to serve both as cross-pollinators and as a clearinghouse of information. The role of the individual members was to share project information within the member’s agency, including updating elected officials as necessary. TAC members made a commitment to attend regular TAC meetings, collaborate with other TAC members, and participate in technical discussions. They were given the ability to negotiate on behalf of the member’s agency, and agreed to work towards consensus. The TAC met 23 times during Phase 1.

Because of the extensive public engagement conducted during Phase 1, the decision was made to not establish a Community Advisory Committee in addition to the TAC, but rather to spend time gathering information and learning directly from community members. Through this process of learning and building resilient relationships during Phase 1, MnDOT is now well-prepared to engage a Community Advisory Committee or similar group as a part of future efforts.

Working groups. In addition to the TAC, four working groups (Table 1-1) were formed to incorporate a broader, more comprehensive technical and corridor-issue knowledge base into the study process, and help guide the study team. Working group members included agency staff who were experts, specialists, and authorities on the identified subjects. Working group members were generally drawn from the same stakeholder agencies as the TAC members.

TABLE 1-1 Rethinking I-94 working groups

	PURPOSE	TOPICS
Engagement	To bring together key stakeholders and communications professionals to discuss, plan, and implement engagement efforts in key areas of the I-94 corridor between Minneapolis and St. Paul.	Communications, Equity
Health & environment	To identify, discuss, and address concerns in relation to public health and the environment along the I-94 project study area.	Health impacts, Water, Air, NEPA
Planning & land use	To review and provide guidance for the I-94 project in all issues pertaining to planning, land use, comprehensive planning, bike and pedestrian connectivity, and accessibility.	Bicycle, Pedestrian, Accessibility, Land Use / Comprehensive Plan
Traffic	To advise technical project staff on traffic issues, forecast, model, and analysis results.	Forecasts, Simulations, Automated Vehicles, Transit Advantages



Working group members provided input, technical analysis, advice, and recommendations. They committed to attending regular working-group meetings, collaborated with other working group members, communicated project information within the members' community/agency, and contributed to issue specific discussions.

Each working group met as indicated below:

- **Engagement:** 8 meetings
- **Health and environment:** 4 meetings
- **Planning and land use:** 16 meetings
- **Traffic:** 19 meetings

1.7 Rethinking I-94 staff and consultants

Phase 1 of Rethinking I-94 was led by MnDOT staff with support from two consultant teams.

MnDOT core team

- Brian Isaacson
- Gloria Jeff
- Nancy Boylan
- Broderick Bell
- Nick Carpenter
- Bill Goff
- Tara Olds
- Brenda Thomas

Engagement consultant team

- Rabbit Relevance
- Signature Insights
- 106 Group
- Zan Associates

Technical consultant team

- WSP
- SRF Consulting Group
- Sambatek
- Kimley Horn
- Isthmus Engineering
- Community Design Group



Section 2

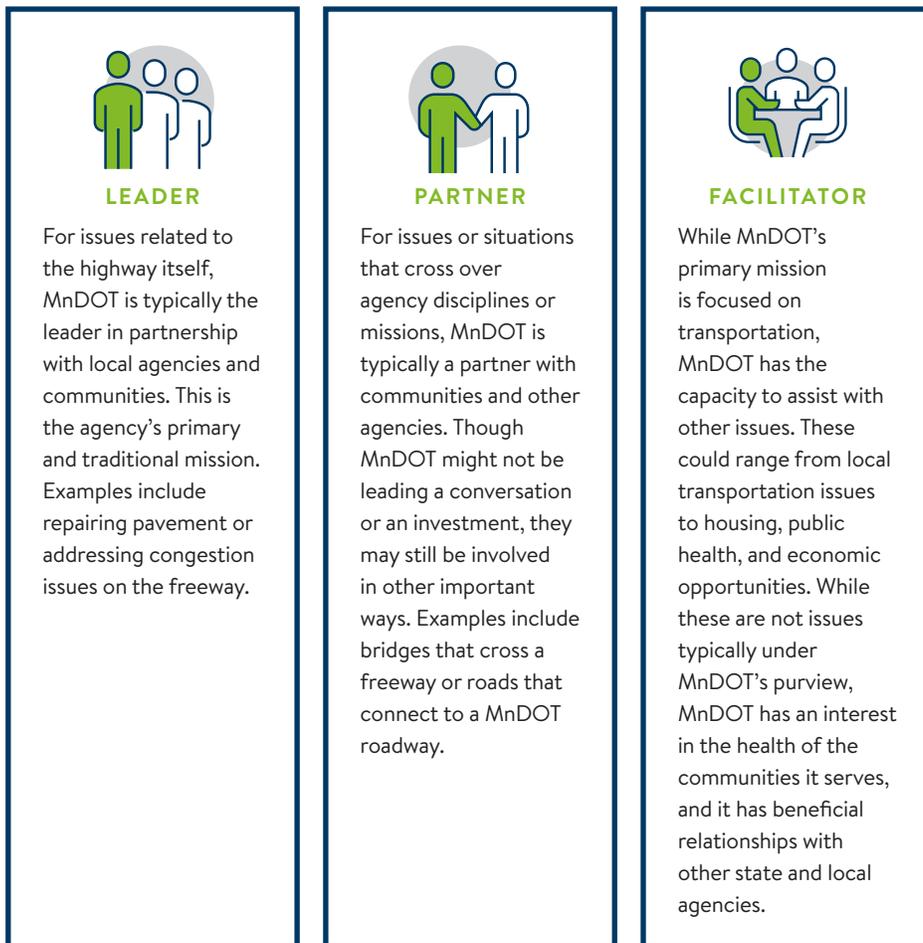
Rethinking MnDOT's role



The heart of Rethinking I-94 is a new way of working with communities. Rather than focusing only on “what” (e.g. planning and designing projects), Rethinking I-94 is also focused on “how.” Making this a reality means rethinking MnDOT’s role.

As a statewide transportation agency, MnDOT works every day with communities around the state and is often asked to help with issues that go beyond transportation — MnDOT can help by engaging its relationships with other agencies, partners, or organizations. Part of Rethinking I-94 is to affirm MnDOT’s role in supporting communities as broadly as possible. Depending on the situation, MnDOT may fill one of several roles (**Figure 2-1**).

FIGURE 2-1 MnDOT’s roles on and off the highway





The extensive engagement work conducted during Phase 1 of Rethinking I-94 led directly to the development of the two sets of guidelines for how MnDOT interacts with communities and plans and designs projects: Guiding Commitments for Project Teams and Livability Framework for Communities.

Guiding Commitments

These statements will guide how MnDOT will work with communities in the future:

- **VISION.** Understanding a community's underlying values and issues of importance, now and into the future, to articulate common ground; building toward that vision with each project and demonstrating that commitment to communities over time.
- **CO-POWER.** Cultivating joint ownership of each stage of the process; acknowledging that local knowledge is valid and valuable expertise; including communities in identifying criteria for prioritizing decisions and being partners in problem solving.
- **AUTHENTIC RESPECT.** Providing timely, accessible information as well as multiple options for participation; acknowledging issues and constraints communicated by stakeholders.
- **TRANSPARENCY.** Communicating realistic timelines, participation impact, funding realities, decision-making processes and levels of authority; making visible the context of the whole process at each step.
- **INCLUSIVITY.** Creating inclusive partnerships and teams from vision to construction; ensuring multiple voices are engaged and reflected in decision making.

Livability Framework

These statements will guide how MnDOT designs and evaluates projects in the future.

- **HEALTH & ENVIRONMENT.** Quality of life, comfortable environment, well-being, sustainability, green space, land use, health, communication, tangible benefits.
- **ECONOMICS.** Jobs, business vitality/opportunities and development, wealth generation, revenue generation, affordability over time.
- **SENSE OF PLACE.** Legacy, vibrancy, sense of identity, cultural pride, our future.
- **SAFETY.** Personal security, freedom from danger, risk or harm.
- **CONNECTIONS.** Infrastructure aligning with meaningful physical, social and cultural community connections.
- **EQUITY.** Inclusive of all people — all races, ethnicities, incomes and abilities — with extra effort to ensure that historically under-represented populations are included and past inequities are addressed to the extent possible.
- **TRUST.** Familiarity, cohesion, stakeholder involvement, good faith collaborations, collaborative work with an interdisciplinary and multijurisdictional team, resilient relationships.

MnDOT agency vision, mission and core values

The roles developed through Rethinking I-94 are consistent with MnDOT's overall vision, mission, and core values, which are summarized below:

Vision Minnesota's multimodal transportation system maximizes the health of people, the environment and our economy.

Mission Plan, build, operate and maintain a safe, accessible, efficient and reliable multimodal transportation system that connects people to destinations and markets throughout the state, regionally and around the world.

Core Values

- Safety
- Excellence
- Service
- Integrity
- Accountability
- Diversity and inclusion



Section 3

Engagement activities & results



Rethinking I-94 represents a new model of engagement for MnDOT. Early on, the engagement team established the intent to design and implement a community-based, comprehensive, and long-term approach to address Rethinking I-94 study area needs. This section summarizes the first two years of this effort, as viewed through the engagement activities conducted and their results. Full details of the engagement activities are provided in **Appendices E1 through E12**.

3.1 Engagement activities

The engagement team, made up of MnDOT and consultant staff, designed and implemented a human-centered engagement process to carry out the Rethinking I-94 intention. The essence of the human-centered approach is to involve the human perspective in all steps of the process; for Rethinking I-94, this meant an emphasis on understanding and engaging the very diverse stakeholders in the corridor.

The engagement team's objectives were to:

- Identify the people who use and are impacted by the I-94 corridor and more deeply understand their cultures, networks, needs, motivations, perceptions, and expectations.
- Understand the multitude of ways that these specific people are likely to want to communicate and participate in ongoing design and construction processes for I-94.
- Engage stakeholders using this knowledge, sharing what needs to be done and asking them how it fits with the vision they have for their communities and their lives.

In conducting the engagement activities, the project team focused on understanding the expectations of a wide range of corridor stakeholders, including community members, commuters, city and county partners, and organizational leaders. Specifically, they spent time listening to and learning directly from community members about:

- Past frustrations and hopes for the future of I-94 and its benefits to and impacts on the community
- How people want to be engaged
- Future visions for the I-94 corridor and its communities



3.1.1 STUDY AREA ENGAGEMENT ZONES

Given the 15-mile length of the Rethinking I-94 corridor, the study area was divided into six smaller zones (Figure 3-1). The zone boundaries are based on anticipated future design and construction project limits (this data changes frequently and will be verified before it is used to identify specific projects). These zones were used for several of the engagement tasks to break the corridor into more manageable units and consider the need for customized engagement approaches.

FIGURE 3-1 Engagement study area zones

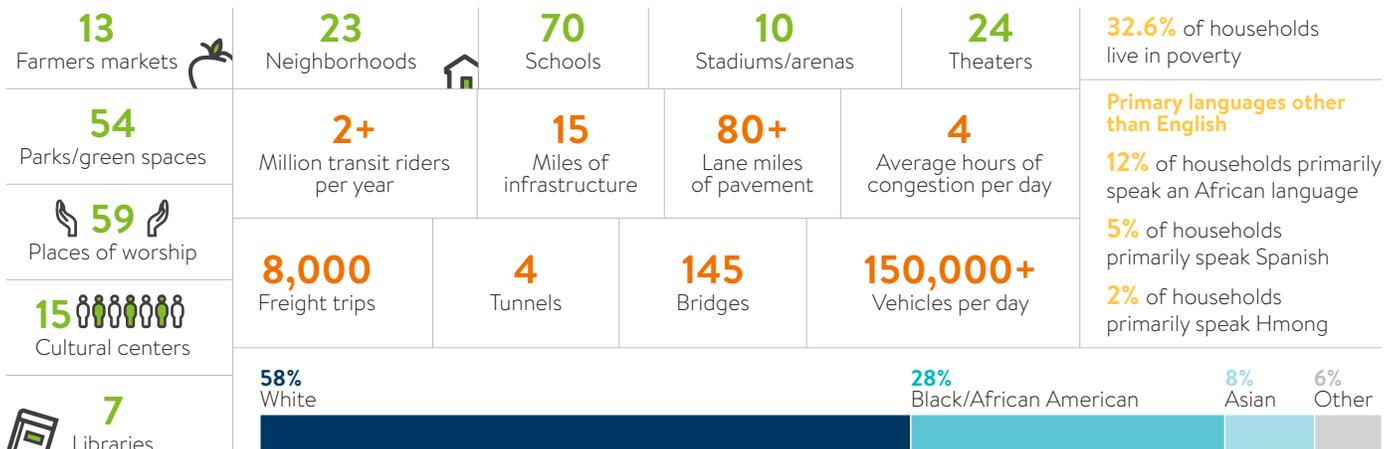


3.1.2 CORRIDOR OVERVIEW

Figure 3-2 was developed to help communicate key information about Rethinking I-94 – both the corridor communities and the highway itself – to a general audience. It exemplifies the integrative nature of Rethinking I-94 effort. A full-size version of the graphic is provided in Appendix E1.

FIGURE 3-2 Corridor overview

1.75 million people live in Hennepin and Ramsey counties. Of these, **250,000 live within one mile of I-94** from Broadway Avenue to Highway 61. Along this corridor, there is a rich and diverse community:





3.1.3 ACTIVITIES AND PARTICIPATION

Figure 3-3 summarizes the key engagement methods and number of participants reached for each method. Nine different methods were used during this phase of Rethinking I-94 and thousands of individuals were reached.

The remainder of this section describes the engagement activities and results according to the following categories:

- Research activities
- Engagement activities
- Products and materials
- Training materials
- Related events

3.2 Research activities

One of the project team’s first tasks was to collect and review existing data and documents to develop an initial understanding of the corridor prior to direct engagement of community members. This “desk research” included review and compilation of the demographics, history, language needs, organizations, and community facilities in the corridor (**Appendix E2**). The findings of the desk research are summarized below.

3.2.1 DEMOGRAPHICS

Race. In addition to the 58 percent of the corridor population that identifies as white, 28 percent identify as African-American, 8 percent as Asian and 6 percent as “Other”.

Country of origin. Nine different countries of origin were identified from Africa, Latin America, and Asia. The corridor communities include a large number of recent immigrants. About 9 percent of the corridor is Somali, about 4 percent is Mexican and Ethiopian, and about 2 percent is Hmong. Additional demographic information can be found in **Appendix E2**.

Language. Many primary languages in addition to English are spoken in the corridor. An African language is the primary language for about 12 percent of the corridor population. About 5 percent of the population identify Spanish as their primary language, and about 2 percent identify Hmong as their primary language.

Poverty. Concentrations of families under the poverty level, based on census data, were identified in the corridor.

FIGURE 3-3

Engagement methods and number of participants

2200

Completed baseline surveys

75

People participated in listening sessions from more than 50 organizations

800+

Phone interviews from segment surveys

1200+

Online surveys from segment surveys

6

Visioning workshops

15

Community events

325+

Comments from online interactive map

75+

Participants from Smart Growth America



3.2.2 ORGANIZATIONS

Contact information was assembled for the following organizations in the corridor:

- Minneapolis Neighborhood Organizations (14) and St. Paul District Councils (9)
- Business associations, including ethnic business associations active in Minneapolis (14) and St. Paul (13)
- Local social and ethnic organizations active in the corridor (14)
- Regional and state ethnic organizations (43)
- Advocacy groups, primarily transportation or community development focused (12)
- Faith organizations – there are many in the corridor
- Directly affected Minneapolis Council Wards (2, 4, 5, 6, 7) and St. Paul City Council Wards (1, 2, 4, 6, 7)

3.2.3 COMMUNITY FACILITIES

Using a GIS database, the following community facilities were identified and mapped:

- Schools
- Libraries
- Parks
- Sporting facilities
- Farmers markets
- Places of worship

3.2.4 PLANS AND STUDIES

The project team reviewed a wide range of plans and studies, including:

- Eight small area and light rail station area plans that guide the development near stations in the Minneapolis portion of the corridor
- Sixteen small area and light rail station area plans that guide the development near stations in the St. Paul portion of the corridor
- Seven documents relevant to the history of the I-94 corridor; these provided insights into the cultural history of I-94 in the Rondo community as well as observations that apply to all neighborhoods affected by the early history of the freeway

Summary:

Desk research

The corridor is **racially diverse**, with 58 percent identifying as white, 28 percent as African-American, 8 percent as Asian and 6 percent as “Other”.

Nine different countries of origin were identified in the corridor.

An **African language is the primary language** for 12 percent of the corridor population; about 5 percent identify Spanish as their primary language and about 2 percent identify Hmong.

The corridor includes portions of **14 Minneapolis Neighborhood boundaries and nine St. Paul District Council boundaries**.

There are documents available* describing the **history of the I-94 corridor** and the affected neighborhoods, including the cultural history of the Rondo community.

*www.dot.state.mn.us/I-94minneapolis-stpaul/



3.3 Baseline survey and updates

The project team conducted a baseline existing conditions survey in 2016 to gauge project awareness, engagement opportunities and community perception, satisfaction, and confidence in MnDOT throughout the I-94 corridor. The survey was repeated in 2017 to begin the process of gathering comparisons to the baseline. The intent of these surveys, and their ongoing implementation, is to document the starting condition and track shifts in key engagement measures over time as conditions change and the Rethinking I-94 engagement activities continue. More details on the surveys are provided in [Appendix E3](#).

3.3.1 2016 BASELINE SURVEY

The 2016 baseline survey used a multimodal data collection methodology and included 786 online interviews and 300 phone interviews of landline and cell phone users among specific ethnicities, as detailed in [Appendix E3](#). The October/November 2016 survey oversampled non-Caucasian residents to ensure the results reflected the demographic makeup of residents living along the I-94 corridor. The survey asked respondents about the following:

- Familiarity with MnDOT’s role in maintaining the I-94 freeway
- Overall perception of MnDOT
- Overall satisfaction with and confidence in MnDOT
- Whether they had a chance to participate in past engagement opportunities
- How they receive their information

The following summarizes results of the surveys, which are further detailed in [Appendix E3](#):

Residents living along the I-94 corridor

- Majority of impacted residents (who live near the I-94 corridor) and users of the freeway (residents that use the I-94 extensively) use a personal motor vehicle as their primary mode of transportation
- Majority travel on the corridor at least two times a week
- Impacted residents are heaviest users of the freeway, and use the freeway for a variety of needs (i.e., work, education, household, errands)
- A small percentage of residents use transit and walk
- Millennials, GenXers, and Ramsey county residents in the study report higher usage of the freeway

Familiarity with MnDOT’s role and awareness around I-94 projects

- Nearly 50 percent of residents in the study area are “familiar” with MnDOT’s role in maintaining and developing the I-94 freeway, but degree of familiarity varies by ethnic group
- Residents are more aware of maintenance of the I-94 exit ramps, overpass bridges, maintenance of road surfaces, and traffic lanes than information regarding the longer term 20-year plan, additional high occupancy vehicle lanes, or any redesign of the I-94 overpass bridges



Overall perception of MnDOT

- Most respondents either completely or somewhat agree that MnDOT does what is best for Minnesota, a reflection of its promise as an agency
- However, perceptions and level of agreement on several attributes such as engaging the community, collaboration, informing the public, and inclusion need significant work
- Users of the freeway perceive that MnDOT truly listens and collaborates
- Impacted residents do not have as strong a perception on MnDOT’s collaborative and inclusive activities

Overall satisfaction and confidence in MnDOT

- Overall level of satisfaction with MnDOT’s efforts in “keeping the public informed” on I-94 is low, providing a huge opportunity for improvement for MnDOT
- Level of satisfaction with MnDOT providing opportunities to share ideas and opinions is also low (less than 20 percent are satisfied overall with MnDOT, and less than 20 percent feel MnDOT provides opportunities to share ideas)
- Overall public confidence in MnDOT is strong only among a third of the respondents; men and GenXers are more confident in MnDOT than the other groups, such as Millennials

Public participation in outreach from MnDOT

- Overall, most residents of Hennepin and Ramsey counties have not had a chance to contribute opinions or share ideas related to I-94 in the past six months; about three percent contributed opinions in the six months prior to the survey
- Of the few that contributed opinions in the six months prior to the survey, respondents mention community meetings as the most frequently cited mechanism to contribute or share opinions with MnDOT
- Residents would overwhelmingly like to contribute opinions to MnDOT if contacted in the future
- Nearly 70 percent of residents value the importance of providing opinions and ideas to MnDOT

Information sources

- There is variation in how residents hear about MnDOT; different sources vary based on age and gender and can be found in [Appendix E3](#)
- Television is the primary means of information regarding planned improvement projects for more than half the respondents; however, social media is an emerging presence
- About 50 percent of the residents are aware of the MnDOT’s website and use it infrequently within a year



3.3.2 2017 SURVEY

In 2017, the project team repeated the baseline survey in an effort to compare areas of growth and needs for improvement. However, the ability to make trend comparisons across both years is limited due to the more targeted sample used in 2017 and the relatively short time period in between the two surveys. The sample sizes varied and the interpretation of results takes this into account.

The 2017 baseline survey was conducted over the phone in English and Spanish. In addition, it targeted certain zip codes in the six study zones described previously. The study’s goal was to oversample ethnic minorities, and the team achieved at least 150 responses of the total sample of 602 to meet the goals of inclusion. The survey also included a segmentation scheme that reflected the four public engagement segments: informed observers, financial contributors, somewhat disconnected, and hands-on contributors (these segments were previously tested in the segmentation survey, see [Section 3.6](#)).

Key findings from the 2017 survey are:

- Awareness of MnDOT’s role in maintaining and developing the I-94 freeway remained the same over the past year
- Slightly more residents are aware of MnDOT’s efforts to long-term plans (eleven percent in 2017 versus seven percent in 2016)
- More residents say they had a chance to share ideas/opinions related to I-94 in the past six months than in the previous year (seven percent versus three percent)
- MnDOT’s efforts in the past year at community events and meetings are recognized as opportunities to inform the public

Summary: Baseline surveys

2016 BASELINE

Engaging the community will require inclusion and collaboration and significant outreach to overcome low awareness and familiarity with MnDOT on the I-94 corridor. This effort will consequently improve confidence and satisfaction with MnDOT overall.

Tactically, use **several channels and multimode communication** and leverage community meetings to increase outreach and build confidence.

Respondents get information about MnDOT from a **variety of different sources**.

2017 UPDATE

Awareness of MnDOT’s role in maintaining and developing the I-94 freeway has remained the same over the past year. However, **MnDOT is making an impact** on awareness of long-term plans.

MnDOT’s efforts to include and gather opinions seem to show a **small impact**.

Future baseline survey updates **should focus on specific zones** to allow better trend comparisons.



3.4 Listening sessions

As part of developing the Rethinking I-94 engagement process, MnDOT staff conducted listening sessions. The purpose of the sessions was to learn how MnDOT can better engage with communities, begin to form resilient relationships, and obtain a better sense of community needs to help guide engagement. The project team held listening sessions with more than 75 people from over 50 organizations. There was representation from community organizations, district councils, and advocacy groups in both cities of Minneapolis and St. Paul in all six zones.

The listening sessions were intended to:

- Open the dialogue between Rethinking I-94 project team and community members/stakeholders
- Provide an “introduction and invitation” to Rethinking I-94
- Listen for the following to strengthen MnDOT’s engagement approach and fuel development of the engagement toolkit:
 - » *How has MnDOT engaged with this neighborhood and its communities in the past?*
 - » *How MnDOT might better engage with this neighborhood and its communities?*
 - » *Who else should MnDOT listen to in this neighborhood and its communities?*
 - » *What issues in this neighborhood and its communities are crucial to engagement planning?*

Summary:

Listening sessions

Transparency. Giving the full picture in terms of timeline and steps of the process.

Ample lead time. Considering a 45-day notice; communities often organize events on their own before MnDOT enters the picture.

Horizontal, not just vertical, connections. Where can coalitions be formed?

Meet community where they are. Physical location, online.

Many similar “hard to reach” groups across the corridor. Wealthier millennials, populations with language barriers, rental community, homeless.

Neighborhood Associations and District Councils’ resources vary. Structure and resources are widely different from group to group.

Clarify the role of MnDOT. Frame around actual projects.

Be present and listening. Move from “fragile trust” to “resilient trust”.

Responsive. Consistent point of contact (specifying the “engagement” person for MnDOT).



3.5 Community culture and history overviews

Community culture and history overviews were prepared to provide historical and cultural background about six stakeholder groups that are present along the I-94 corridor and to provide insights into the broader cultural characteristics and history of engagement by the community on transportation and planning efforts. The overviews were also developed to help the project team design an engagement strategy specific to this historically, socially, and geographically complex corridor, and to provide MnDOT staff information to guide their ongoing engagement efforts. Cultural competency among MnDOT staff was identified as being essential to delivering a more effective and more equitable engagement with these and other communities. The following six communities were described and mapped with respect to key historical events and experiences, significant values, reasons for settlement in an area, communication preferences, and common cultural norms:

- American Indian
- Euro-American
- African American
- Asian American
- Latino
- Recent African

While the report is organized by ethnicity for ease of presentation, it is important to note that ethnic diversity is distributed through the corridor rather than being concentrated in certain locations. Also, while the histories and cultural characteristics described in the overviews are both research-based and informed by experience (and meant to be as broad and inclusive as possible), they do not represent the experience of every individual. They should, however, provide insight into the types of experiences common within a community.

A profile of the ethnic identity of the I-94 corridor population compared to Minneapolis-St. Paul and Minnesota (Table 3-2) highlights the significantly greater presence of African American, Latino and Recent African populations in the corridor as compared to the Minneapolis-St. Paul metro area.

TABLE 3-2 Percent of total population by ethnicity for geographic areas

ETHNICITY	MINNESOTA	MINNEAPOLIS-ST. PAUL	I-94 CORRIDOR
American Indian	1.0% (60% Chippewa, 11% Sioux)	1.2% (43% Chippewa, 19% Sioux)	1.0%
Euro-American	85.2%	63.8% (21.6% German, 10.5% Irish, 8.4% Norwegian, 6.2% Swedish)	56.0%
African American	5.4%	16.9%	28.0%
Asian American	4.3%	10.2% (7.2% Other Asian, 8% Chinese, 7% Asian Indian, 5.6% Vietnamese)	7.5%
Latino	4.9%	9.7% (67.3% Mexican, 25.8% Other Latino, 5.1% Puerto Rican, 1.7% Cuban)	7.0%
Recent African	2.6% (37% Somali, 25% West African, 21% Ethiopian, 8% Kenyan)	6.5%	12.8%

Note: Percentages for each geographic area exceed 100, as some individuals identify with more than one ethnicity.



For each community, a culture map was prepared illustrating current population distribution and density and culturally significant areas or places in relation to the study area. For each culture map, the following information was included:

- Why did groups of people settle where they did, and when did they arrive?
- Why do they remain where they are?
- Who are cultural leaders?
- How did immigrants adapt?
- Where did immigrants live and work?
- What is important to members of the community?

Culture maps for the six main ethnic cultural groupings along the corridor are available in [Appendix E4](#).

Summary: Cultural mapping & historical overviews

The ethnic profile of the Rethinking I-94 corridor is **significantly different** than Minneapolis-St. Paul and the state of Minnesota as a whole.

Six large ethnic communities in the corridor include American Indian, Euro-American, African American, Asian American, Latino, and Recent African.

Other **smaller ethnic communities** also exist.

Ethnic diversity is distributed throughout the corridor and not concentrated in a specific location.

Cultural competence among MnDOT staff is essential to design and implement effective engagement in this historically, socially, and geographically complex corridor.



3.6 Segmentation survey

A segmentation survey was completed in 2016 to collect feedback from people defined as both users of or impacted by the Rethinking I-94 corridor. “Users” of the freeway were identified as those respondents who use I-94 at least two times a week and live in the Hennepin and Ramsey County area zip codes. Those “impacted” by the freeway were identified as those respondents living within a mile of the I-94 freeway within the defined study area.

The concept of “segmentation” was used to interpret individual’s responses based on their relation to I-94, broken into the following groups, or segments (Table 3-3):

- Financial contributors
- Hands-on contributors
- Informed observers
- Somewhat disconnected

TABLE 3-3 Levels of engagement by market segment

	INFORMED OBSERVER	ACTIVE CONTRIBUTOR	HANDS-ON PARTICIPANT	UNREACHED OBSERVER
Sample engagement statements	<p>Everyone should stay informed about community, local, and state news on a regular basis.</p> <p>Every citizen needs to know how local and state government functions.</p> <p>Everyone should provide regular input when asked by local officials or representatives.</p> <p>All citizens have a responsibility to their community</p>	<p>Each resident currently has the opportunity to be involved in their local neighborhood/ community decisions.</p> <p>I contribute to charitable organizations within my community.</p> <p>It is important to financially support charitable organizations.</p>	<p>I volunteer in my community.</p> <p>I help members of my community.</p> <p>I am involved in structured volunteer positions in the community.</p> <p>I believe that each resident currently has the opportunity to be involved in their local neighborhood/community decisions.</p>	<p>State agencies should seek public opinion on key issues and projects that affect the public.</p> <p>Each resident does not currently have the opportunity to be involved in their local neighborhood/community decisions.</p>
Gender	Mostly men	–	–	Mostly women
Race	–	Mostly white	Whites, blacks	Multiracial
Income	–	Higher income	Income not a barrier	–
Generation	Boomers, students	Boomers (retirees)	Boomers, millennials	GenX
Education	Varies	–	–	Bachelor’s degree
Region	–	–	Prevalent in Hennepin County	Prevalent in Ramsey County



Through this process, a total of 2,000 responses were collected from 800 interviews and more than 1,200 surveys. The purpose of the segmentation survey was to gain an understanding of the attitudes, desires, and values of residents impacted by the I-94 freeway to plan for more effective, targeted activities to engage audiences along the corridor. The segmentation survey was a psychographic, quantitative study with open-ended questions across the I-94 corridor community of residents and users. The segmentation survey was specifically aimed to:

- Engage more voices in transportation planning and focus on the **impacted** while improving diversity representation
- **Specifically target** people living within one mile of the I-94 freeway
- Capture the **user** information of people driving on the freeway versus the **impacted**
- Identify specific actions for how emotions/values influence actions/activities
- Understand media usage and their preference for how they wish to engage with MnDOT

A summary of the market segmentation survey comment themes is provided in [Appendix E5](#).

3.7 Engagement

3.7.1 VISIONING WORKSHOPS

MnDOT hosted six visioning workshops in June 2017. The workshops were designed to help identify and articulate neighborhood-level transportation values, issues, and concerns through community stories. The workshops were also designed to gain a better understanding of community visions for the future that can help shape future transportation investment in the area and to set the groundwork for the next steps of engagement around transportation concepts that align with a shared vision. A total of 128 people attended the six workshops. Attendees generally stayed for 30 minutes to one hour.

The stated purposes of each workshop were to:

- Work together to develop a vision for the I-94 corridor between Minneapolis and St. Paul
- Better understand communities along I-94 and how I-94 affects them
- Help identify what works well for the community, and what needs improvement on, along, and across I-94

The workshops were open to all interested participants and held in the following locations:

- Merriam Park Recreation Center (St. Paul)
- Hubbs Center for Learning (St. Paul)

Summary:

Segmentation survey

Active contributors are concerned about more traffic lanes, better maintenance, better traffic flow, and wider roads or lanes.

Hands-on participants are concerned about safety, pedestrian-friendly features, green space, and access.

Informed observers are concerned about more traffic lanes and traffic flow, better maintenance, safe ramps, and better access.

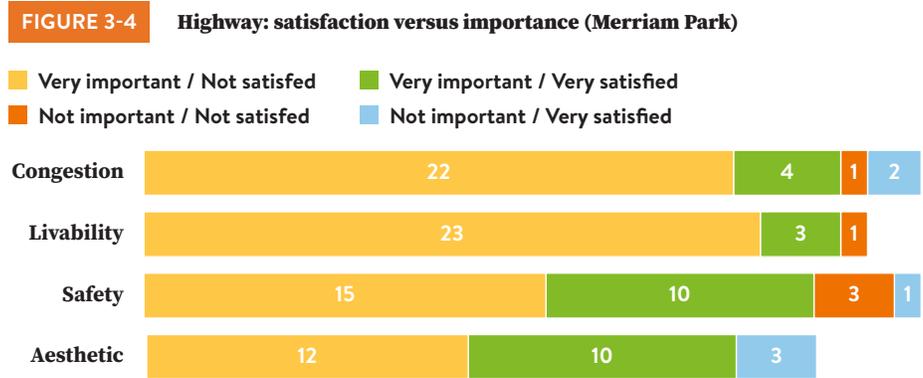
Unreached observers are concerned about traffic flow, better maintenance, access, and noise.



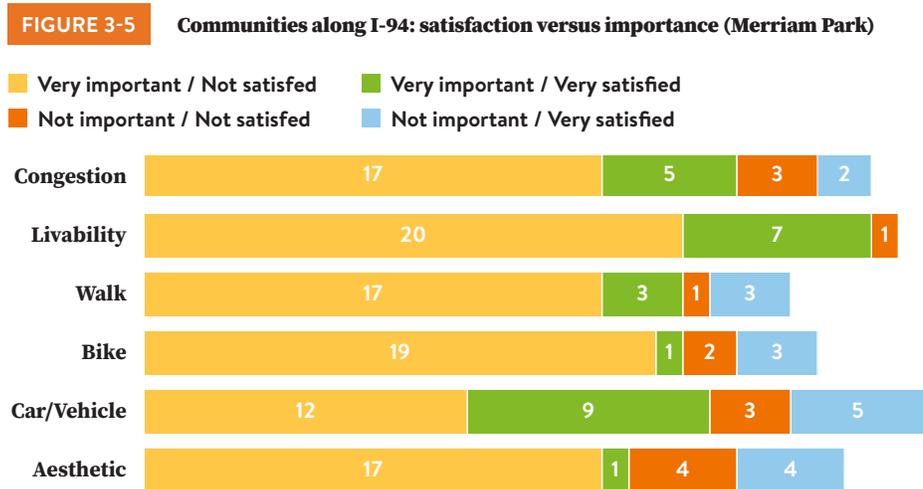
- Hope Community Center (Minneapolis)
- Dayton’s Bluff Recreation Center (St. Paul)
- Brian Coyle Center, two workshops (Minneapolis)

A detailed report of the findings (comments, emerging themes, etc.) from all six visioning workshops can be found in **Appendix E6** and are summarized below.

Highway: satisfaction versus importance. For this portion of the exercise, participants were asked to use a set of stickers to indicate for a series of highway-related issues (i.e., congestion, livability, safety, aesthetic, other) how satisfied they were with that issue or condition and how important it was to them. Results for Merriam Park are shown in **Figure 3-4**.



Communities along I-94: satisfaction versus importance. For this portion of the exercise, participants were asked to use a set of stickers to indicate for a series of highway-related issues (i.e., congestion, livability, walk, bike, vehicle, aesthetic, other) how satisfied they were with that issue or condition and how important it was to them. Results for Merriam Park are shown in **Figure 3-5**.



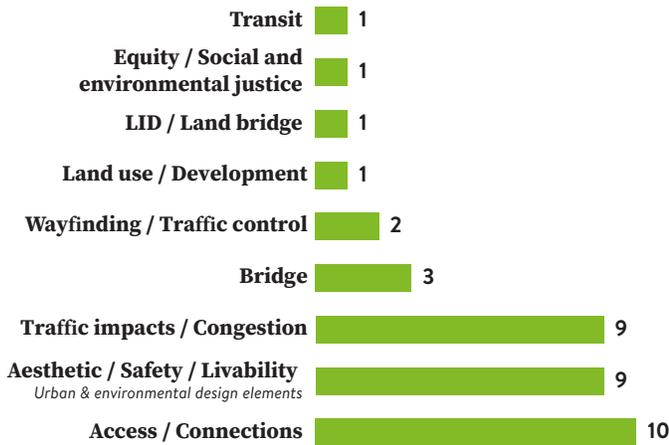
Workshop results: Merriam Park

The two-hour long visioning workshops were conducted in an open-house format. Each workshop was arranged around seven stations. There were two exercises specifically designed to enable the workshop participants to provide their comments related to the highway and the surrounding communities. The results and outcomes of these workshops are very location specific. The details shown on this page provide the results of the two topics for the Merriam Park neighborhood workshop location.



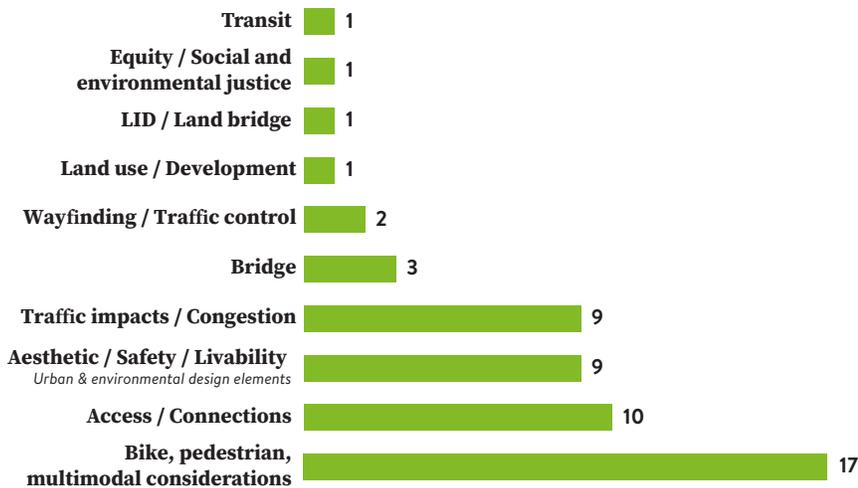
Tell us your experience about I-94. At this station, participants were asked to add comments to an aerial map regarding issues of importance to them. There were 49 comments received. Of all comments, 31 percent identified needs and issues related to bike, pedestrian, and multimodal considerations, and 27 percent of the comments focused on traffic impacts and congestion. **Figure 3-6** summarizes the common themes for the corridor aerial map in Merriam Park. Information on the other workshops can be found in **Appendix E6**.

FIGURE 3-6 Corridor aerial map themes (Merriam Park, 37 total comments)



Tell us your experience in your neighborhood. There were 54 comments received at this station related to neighborhood issues. Of all comments, 31 percent identified needs and issues related to their neighborhood – including bike, pedestrian and multimodal considerations. Of all comments, 19 percent focused on access and connection. **Figure 3-7** summarizes the common themes for the neighborhood zone map in Merriam Park.

FIGURE 3-7 Neighborhood zone map themes (Merriam Park, 54 comments)





3.7.2 ENGAGEMENT ACTIVITIES

Community events. As an expansion to the visioning workshops, the project team participated in 15 community events in the summer of 2017. This provided additional opportunities to achieve the engagement goals to reach more people in underrepresented communities than they typically do. MnDOT participated in the following events:

- Community Peace Celebration
- Rondo Days and Parade
- Bastille Day
- Party in the Park at Griggs
- National Afternoon Out
- Safe Summer Nights
- Dark2Dawn
- Midway in Motion
- Prospect Park Ice Cream Social
- ReConnect Rondo Block Party
- Open Streets
- Selby Jazz Fest
- 4th Annual Lex/Ham Ice Cream Social
- Ice Cream and Peanut Butter Jam
- Little Africa

One-on-one meetings. One-on-one meetings between MnDOT staff and a wide range of corridor stakeholders have been the backbone of the Rethinking I-94 engagement process to gather information and build relationships. These meetings were intended to open the dialogue between the project team and community members/stakeholders and to provide an “introduction and invitation” to Rethinking I-94. These meetings began early in the process and continued throughout Phase 1. As of June 2018, more than 250 one-on-one meetings and conversations have taken place within the communities. These conversations have helped the project team get a better sense of the community needs and have helped guide engagement efforts. They also laid the ground work for resilient relationships with key community stakeholders.

Interactive map. As part of the data gathering and engagement efforts, the project team identified the need to create an online crowdsourcing tool to gather feedback from the community. The interactive map was created as an alternative way to identify transportation values, issues, and concerns; better understand the “impacted” and “user” vision(s) for the future of the I-94 corridor; better understand communities along I-94 and how the freeway affects them; and to help identify what works well for “impacted” and “users,” and what needs improvement on, along, and across I-94.

In contrast to meetings or paper comment sheets, the interactive map allows users to enter comments anonymously and associate their comment with a specific location. The tool allows users to submit as many comments as they want and at their convenience. It also provides an alternate data source for existing conditions information that is not subject to the traditional transportation engineering data collection processes and perspectives.

As of April 2018, approximately 325 comments have been received via the interactive map, which can be found at rethinkingi-94.com/crowdsource/map. More details on the interactive map are provided in [Appendix E7](#).

Summary: Engagement

Interactive workshops targeted to specific communities allowed for improved understanding of priorities in different locations.

Community members are interested in issues that go **beyond the freeway** itself.

Participation in community events has helped build and strengthen relationships and mutual understanding.

One-on-one meetings have been the backbone of the engagement process, allowing for more in-depth understanding and relationship building.

The **interactive map** allows users to engage more conveniently and values community input on technical issues.



3.8 Products and materials

3.8.1 ZONE PROFILES

As discussed earlier in [Section 3.1](#) and shown in [Figure 3-1](#), MnDOT divided the Rethinking I-94 corridor into six zones based on potential future design and construction projects. These geographic zones created smaller sub areas to help understand the various I-94 communities. Specifically, the zone profiles were created to help the Rethinking I-94 project team understand four questions about the study area communities:

- Who lives along the I-94 corridor?
- How do respondents use I-94?
- How do respondents get information?
- How do respondents participate in Rethinking I-94?

Demographic research was used to answer the first item while the other three were addressed through surveys. In addition, transportation origin/destination information was used to understand travel patterns on the corridor.

While the profiles are considered a starting point for developing community engagement plans, they are not a substitute for robust public engagement or local knowledge that people have about their own communities. The profiles for each zone includes the following information:

- Demographics
- Survey responses
- Inventory of community organizations and events, local media outlets, and elected officials
- Neighborhood snapshots (key demographics, neighborhood organizations and destinations)

Examples of the graphical summaries provided for each zone are shown in [Figure 3-8](#). Because demographic and other information changes over time, it is important to regularly update the zone profiles (for example, when starting a new project on I-94).

The full zone profiles documentation is provided in [Appendix E8](#).

FIGURE 3-8

Number of people living in poverty, Zone 2



Number of people who speak Spanish and speak English less than “very well” by census tract, Zone 2



Sources: 2015 American Community Survey
5-year estimates



3.8.2 GUIDING COMMITMENTS AND LIVABILITY FRAMEWORK

The extensive data gathering and engagement on Rethinking I-94 allowed the team to develop overarching statements that reflect what people expect from MnDOT. See [Appendix E9](#) for additional details.

Guiding Commitments

These statements will guide how MnDOT will work with communities in the future:

- **VISION.** Understanding a community’s underlying values and issues of importance, now and into the future, to articulate common ground; building toward that vision with each project and demonstrating that commitment to communities over time.
- **CO-POWER.** Cultivating joint ownership of each stage of the process; acknowledging that local knowledge is valid and valuable expertise; including communities in identifying criteria for prioritizing decisions and being partners in problem solving.
- **AUTHENTIC RESPECT.** Providing timely, accessible information as well as multiple options for participation; acknowledging issues and constraints communicated by stakeholders.
- **TRANSPARENCY.** Communicating realistic timelines, participation impact, funding realities, decision-making processes and levels of authority; making visible the context of the whole process at each step.
- **INCLUSIVITY.** Creating inclusive partnerships and teams from vision to construction; ensuring multiple voices are engaged and reflected in decision making.

Livability Framework

These statements will guide how MnDOT designs and evaluates projects in the future.

- **HEALTH & ENVIRONMENT.** Quality of life, comfortable environment, well-being, sustainability, green space, land use, health, communication, tangible benefits.
- **ECONOMICS.** Jobs, business vitality/opportunities and development, wealth generation, revenue generation, affordability over time.
- **SENSE OF PLACE.** Legacy, vibrancy, sense of identity, cultural pride, our future
- **SAFETY.** Personal security, freedom from danger, risk or harm.
- **CONNECTIONS.** Infrastructure aligning with meaningful physical, social and cultural community connections.
- **EQUITY.** Inclusive of all people — all races, ethnicities, incomes and abilities — with extra effort to ensure that historically underrepresented populations are included and past inequities are addressed to the extent possible.
- **TRUST.** Familiarity, cohesion, stakeholder involvement, good faith collaborations, collaborative work with an interdisciplinary and multi-jurisdictional team, resilient relationships.



3.8.3 COMMUNITY COMMENTS DATABASE

In order to develop a comprehensive, long-term, and community-based approach to address I-94 study area needs, the Rethinking I-94 team wanted to design an effective public engagement tool that would be able to inform future MnDOT project teams. The information gathered through the various engagement efforts included the underlying community values and issues. These methods were intended to improve diversity and inclusion of underrepresented voices. The community comments database was developed to capture, organize, and report on what was learned to help guide future transportation project development and investment in the I-94 corridor.

Database functions. The following reports can be generated via the database:

- Comments within a given zone and comparisons between different zones
- Comments categorized based on themes (see below)
- Comments categorized based on the agencies who are relevant to the resolution of the comment
- Comments based on the project timeframe during which the comment is relevant
- Breakdowns of comments by the focus of the comment on either mainline I-94 or the surrounding corridor
- Status of each comment, or each comment within one of the subsets noted above, and any actions associated with those comments

Community comments themes. The project team identified comment themes to enable the comments to be sorted and organized by topic. The themes were generated based on comments from the 2017 visioning workshops and other comments received through engagement activities. All comments were categorized into the following themes:

- Aesthetic/urban and environmental design elements
- Alternative options: MnPASS/managed lanes/highway expansion
- Auto connections
- Bike/pedestrian/multimodal connections
- Bridge/land bridge (any bridge comments).
- Development
- Economics
- Justice
- Maintenance
- Neighborhoods/livability
- Noise/noise pollution
- Rebuilding community (Rondo)
- Safety
- Traffic impacts/congestion
- Transit
- Wayfinding/traffic control
- Other

Additional detail on the database is provided in [Appendix E10](#).



3.9 Training materials

3.9.1 PUBLIC ENGAGEMENT TOOLKIT

The engagement team developed a public engagement toolkit that outlines an adaptable and actionable process that project managers and teams can use to develop project-specific plans for public engagement in the I-94 corridor ([Appendix E11](#)). The toolkit supports projects of all sizes and types and provides a framework and process for projects and studies outside the I-94 corridor as well. Because there is no “one-size-fits-all” approach to engagement, this toolkit provides a jumping-off point for teams to customize engagement plans for various communities, geographies, and projects. The toolkit is intended to supplement existing MnDOT tools such as the “Conflict Scoping Process” and “Hear Every Voice” process. The toolkit features five sections and a variety of engagement tools ([Figure 3-9](#)).

A training guide was developed for the toolkit to help MnDOT staff and others better understand the Rethinking I-94 principles and engagement tools developed to help improve community engagement. The objectives of this training are to:

- Promote participants’ understanding of the tools in the Rethinking I-94 Toolkit
- Give participants real-time experience in using available tools to build an effective engagement plan that is right-sized for their project
- Encourage participants to explore and use other engagement tools and resources that are available both internally at MnDOT and externally

The target audience for this training guide is primarily MnDOT staff who will facilitate the training of additional MnDOT staff and other professional staff working on I-94 projects, regardless of size. However, the principles of the training could be easily applied to any transportation project. The format of the training is facilitated roundtable discussions coupled with exercises designed to provide hands-on practice in using the different tools in the toolkit. The training guide can be found in [Appendix E12](#).

FIGURE 3-9

Tools in the public engagement toolkit

Introduction

Public engagement process

Project corridor

Zone map

Principles for effective engagement

Guiding commitments

Livability framework

Research tools

Literature review

Desk research

Community overviews & culture map

Baseline quantitative survey

Qualitative assessment

Quantitative assessment for segmentation & values laddering

Case studies

Zone profiles

Using the toolkit to build an engagement plan

Public participation spectrum

Determining “who” should be involved

Determining community engagement tactics

Developing key messages & “asks”

Levels of engagement by market segment

Laddering to determine relationship between functional benefits and personal values



3.10 Related events

In addition to the events and engagement efforts led by the Rethinking I-94 project team, MnDOT participated in several events led by others during the first phase of Rethinking I-94.

3.10.1 USDOT WORKSHOP, EVERY PLACE COUNTS DESIGN CHALLENGE

The U.S. Department of Transportation (USDOT) selected the Twin Cities — one of four communities across the country — as winners of the “Every Place Counts Design Challenge”. Each winning community received a two-day workshop in July 2016 that aimed to identify innovative community design solutions to bridge the infrastructure divide and reconnect people to opportunity.

The workshop focused on two Twin Cities neighborhoods negatively affected by the construction of Interstate 94 in the 1960s — Prospect Park in Minneapolis and Rondo in St. Paul. The event featured design sessions with on-site technical and strategical assistance from subject matter experts.

The workshop convened federal advisors, state agencies, local officials, community organizations, and neighborhood residents to explore design and policy approaches that create connected, economically prosperous, and environmentally and physically healthy communities.

Five key design and policy recommendations came out of this workshop:

Community engagement. Establish a working group of agencies and organizations to continue interactive conversations, and generate a community/public engagement plan to include all stakeholders and perspectives.

Placemaking. Study and coordinate existing land uses, businesses, parks, and schools to identify neighborhood nodes and actively engage communities with pilot programs/exercises such as tactical urbanism.

Multimodal systems. Establish multimodal priority in specific locations and investigate best practices for mode metrics like performance indicators.

Cultural inclusion. Incorporate public art into all public projects for each jurisdiction and pursue funding opportunities for cultural inclusion as a percentage of infrastructure costs.

Equitable investments. Conduct a health impact assessment in the targeted areas and use equity scorecard as a starting point for solving disparities.

A full report detailing design challenge goals, findings and next steps for each community that received a workshop is available on the [USDOT website](#).¹

1. cms.dot.gov/sites/dot.gov/files/docs/CNU.USDOT_Report_FINAL.pdf



3.10.2 ULI HEALTHY COMMUNITIES INITIATIVE

In June 2016, MnDOT invited the Urban Land Institute in Minnesota (ULI MN) to conduct a Technical Assistance Panel (TAP). The goal of the TAP was to analyze whether private sector investment could generate sufficient revenue to pay for building “lids” above the roadway and other improvements. The panel also explored what steps MnDOT might take to make these projects a reality.

The TAP was designed to consider the I-94 corridor from Minneapolis to St. Paul and study three specific areas: I-35W/Minneapolis Central Business District, Farview Park in North Minneapolis, and historic Rondo Avenue in St. Paul. It also included a “lightning round” of participation for high-level observations of five other sites, and a series of questions and goals developed by MnDOT and ULI MN. ULI MN convened a panel of experts to engage in an active three-day TAP which included site visits, interviews with community leaders, and analysis of economic data and case studies of successful freeway lid projects to develop recommendations and guidelines for moving forward.

Early on day two, the panel identified a critical conceptual breakthrough: the corridor should be considered as a whole under a single banner, not separate lid projects, and implementation should be part of a rebranded vision called “the Healthy Communities Initiative.”

The following principles and recommendations were identified through this effort.

Principles — do the right thing and do it right

- Connect and reconnect communities
- Protect and enhance our environmental health
- Catalyze economic and housing opportunities for all
- Value aesthetics
- Strengthen the state’s economy

Recommendations

- As an immediate next step, maintain momentum, begin the Healthy Communities Initiative within the next three months with the establishment of a task force of community, public, and private sector leaders to evaluate and act on the following recommendations
- Form a quasi-governmental public-private partnership led by a small team of leaders to oversee a corridor-wide strategy to restore and enhance physical, environmental, economic, and social health
- Form a 501(c)(3) nonprofit organization and identify a fundraising champion to raise money for recreational and cultural amenities and to fund maintenance and operations through an endowment
- Put an experienced, professional leader in charge of managing and delivering the initiative and set an aggressive timeline
- Make freeway bridge locations development-ready when rebuilt and do as much as possible now so that neighborhoods and the development community can seize opportunities as they arise



- Conduct a corridor-wide parking and transportation study to evaluate parking at lids and how transit at lids can provide access to jobs
- Develop market-based conceptual plans at Rondo and I-35W/Washington Ave and pursue land-use consensus at Farview Park; TAPs or similar analyses can prepare these areas for lid projects when the time comes (Farview Park, the City of Minneapolis, the Minneapolis Park and Recreation Board, and neighborhoods need a shared vision on the future of the industrial land along the river)
- Mandate a mechanism to ensure the inclusion of affordable housing to deliver a full range of housing choices, including a range of affordability throughout the corridor
- Use the corridor as a showcase for art, architecture, design, and innovative engineering and technology best practices by engaging artists, architects, and designers who will want opportunities to showcase their work
- Look to the future of transportation and study emerging best practices
- Practice effective community engagement and support cultural connections by working with community leaders and valuing public art, green space, and great design throughout the corridor

A full report detailing findings and next steps is available on the [ULI MN website](#).²

3.10.3 SMART GROWTH AMERICA

Smart Growth America facilitated two visioning workshops in July 2017 on behalf of MnDOT to generate ideas about how to improve connections around and across the I-94 corridor at Dowling Avenue in Minneapolis and Lexington Parkway in St. Paul.

The goals of the workshops were to provide a closer look at two key interchanges along I-94 and engage agency partners and community members in discussions about near-term improvements and long-term visions to improve access and safety across I-94 and in the surrounding area. The discussions also focused on strengthening connections between the physical infrastructure and the values and character of the surrounding neighborhoods through creative placemaking.

The outcomes of both workshops will support broader efforts to reconnect the social and physical fabric of the communities impacted by the construction of I-94. The observations made by participants about each interchange, and the ideas brainstormed, are helpful in generating discussion between the agency partners about how to improve access and address community needs.

The following objectives were brainstormed by workshop participants, and the ensuing strategies were identified through this effort.

2. <https://minnesota.uli.org/advisory-services/technical-assistance-panel-tap/mndot-technical-assistance-panel-healthy-communities-initiative/>



Objectives

- Improving safety for pedestrians and bicyclists
- Decreasing conflicts between modes of travel
- Reducing the share of trips taken by single-occupant vehicles, while still preserving access for cars and trucks
- Reducing vehicle speeds
- Improving travel flow through the interchange
- Improving connectivity to destinations across I-94 and the river
- Improving air quality
- Increasing physical activity
- Improving access to jobs and services
- Preserving community character

Strategies

- Expanding community engagement
- Supporting affordability for current residents
- Reducing impacts on local businesses during construction
- Establish corridor design guidelines in partnership with communities
- Ongoing coordination between MnDOT, the cities, and counties

A full report detailing findings and next steps is available to download on the [Smart Growth America website](#).³

3.10.4 FHWA PEL PEER EXCHANGE

In August 2017, MnDOT, with support from the Minnesota Division of the Federal Highway Administration (FHWA), hosted a peer exchange through the FHWA Transportation Capacity Building (TPCB) Program to receive assistance with the development of a framework for stakeholder and public engagement.

Through discussion with FHWA Division Office staff, the planning team (comprised of the FHWA, FTA, FHWA MN Division, the Volpe Center, MnDOT, and other state DOTs) identified FHWA's suite of Planning and Environmental Linkages (PEL) research and tools as valuable assets to help guide MnDOT towards successful project delivery. With a focus on PEL stakeholder and public engagement, both in the context of I-94 and for application to other projects statewide, MnDOT was specifically interested in learning from peers with experience implementing the following strategies:

PEL frameworks for successful collaboration with project partners

- What structures best support collaboration?
- What organizational roles and responsibilities set a project up for success?
- What are strategies for adopting planning products in reference to NEPA (PEL)?

3. <https://smartgrowthamerica.org/resources/reconnecting-neighborhoods-across-94-lexington-parkway-dowling-avenue/>



How decision-making processes are established and streamlined

- What works/does not work?
- How to manage data sharing and perform technical analyses?
- How to link systems-level planning and programming with project-specific decision-making?

Protocols for engaging community groups and conducting public engagement

- What works/does not work?
- What are some new, innovative, and effective public engagement techniques?

Managing community expectations

- How is “community buy-in” effectively achieved, especially with controversial projects?
- What are some management approaches for incorporating community desires into projects, or working with community desires that exceed project scope/capacity?
- What are some techniques for managing unexpected issues (in project scoping, community relations, etc)?

Challenges and risks

- What unanticipated issues arose on projects regarding engagement and communications?
- What lessons were learned; what would you change if you could?
- How do you document decisions and the decision-making process?

Recommendations. Through this TPCB Peer Exchange, MnDOT learned from Ohio DOT and Massachusetts DOT about the value of and strategies for delivering successful projects that accomplish agency transportation goals, while supporting broader community-wide goals at the same time. Strategies to support these outcomes include the following:

- Engage with communities by developing long-lasting relationships with neighborhoods and community organizations that operate as a partnership and information exchange
- Use visual tools such as renderings, full color illustrations, and mapping to ensure project details and options are clearly and legibly presented and understood by community members and stakeholders
- Determine internally, and then articulate clearly externally, the limitations of a project – whether in the form of physical parameters, fiscal constraints, or regulatory requirements, to manage community expectations
- Allow for creativity and the expression of local stories and culture where possible, to recognize the historic contributions of community members to the character of their neighborhoods



- Ensure that decision-making is transparent and that project partners — whether public servants or other agency staff and managers, community members, neighborhood and community organizations, and private partners, remain accountable for their responsibilities, commitments, and decisions
- Maintain open and continuous communication channels to sustain relationships and partnerships throughout, and beyond the duration of each given project
- Seek out creative solutions to project challenges, whether they originate with adjacent business or other properties, intersecting transportation networks or services (including transit service), or project financing

A full report detailing findings and next steps is available on the [FHWA website](#).⁴

3.11 Conclusions

The findings and recommendations that resulted from these engagement events and activities reflect the complexity and diversity of this corridor. This information will be incorporated into the corridor vision and the next phase of the project.

4. https://planning.dot.gov/Peer/Minnesota/FINAL_MnDOT_Exchange_Report_DRAFT_5_0.pdf



Section 4

Transportation context



The Rethinking I-94 corridor through Minneapolis and St. Paul is a complex, heavily used highway with investment needs and significant congestion. As a result, developing an understanding of the highway was an essential first step in the technical work of Rethinking I-94.

To this end, the study team gathered and analyzed extensive asset and transportation-related data to help inform the future planning and design process. This section of the report addresses the following:

- The physical characteristics and geometric attributes of the highway
- The condition of the highway assets
- Existing traffic characteristics and associated transportation problems

4.1 Study area

The Rethinking I-94 study area (**Figure 4-1**) extends between West Broadway Avenue in Minneapolis and TH 61 in St. Paul, and is about 15 miles long. The geographic limits of Rethinking I-94 reflect the portions of the two cities most impacted by the freeway’s initial construction and the areas of most severe traffic, safety, and asset investment needs today.

Several major interchange areas are within the study area including I-94’s connections to I-35W, TH 280 and I-35E. I-94 is part of the National Highway System within Minnesota and is a major east-west facility that runs the entire width of Minnesota. It enters the state from North Dakota at the city of Moorhead and exits into Wisconsin between Lakeland, MN and Hudson, WI. The Rethinking I-94 corridor is by far the most urban and heavily used segment of I-94 in the state.

FIGURE 4-1 Rethinking I-94 study area





4.2 Physical characteristics

The study team inventoried the physical characteristics of I-94 to develop a more detailed understanding of the highway's condition that could also guide the development of future conceptual designs. **Figure 4-2** summarizes the key characteristics and additional details on the key elements follow below.

Cross section. The number of travel lanes on I-94 varies through the study area as the interstate merges and diverges with other interstates and major state routes. At its widest location, there are four travel lanes in each direction, although travel lanes are frequently dropped and added at the many exits and entrances within the study area. At its narrowest location, there are two lanes eastbound and three lanes westbound. A comprehensive look at how the travel lanes vary over the length of the study area can be found in **Appendix T1**.

Ramps and connections to/from interstate. The study area starts in the west at I-94's exit 229 and ends at exit 244 in the east. Eastbound I-94 has 23 on-ramps and 18 off-ramps, while westbound I-94 has 18 on-ramps and 22 off-ramps. There are eight left-side entrance ramps to I-94 and seven left-side exit ramps from I-94. Nine of these left-side ramps are on eastbound I-94 and six on westbound I-94. Of the 15 left-side ramps, five of them are a left-side merge or left-lane drop. These five present concerns in terms of driver expectation and safety. Left-side diverge and lane add conditions are less of a concern if the travel patterns support the design. These ramps will be evaluated in more detail in Phase 2.

Tunnels. The roadway is generally located one level below the city street level with local streets connected by bridges across the top. Larger bridges that form tunnels are used at four locations:

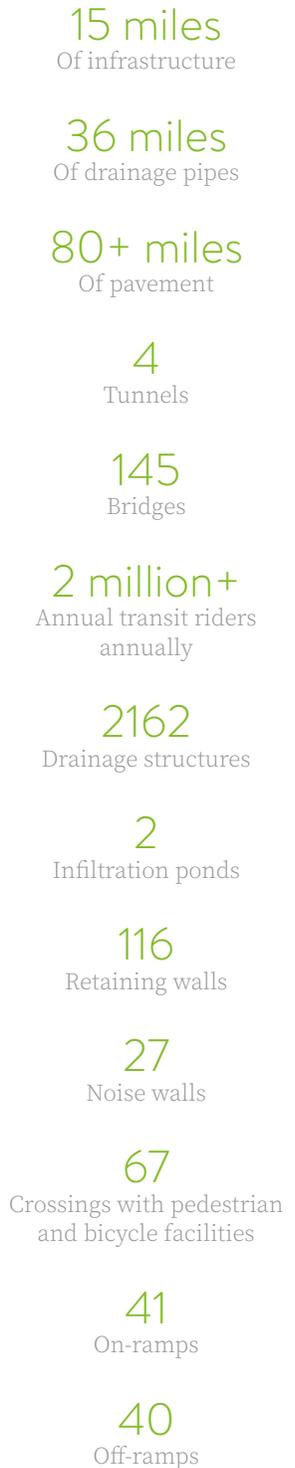
- Lowry Hill Tunnel (I-94 under Lyndale/Hennepin)
- Portland Tunnel (35W over I-94 EB)
- TH 55 Tunnel (I-94 WB on-ramp under TH 55)
- History Center Tunnel

The largest of these tunnels is the Lowry Hill Tunnel, which conveys I-94 through downtown Minneapolis and is approximately 1,492 feet long.

Bridges. There are 145 bridges in the study area including mainline ramps, pedestrian bridges, overpasses, interchanges, tunnels, railroad bridges, and one utility bridge that carries utilities across I-94. Out of the 145 bridges, 126 are vehicular bridges and the rest are railroad, pedestrian-only, or utility bridges.

Drainage facilities. The drainage system includes inlet structures, pipes of varying size and material, surface ponds, and outlet aprons (a drainage feature placed at the end of an outlet). The study area has 2,048 pipes totaling nearly 36 miles in length. Of the existing pipes, 96 percent are constructed of concrete and the remaining 4 percent are aluminum, steel, plastic, or other materials. There are 2,162 drainage structures consisting primarily of catch basins (91 percent), manholes (8 percent), and drop inlets and drop shafts (1 percent). In addition, there are 34

FIGURE 4-2





aprons and two infiltration ponds (for stormwater runoff storage) in the study area.

Retaining walls. There are 116 retaining walls within the study area, totaling roughly 460,000 square feet of exposed wall face.

Noise walls. There are 27 noise walls in the study area, ranging between 10 and 20 feet high, with a combined length of 32,000 feet. Most of the noise walls (21 of the 25) are located between TH 55 to TH 280 and I-35E to US 61.

Pedestrian and bicycle crossings. There are 67 bridges across the highway that include pedestrian and bicycle crossings in the form of sidewalks and shared use paths and bike lanes, etc. (Figure 4-3). While all the roadway crossings accommodate pedestrians and bicyclists, the quality of the facilities varies widely. In many locations, crossings are spaced about an eighth mile apart, but gaps of a half mile or more exist near TH 280 and at each end of the corridor. There is currently no bicycle facility that follows along I-94, although stakeholders (the general public and agency partners) have expressed interest in creating one.

Summary:
Physical characteristics

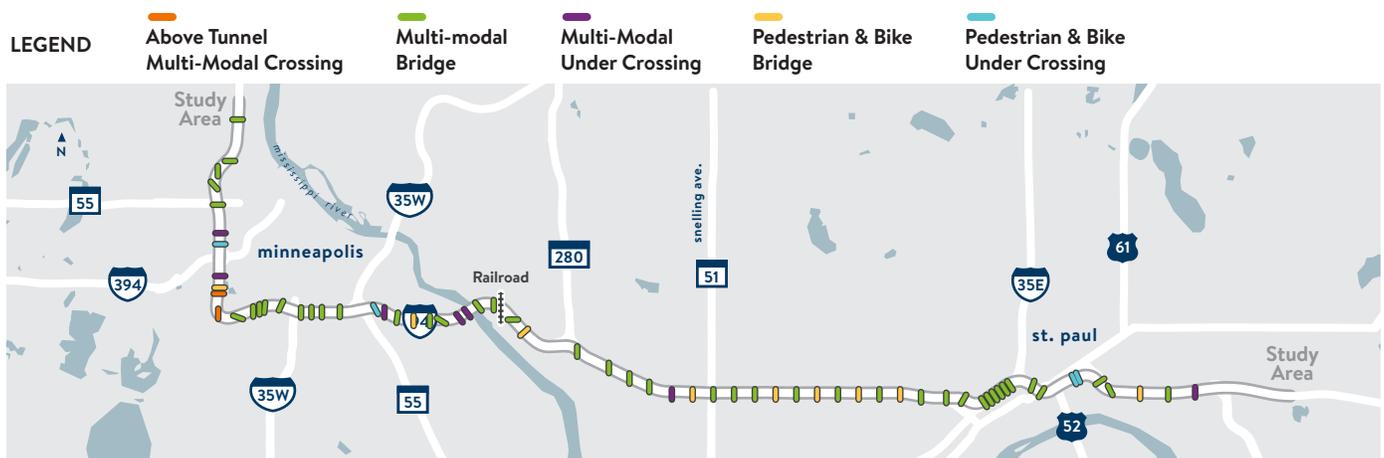
The study corridor typically varies from **three to four travel lanes** in each direction.

Of the 41 on-ramps and 40 off-ramps in the corridor, about **one in five** are on the left-hand side of the freeway, a potential cause of congestion and safety issues.

There are **four tunnels** in the Rethinking I-94 study area, including the Lowry Tunnel in Minneapolis, a significant capacity constraint.

67 freeway crossings accommodate pedestrians and bicycles, but their condition and spacing varies.

FIGURE 4-3 Crossings with pedestrian and bicycle facilities





4.3 Geometric attributes

4.3.1 GEOMETRIC ELEMENTS

The study team reviewed the geometric elements of the study area to assess their compliance with current MnDOT design standards (**Figure 4-4**). A summary of the findings is given below and the full summary can be found in **Appendix T2**.

Cross-section widths. The design standard lane and shoulder widths for this facility are 12 feet and 10 feet, respectively. Within the study area, lane widths generally meet standards; however, shoulder widths are much more variable and often do not meet standards with current shoulder widths ranging between 4.3 feet and 12 feet.

Horizontal alignment. The study area has several sharp curves with design speeds less than 50 miles per hour (MPH) — particularly within the downtown St. Paul commons (35E and I-94), near TH 280, over the Mississippi River, along I-35W commons, and by the Lowry Hill Tunnel. This means that even without the presence of heavy traffic volumes, motorists may slow down due to the sight distance limitations, which may cause congestion.

Vertical alignment. Flatter profile grades support more uniform traffic flows and steeper grades can impact operations since vehicles — especially trucks and other heavy equipment vehicles — will slow down when climbing a hill. A typical maximum grade for a freeway is 3 percent. Highway grades in the study area range between 0 percent and 4.4 percent, with approximately 24 percent of the corridor exceeding the typical maximum grade.

Interchange spacing. The minimum access spacing standard for the study area is 1 mile, in accordance with the MnDOT Road Design Manual and the AASHTO Green book for this classification of roadway. Currently the average spacing in the study area is 0.7 miles, with 16 out of 21 interchanges spaced at less than 1 mile.

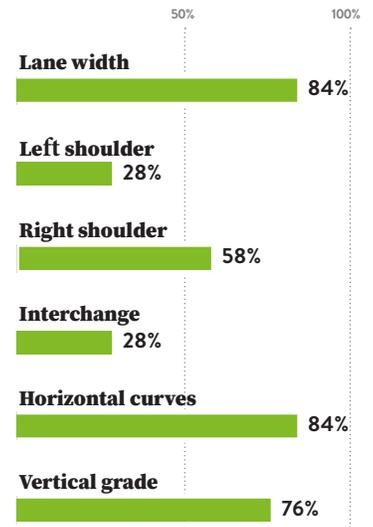
4.3.2 BRIDGE CLEARANCE

The study team collected and reviewed available data and documents specific to the I-94 overpass bridges (over I-94) to identify potential vertical constraints for future bridge or other freeway crossing projects such as lids. The collected data revealed that most of the bridge crossings — including pedestrian bridges — are at least half a foot less than the desired vertical clearance. Also, clearance for most bridges differs from one end to the other.

In addition, high groundwater elevations could be a constraint to future crossing projects in selected locations if the freeway were to be lowered. The depth of existing utilities would also have to be verified. The degree to which any of these factors present a constraint to future projects is not yet determined. A full inventory of the vertical constraints can be found in **Appendix T3**.

FIGURE 4-4

Percentage of geometric elements meeting minimum standards



Summary: Geometric attributes

Travel lane widths generally meet standards **but shoulders often don't**.

Most interchanges are **less than 1 mile apart**, which is the design standard for interchange spacing.

Clearance under most bridges is **less than** the 16.5 feet desired for over-height vehicles.



4.4 Asset condition

The condition of the roadway assets in the study area varies considerably. Given that this facility dates to the 1960s, many of the assets are aging and will need replacement in the coming years. MnDOT has established protocols for rating the condition of specific roadway elements. The ratings typically range from “poor” to “excellent”, although there are differences as to how each type of asset is rated. Assigned ratings determine which structures are in the greatest need for repair or replacement. Additional information on these assets can be found in [Appendix T1](#).

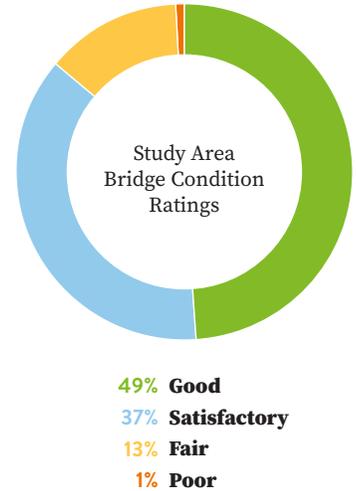
Pavement. The age of the pavement on I-94 in the study area ranges from 55 years old (constructed in 1963) to 29 years old (constructed in 1989). Between Nicollet Avenue and Snelling Avenue, I-94 was constructed as continuously-reinforced concrete pavement in the 1960s.

Although the pavement has been resurfaced numerous times, the original pavement sub-base remains. The study area is on a seven-year mill-and-overlay cycle. This means that typically in the first two to three years after improvement, the pavement is in good condition, but can then become a major maintenance issue until the next mill-and-overlay cycle.

Bridges. Bridge ratings range from “poor” to “good;” a rating of “fair” or lower denotes a structure is in need of future repairs. The urgency of repairs varies. Within the study area, 95 of the 145 bridges (86 percent) have a condition rating of “good” or “satisfactory” ([Figure 4-5](#)). Eight of the 19 “fair” bridges are programmed for replacement or removal. The one “poor” bridge (I-94 WB on-ramp over I-94 near TH 65) is scheduled for replacement in 2018/19.

Bridge sufficiency ratings provide a measure of the ability of a bridge to remain in service. It is based on factors including structural evaluation, functional obsolescence, and the bridge’s essentiality to the public. Sufficiency ratings range from 0 to 100, with 100 considered to be entirely sufficient. A low sufficiency rating may be due to structural defects, narrow lanes, low vertical clearance, or other issues.

FIGURE 4-5





The 126 vehicle bridges are only included in this summary; railroad bridges are not rated and pedestrian bridge ratings are presented below. Approximately 22 percent of the vehicle bridges have a rating between 50 and 80, rendering them eligible for rehabilitation funding (Figure 4-6). The remaining 78 percent have ratings above 80, indicating they have no current rehabilitation needs.

Pedestrian bridges. While most of the roadway bridges in the study area accommodate pedestrians, there are 12 non-vehicular bridges in the study area. The condition of the pedestrian bridges in the study area ranges from poor to good and more than half do not meet the Americans with Disabilities Act (ADA) standards and need to be brought into compliance (Table 4-4).

TABLE 4-4 Pedestrian bridge ratings and ADA compliance

Accessible Grade (not to standards) Stairs (not accessible)

TUNNEL NAME	YEAR BUILT	OVERALL RATING	ADA COMPLIANT
Lowry Hill Tunnel <i>I-94 under Lyndale/Hennepin</i>	1988	Good (4)	
Lyndale Footbridge <i>Over Lyndale Avenue</i>	2005	Good (4)	
22nd Ave. <i>Over I-94</i>	1962	Poor (2)	
Huron Blvd. <i>Over Huron Blvd. & I-94 ramps</i>	1965	Satisfactory (3)	
Seymour Ave. <i>Over I-94</i>	1967	Poor (2)	
Aldine St. <i>Over I-94 & ramps</i>	1966	Good (4)	
N. Griggs St. <i>Over I-94 & ramps</i>	2009	Good (4)	
N. Chatsworth St. <i>Over I-94 & ramps</i>	2010	Good (4)	
N. Grotto St. <i>Over I-94 & ramps</i>	2016	Good (4)	
Mackubin St. <i>Over I-94 & auxiliary lane</i>	2016	Good (4)	
Maple St. <i>Over Hudson Rd., I-94, & Pacific St.</i>	1973	Satisfactory (3)	
Hazelwood St. <i>Over I-94 & ramps</i>	1974	Satisfactory (3)	

FIGURE 4-6



78% More than 80
22% Between 50 and 80



Tunnels. All four of the tunnels in the study area are in satisfactory or good condition (Table 4-5) and are not expected to need rehabilitation or replacement in the foreseeable future.

TABLE 4-5 Condition of tunnels in the study area

TUNNEL NAME	YEAR BUILT	LENGTH	CONDITION
Lowry Hill Tunnel I-94 under Lyndale/Hennepin	1969	1,496 feet	Good
Portland Tunnel 35W over I-94EB	1967	390 feet	Good
TH 55 Tunnel I-94WB on-ramp under TH 55	1967	450 feet	Satisfactory
History Center Tunnel	1988	470 feet	Good

Retaining walls. In 2015, MnDOT inspected the 116 retaining walls within the study area, which total nearly 460,000 square feet of exposed wall face. The walls were given a structural rating between 4 and 9 based on condition (Table 4-6). Walls with ratings of 4 or 5 (12 percent of the wall area in this corridor) are likely to require replacement within the next 15 years.

TABLE 4-6 Retaining wall structure ratings

WALL STRUCTURAL RATING	WALL AREA
Excellent (9)	2,288 sq. ft.
Very Good (8)	13,118 sq. ft.
Good (7)	144,730 sq. ft.
Satisfactory (6)	242,545 sq. ft.
Fair (5)	52,701 sq. ft.
Poor (4)	3,240 sq. ft.
TOTAL	485,622 sq. ft.

Noise walls. Table 4-7 summarizes the condition of the noise walls in the corridor by location. All noise walls are in excellent, good, or fair condition as of 2018, and do not need replacement or repair in the next 20 years.

TABLE 4-7 Health index rating for study area noise walls

LOCATION	WALL LENGTH IN AREA	EXCELLENT	GOOD	FAIR	POOR	VERY POOR
Broadway to I-35	3,630 feet	0	2	1	0	0
I-35W to TH 55	0	0	0	0	0	0
TH 55 to TH 280	14,710	5	6	2	0	0
TH 280 to I-35E	3,591	0	3	0	0	0
I-35E to US 61	10,026	0	4	4	0	0
FULL CORRIDOR	31,957	5	15	7	0	0



Drainage. The drainage elements within the study area fall within a range of conditions as shown in **Figure 4-7**.

- **PIPES** Of the 2,048 pipes in the study area, 635 pipes (at a combined length of 8.6 miles by length) did not have a rating provided or had a rating of 0, which indicates that they were not able to be rated. Of the remaining 1,413 pipes (27.3 miles) that were rated, 90 percent of the pipes had a rating of 1 or 2, indicating they are in fair or excellent condition. Only 10 percent of the pipes were rated as poor or very poor.
- **DRAINAGE STRUCTURES** Out of the 2,162 drainage structures in the MnDOT database, 410 structures (19 percent) did not have a rating or were rated as 0, which indicates they could not be rated. Of the remaining 1,752 structures in the database, 1,467 (84 percent) were determined to be in fair or excellent condition. Approximately 220 (12.5 percent) were rated as poor and (65) 3.5 percent were rated as very poor.
- **APRONS** Out of the 24 aprons rated, 21 were rated to be in fair or excellent condition and three were rated as poor.
- **INFILTRATION PONDS** There are two infiltration ponds in the study area as identified in the MnDOT drainage database. Both have a fair condition rating.

Appendix T1 includes the complete asset conditions work completed for Rethinking I-94.

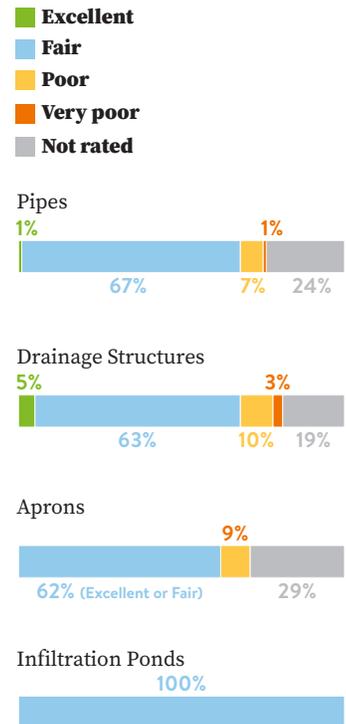
4.4.1 AIR QUALITY

All transportation-related air quality pollutants currently meet standards in the study area. Despite increasing numbers of trips and miles traveled, emissions continue to decline because of vehicle emission controls and vehicle fuel efficiency improvements. Transportation-related trends of air pollution emissions in Hennepin and Ramsey Counties are predicted to match national trends, showing a significant decrease in emissions over the next three decades. Impacts to air quality, as defined by the Federal Highway Administration (FHWA) and the Environmental Protection Agency (EPA), are not anticipated in the corridor because of any transportation project that may occur in the future.

More detailed discussion of air quality is provided in **Appendix T4**.

FIGURE 4-7

Percentage of drainage elements by rating in study area



Summary:

Asset conditions

I-94's infrastructure is aging and some components need to be **repaired or replaced**.

The primary freeway assets are **pavement, bridges and tunnels, retaining walls, noise walls, and drainage structures**.

Upgrades to aging infrastructure would be required as part of any mobility projects, adding to the cost.



4.5 Traffic volumes

The I-94 corridor linking Minneapolis and St. Paul is one of the most heavily used highways in Minnesota. Unlike almost any other highway in the Twin Cities, the operation of I-94 is critical to the operation of the regional traffic network. When I-94 is heavily congested, it has a substantial impact on other highways near the corridor and a wide swath of the local street network. This influences basic decisions about travel within the area, and impacts the vitality of the communities it serves with regards to jobs, employer locations, economic development, and where people want to live.

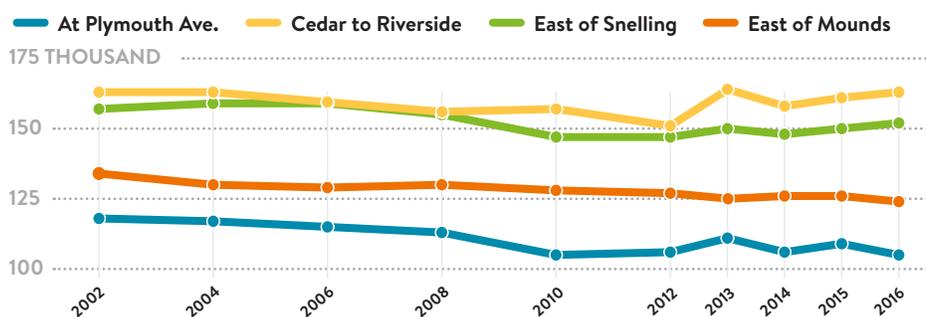
4.5.1 DAILY TRAFFIC VOLUMES

Weekday daily traffic volumes on I-94 between downtown Minneapolis and downtown St. Paul are between 150,000 and 170,000 vehicles per day (two-way volume) with approximately 8,000 freight. The largest volumes in the study area occur between Hennepin Avenue/Lyndale Avenue and I-35W S (approximately 222,000 vehicles per day) and in the commons section of I-35E (approximately 198,000 vehicles per day). The largest peak hour volumes also occur at these locations. The daily traffic volume in the Lowry Hill Tunnel is approximately 175,000 vehicles per day. Average annual daily traffic volumes in the corridor have been relatively stable over the last 15 years, likely indicating the freeway is at capacity for much of the day (Figure 4-8). The full traffic volume data summary can be found in Appendix T5.

Traffic volumes along the corridor are not always balanced (eastbound does not equal westbound) for several reasons:

- Inconsistent access in the westbound and eastbound directions because not all movements are provided
- Congestion develops along most of the corridor for at least one hour per day and in the I-94/I-35W commons, congestion exceeds seven hours per day
- Vehicles making a return trip will often use a different route depending on the expected levels of congestion

FIGURE 4-8 Historic average annual daily traffic on I-94





4.5.2 AM AND PM PEAK PERIOD

In general, the AM peak hour for the study area is between 7 and 8 a.m. and the peak period lasts from 6 to 9 a.m. The PM peak hour is between 4 and 5 p.m. and the peak period lasts from 3 to 6 p.m.

Figure 4-9 compares the percentage of peak period congested miles in the Twin Cities metro area and the study area over a 10-year period (2006 to 2015). Overall, the percentage of congested miles in the metro area has been steady, with an average of 21 percent. There was a minor dip in overall congestion from 2008 to 2009 that mirrors national recession trends; however, congestion has since risen to pre-recession levels. In contrast to the metro area, the percentage of congested miles along I-94 over the past 10 years is significantly greater and averages 79 percent in the eastbound direction and 67 percent in the westbound direction.

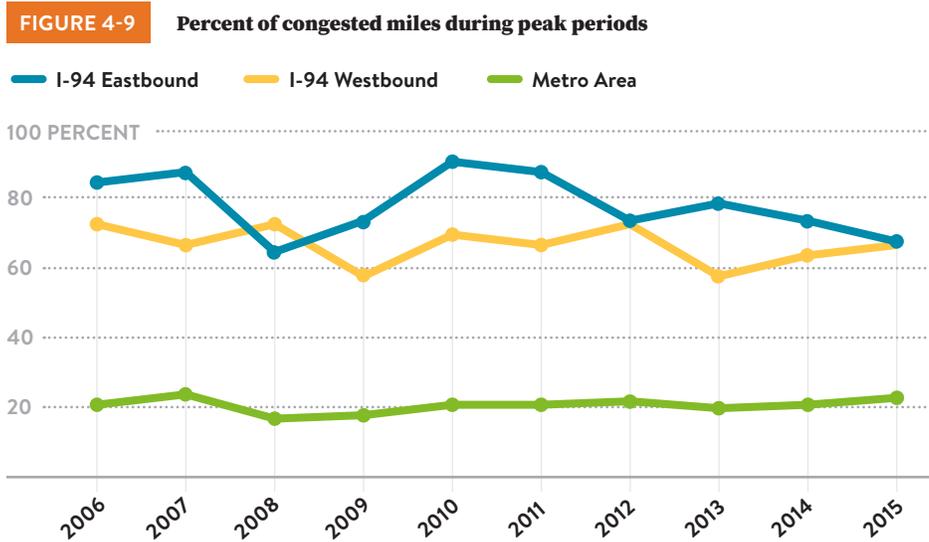
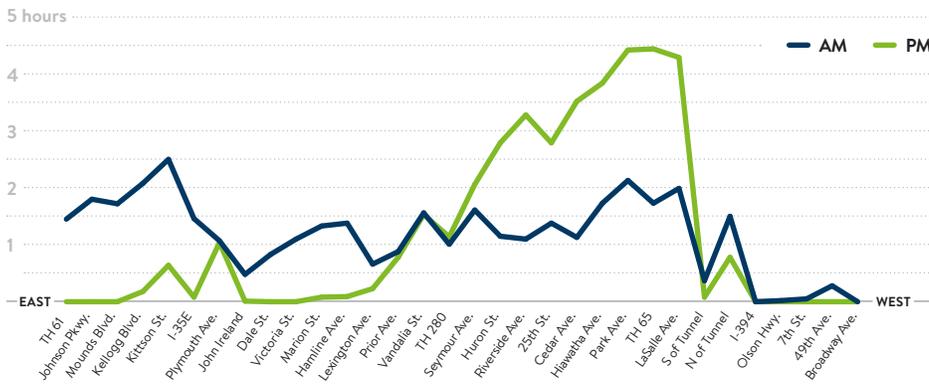




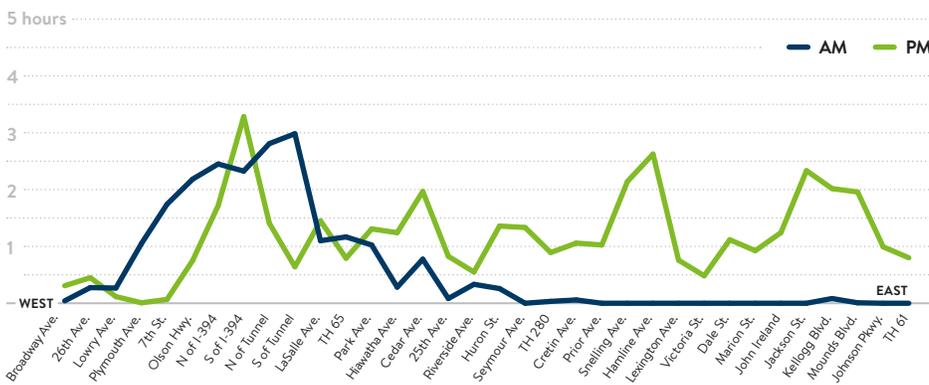
Figure 4-10 and Figure 4-11 show the hours of peak period congestion on I-94 in the westbound and eastbound directions, respectively. Because congestion spills outside of the typical three-hour peak period, this analysis assumes the AM period was 5 to 10 a.m. and the PM period was 2 to 7 p.m. These graphs were generated using available speed data for a 10-year period between 2006 and 2015, and congestion is assumed to occur when speeds were below 45 MPH. The primary location of congestion in both directions is upstream of the Lowry Tunnel, and it spills back as far as Snelling Avenue. The westbound PM peak period experiences more than twice the congestion of the AM peak period at this location.

FIGURE 4-10 Hours of congestion for westbound I-94



In the eastbound direction, the PM peak period experiences twice the congestion of the AM peak period. The Lowry tunnel is a source of congestion for both periods, but that is where the similarity ends. In the PM period, congestion also spikes around Snelling Avenue and in the downtown St. Paul area associated with the back-to-back I-35E system interchanges and U.S. Route 52 (Lafayette Freeway).

FIGURE 4-11 Hours of congestion for eastbound I-94





4.5.3 RAMP TRAFFIC VOLUMES

The study area has 41 entrance and exit ramps in the eastbound direction and 40 in the westbound direction. The highest volume ramps (in 2015) merging on to westbound I-94 come from 4th Avenue/I-35W South (32,400 weekday daily traffic) and the highest volume exit leaving westbound I-94 occurs at the I-394 exit (37,400 weekday daily traffic). The highest volume ramps merging on to eastbound I-94 come from I-394 (30,350 weekday daily traffic) and the highest volume exit leaving eastbound I-94 occurs at the I-35E northbound exit (36,000 weekday daily traffic). A full inventory of each ramp's daily and peak hour volumes can be found in [Appendix T5](#).

What about automated vehicles?

The study team evaluated the potential future effect of automated vehicles (AVs) on I-94 in broad terms. AVs are expected to be widely adopted in the next 15 to 20 years. Widespread use of AVs will allow for narrower lanes and permit higher vehicle densities. Also, the vehicles will be able to maintain higher speeds and avoid breakdown conditions under higher volumes since they are fully automated and can operate at higher densities.

To simulate a condition with AVs, the modeled capacity on the freeways and arterials was increased by 50 percent and 10 percent, respectively, to account for the efficiencies of AVs. Also, parking costs were removed from the model. Because the widespread use of AVs is assumed to allow segments of the population that otherwise have been unable to use vehicles alone to make use of transportation, multiple auto availability levels were tested. Two basic auto ownership scenarios were tested. The “owned” scenario assumes individuals continue to own vehicles as they do today. The “shared” scenario assumes individual ownership of vehicles is greatly reduced as more people rely on a form of shared vehicle use. While actual conditions would likely fall in between these two points, these two scenarios allowed the team to consider two extremes.

The study concluded that AVs would likely impact key transportation metrics like Vehicle Miles Traveled (VMT), Vehicle Hours Traveled (VHT), and congested VMT as compared to a condition without AVs. Modeling of potential AV scenarios showed increased congestion, VMT, and VHT due in large part to travel by driverless vehicles (assuming that no new constraints were placed on AV trip-making). The specific magnitudes of the results vary depending on the assumptions used, but the general trend indicated an increased burden on the transportation system regardless of the specific AV scenario and without introduction of policies or pricing to manage demand. The full analysis can be found in [Appendix T6](#).

Summary:

Traffic volumes

This segment of I-94 is **one of the most heavily used highways in Minnesota**, carrying between 150,000 and 170,000 vehicles per day.

Congestion on I-94 is **considerably higher** than in the metro area generally.

Some areas of the corridor experience **more than four hours of congestion** in the PM peak period.

Traffic in the corridor has not grown much **over the last 15 years**, likely indicating the freeway is at capacity and drivers are choosing other routes or modes.



FIGURE 4-12 Study area segments used in reliability analysis



4.6 Travel time reliability

The study team performed a reliability analysis using 2015 data to examine the causes of congestion due to weather, crashes, and other non-recurring conditions. The analysis divided the study area into seven segments (Figure 4-12) and detailed more in Appendix T7.

Delay in the corridor is caused by both normal conditions (predictably recur daily) and non-recurring conditions such as crashes, weather, incidents, roadwork, and a combination of these. Most delay in the study area is recurring, accounting for between 57 and 87 percent of the annual hours of delay depending on the segment (Table 4-8). Weather and crashes make up a larger percentage of the annual delay in segments that do not experience as much recurring congestion, such as Segment 7. The full reliability analysis can be found in Appendix T7.

Summary:

Travel time reliability

Most congestion in the study area is recurring, with considerable delay seen regularly around the Lowry Tunnel.

Crashes, weather, and roadwork are also important contributors to congestion.

Crash conditions cause considerable delay to I-94 travelers and should be addressed as part of future freeway improvements.



TABLE 4-8 Percentage of annual hours of delay by condition for all segments

SEGMENTS	1	2	3	4	5	6	7
Normal	WB 62%	WB 80%	WB 76%	WB 70%	WB 79%	WB 78%	WB 79%
	EB 87%	EB 80%	EB 72%	EB 72%	EB 83%	EB 78%	EB 57%
Crash	WB 3%	WB 10%	WB 13%	WB 12%	WB 8%	WB 5%	WB 7%
	EB 5%	EB 10%	EB 18%	EB 8%	EB 7%	EB 9%	EB 11%
Weather	WB 16%	WB 6%	WB 7%	WB 8%	WB 7%	WB 7%	WB 11%
	EB 7%	EB 7%	EB 8%	EB 7%	EB 8%	EB 10%	EB 25%
Incident	WB 19%	WB 1%	WB 3%	WB 1%	WB 1%	WB 0%	WB 0%
	EB 1%	EB 2%	EB 2%	EB 1%	EB 1%	EB 0%	EB 0%
Roadwork	WB 0%	WB 1%	WB 0%	WB 5%	WB 5%	WB 7%	WB 3%
	EB 0%	EB 0%	EB 0%	EB 9%	EB 0%	EB 1%	EB 0%
Overlap	WB 0%	WB 2%	WB 1%	WB 4%	WB 1%	WB 2%	WB 0%
	EB 1%	EB 1%	EB 0%	EB 3%	EB 1%	EB 2%	EB 7%
Hours of annual delay	WB 3,700	WB 333,900	WB 290,500	WB 53,700	WB 48,600	WB 81,800	WB 71,700
	EB 167,800	EB 210,500	EB 78,700	EB 122,900	EB 156,600	EB 41,400	EB 2,800



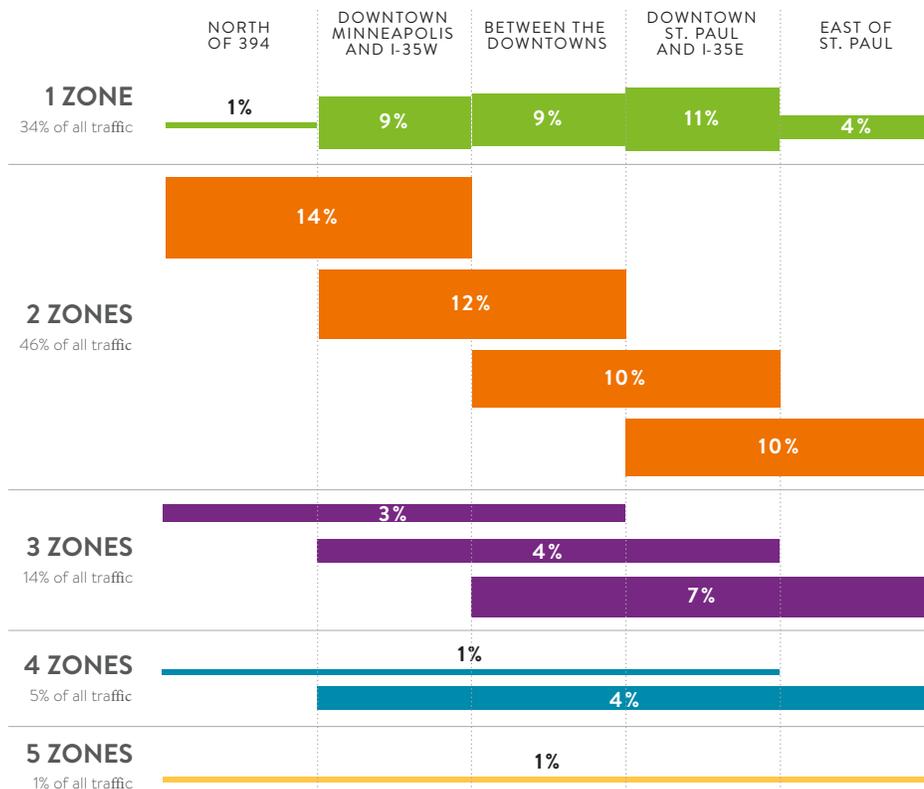
4.7 Travel patterns

The traveling public's use of I-94 in the study area is complicated and there is no single statistic that fully represents the travel patterns along the corridor. In general, people living and working near I-94 use the interstate. Approximately 40 to 50 percent of the vehicle trips generated by the neighborhoods along I-94 between downtown Minneapolis and downtown St. Paul use I-94.

There is substantial travel and congestion in the study area that reduces the corridor's ability to serve regional travel. As an example, approximately 95 percent of all regional trips that travel on I-94 in Brooklyn Center and I-94 in Woodbury use I-694 to bypass the central portion of I-94. Less than one percent of all trips that use the I-94 corridor through the study area traverse the entire length of the corridor.

The study team aggregated the travel data from the study area into five zones to better understand the general travel patterns along the corridor. **Figure 4-13** identifies average daily traffic patterns for both eastbound and westbound travel on I-94. Approximately 80 percent of all trips either occur within a single zone or travel to the adjacent zone. The full origin destination data summary can be found in **Appendix T8**.

FIGURE 4-13 I-94 trips by zone, averaged for both directions



Summary: Travel patterns

About **half of the trips** in the Rethinking I-94 study area originate in the neighborhoods along the corridor.

These **shorter trips create congestion** on this corridor as large numbers of drivers merge on and off the highway in a concentrated area.

Less than one percent of trips are “through” trips that begin and end west of downtown Minneapolis and east of downtown St. Paul.



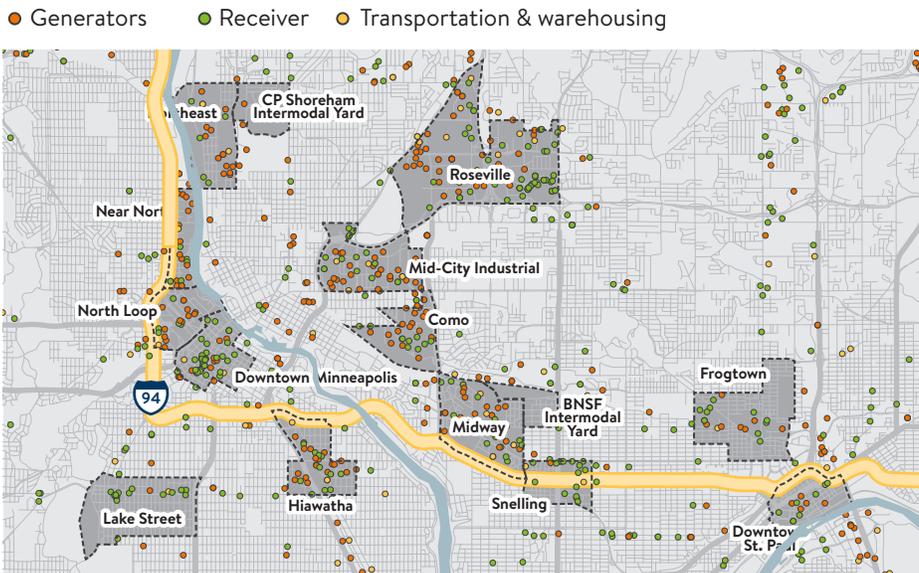
4.8 Freight

The locations of freight-related businesses along the study area were used to identify freight districts based on a combination of the business clusters and their proximity and relation to key roadway infrastructure. In total, 15 freight districts were identified, as shown in **Figure 4-15**.

The study team reviewed the freight trip travel patterns into and out of each district to identify the key routes used. Freight trips in all the freight districts use I-94 to some extent, but some rely on I-94 more heavily than others. The districts with the highest usage of I-94 are the Hiawatha, Midway, Snelling, and Downtown St. Paul districts. The Downtown Minneapolis, Como, and Mid-City Industrial Freight districts also rely on I-94, but a greater proportion of the truck trips to and from these districts use I-35W and other roads. The district with the least reliance on I-94 is the Northeast Freight District. Truck trips from this district primarily use local roads to access I-694.

Most of the freight districts have truck trip arrivals and departures peaking between the hours of 10:00 a.m. and 1:00 p.m. However, some of the freight districts — particularly those with higher concentrations of retail activity — trend towards two separate peaks of freight trip arrivals between the hours of 6:00 a.m. and 10:00 a.m., and a peak of freight trip departures between the hours of 2:00 p.m. and 4:00 p.m. One notable exception to these generalizations is the Frogtown Freight District which shows a clear bimodal distribution, but with a peak of freight departures in the morning and a peak of freight arrivals in the afternoon.

FIGURE 4-14 Freight districts





On average, 21 percent of all freight trips start or end at a point outside of the metro area (inter-regional), but this varies substantially from district to district. The districts with the highest proportion of inter-regional trips include Como (42 percent), Frogtown (42 percent), Roseville (35 percent), and Northeast (33 percent). The proportion of inter-regional trips at the remaining districts ranges from six percent at Lake Street to 24 percent at Midway.

Also of note are districts with a relatively high proportion of inter-district trips (within the same district). In the Downtown Minneapolis district, 10 percent of all freight trips start and end within the district. Reviewing only the freight trips that originate downtown reveals that nearly one in five freight trips that begins in the Downtown Minneapolis district also terminates in that district. Other districts with a higher proportion of inter-district trips include Downtown St. Paul (eight percent) and Midway (six percent).

There is a strong correlation between the proportion of inter-regional trips and the proportion of heavy trucks. This result is expected since it is generally most cost-effective to use heavier vehicles for long-haul trips. The Como District has the highest proportion of heavy truck trips at 83 percent. Districts with high concentrations of retail activity such as the two downtown districts and the Lake Street District show a low proportion of heavy trucks. One notable exception to this finding is the Frogtown District, which has a heavy truck proportion of 19 percent.

The study team also did a systems-level analysis of the air and noise impact from freight on environmental justice (EJ) populations, which include low-income and minority populations. Specifically, the team was looking to see if EJ populations are affected to a greater or lesser extent than non-EJ populations. Their analysis found that minority and low-income populations have higher exposure to freight from trips through and near the I-94 corridor than from the local legs of those trips on adjacent roadways. Minority populations experience six percent greater freight activity than non-minority populations and low-income populations experience 20 percent greater activity than non-low-income groups. Additional work is needed to better understand the negative impacts, like noise and air quality, from truck trips on I-94 and reduce them. The complete urban freight study can be found in

[Appendix T9](#).

Summary: Freight

Of the **15 freight districts** identified in the study, those that use I-94 the most are Hiawatha, Midway, Snelling, and Downtown St. Paul.

While most of the freight districts have arrival and departure times that **peak between 10 a.m. and 1 p.m.**, some have arrivals in the early morning and departures in the late afternoon.

Low-income and minority populations are potentially more impacted by the movement of freight through and near I-94. Future work to identify strategies to reduce these potential impacts may be warranted.



4.9 Safety

The project team looked at crash data for a five-year period (2011 to 2015) using MnDOT's 2015 Crash Toolkit, which divides the study area into eight discrete segments and covers an area slightly larger than the study area (19.4 miles versus about 15 miles). The eight segments examined on I-94 were:

- Approximately 1 mile south of I-694 to TH 55
- TH 55 to I-394
- I-394 to Hennepin/Ramsey County line
- Hennepin/Ramsey County line to eastern end of TH 280 interchange
- TH 280 to Marion Street
- Marion Street to I-35E
- I-35E to Mound Boulevard
- Mound Boulevard to TH 61

In the analysis, crashes were further divided into mainline crashes and interchange crashes.

Mainline crashes. Six of the eight segments experience crash rates higher than the metro average and all eight segments experience crash rates higher than the statewide average for all freeway classifications. The average crash rate for the study corridor is approximately twice the metro and statewide averages for freeway facilities. Five of the eight segments rank in the top 10 in the state, with the segment between the Hennepin/Ramsey County line and TH 280 ranking number one statewide.

All eight segments are in the top 25 segments in Minnesota based on crash cost, with five segments in the top 10 in the state. The total crash cost for the 19.4-mile segment of I-94 is \$23,646,000 for the five-year window (2011 to 2015). The total number of crashes reported along the I-94 segments, excluding the interchanges in the study area, was 6,889 over the five years (2011 to 2015) in the 19.4-mile corridor. The costs associated with I-94 crashes occurring between the Hennepin/Ramsey County line to the eastern end of the TH 280 Interchange was \$6,108,000 over the five years, which was highest in the state.

Interchanges crashes. Thirteen of the 25 interchanges in the study area rank in the top 25 crash cost interchanges in the state. Seven of the interchanges have crash costs ranking in the top ten in the state. Crash costs associated with the I-94 crashes occurring at the I-35W/TH 65 interchange was \$8,851,000 over the five years, which is the highest crash cost in the state. Twenty-six percent of fatal crashes reported at interstate interchanges in the metro area occur within the study area, even though the study area only accounts for 12 percent of interchanges. The full crash data summary including documentation of crash severity can be found in [Appendix T10](#).

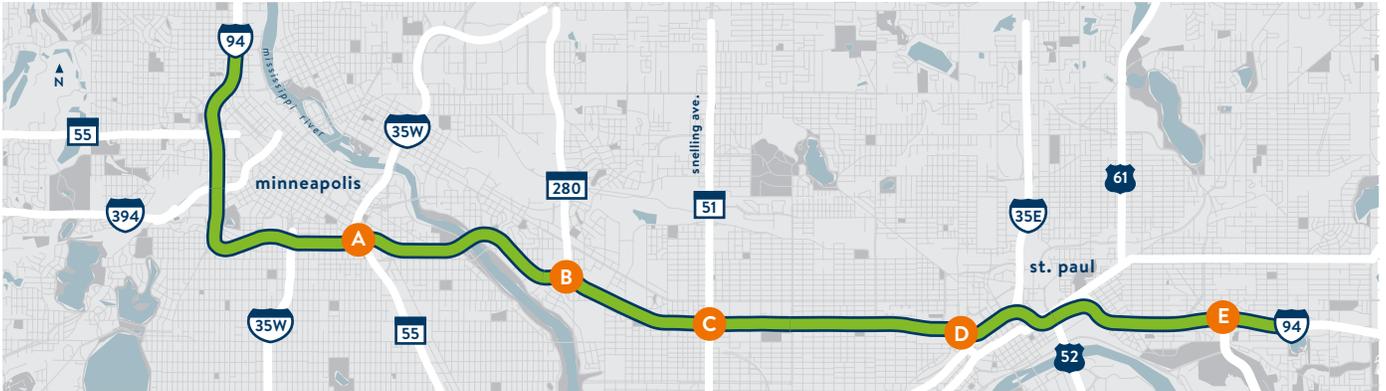
Summary: Safety

The average crash rate for the Rethinking I-94 corridor is about **twice the metro and statewide averages** for freeway facilities.

The segment near the TH 280 interchange is the **highest crash segment in the state**.

Of the 25 interchanges in Minnesota with the highest crash costs, **13 are in the Rethinking I-94 corridor**.

26 percent of fatal crashes at metro area interchanges occur in the corridor, even though the corridor accounts for only 12 percent of the metro area interchanges.

**FIGURE 4-15 Potential freeway connections**

4.10 Potential freeway connections

Several interchanges within the study area do not provide full access or other connections that users consider desirable. During the study, agency stakeholders and the public specifically questioned five of these potential connections:

- A** WB I-94 to NB I-35W & SB I-35W to EB I-94
- B** SB TH 280 to Cretin Avenue
- C** Ayd Mill Road extension to I-94
- D** EB I-94 to SB I-35E & NB I-35E to WB I-94
- E** EB I-94 to Etna Street and Etna Street to WB I-94

The study team performed a traffic analysis on these five connections ([Figure 4-16](#)) to see how the traffic system would change if these additional connections were constructed and to identify at a high level whether constructing the connection might be feasible. The results on that analysis are summarized below and detailed more fully in [Appendix T11](#).

A WB I-94 to NB I-35W & SB I-35W to EB I-94

Modeling shows these connections would not be well used, with both carrying approximately 4,000 trips per day (two-way volume). These ramps would carry fewer vehicles than any of the existing ramps along the corridor. For comparison purposes, the lowest ramp volume today within the study area is 3,000 trips per day (one-way volume).

The daily traffic volume on the Mississippi River Bridge would increase by 2,000 trips per day (most of this traffic has a local origin and/or destination).



These potential connections would be challenging to construct and could result in modification of existing access.

B SB TH 280 to Cretin Avenue

Assuming the connection is reasonable to maneuver, the daily traffic volume on the existing off ramp to Cretin Avenue would increase by 3,000 trips per day. Traffic volumes would decrease on University Avenue (approximately 2,000 fewer vehicles just east of TH 280). Approximately 2,000 additional vehicles per day would be expected on Cretin Avenue between I-94 and Marshall Avenue, with minimal change south of Marshall Avenue.

Currently, the westbound on-ramp to I-94 is 3,000 vehicles per day more than the eastbound off ramp (this ramp allows for traffic to access TH 280)

C Ayd Mill Road extension to I-94

Ayd Mill Road currently serves about 24,500 daily trips near I-35E and about 11,500 west of Hamline Avenue. The daily traffic volume on the new segment of Ayd Mill Road between I-94 and Selby Avenue would be approximately 10,000 trips per day and most of this traffic would come from the existing roadways of Snelling Avenue, Pascal Street, Hamline Avenue, and Lexington Parkway.

Minimal changes to regional traffic would be expected, and most of the changes in traffic volumes would occur on the local roadway network. This assumes the connection would tie into the one-way frontage roads at I-94 (no new ramps to/from I-94).

D EB I-94 to SB I-35E & NB I-35E to WB I-94

Modeling shows these connections would not be well used, with both connections carrying approximately 2,000 trips per day (two-way volume) and mainly serve trips that have an origin and/or destination along Dale Street north of I-94.

A slight reduction in daily traffic volumes would be expected on Kellogg Boulevard, Marion Street, Dale Street south of I-94, and Lexington Parkway south of I-94.

These potential connections would be challenging to construct, which may result in modification of existing access.



E EB I-94 to Etna Street and SB Etna Street to WB I-94

Modeling shows these would not be well used, with both connections carrying approximately 3,000 trips per day (two-way volume). This would mainly reduce volumes by 1,000 vehicles per day at Mounds Boulevard, White Bear Avenue and TH 61 where vehicles are currently making a U-turn at Burns Avenue.

These potential ramps were also evaluated as part of the Gateway Corridor transit project and were not recommended because they were not needed as part of that project.

4.11 Conclusions

The Rethinking I-94 study area is a vital transportation corridor that serves a large number of travelers and provides for the movement of goods in the metropolitan region. It is also an aging facility that requires asset upgrades and safety improvements.

One segment of the study area has the highest crash rate in the state, and five segments rank in the top ten in the metro area and statewide.

Existing recurring congestion can last more than four hours per day in certain portions of the study area. Reliability in some corridor segments is low.

As Rethinking I-94 moves into the next phase, additional traffic modeling will be needed to also look at projected conditions for the study area in 2040 or beyond. This information will support the design of potential solutions to meet both current and future transportation needs.

Summary: Potential freeway connections

The potential additional connections studied **did not suggest** any connections that would provide enough traffic benefit to be clearly warranted.

Constructing most of the connections would have **substantial physical impacts and/or constructibility issues.**



Section 5

Concepts
for further
consideration



During this phase of Rethinking I-94, the team developed a range of preliminary concepts to potentially address the existing transportation issues in the corridor. Because this initial phase of work was conducted at a high level and prior to the formal environmental process, this analysis does not conclude with a formal evaluation or recommendations of options. Instead, the identified concepts are considered preliminary inputs for subsequent use.

The effort also did not attempt to identify or address the full universe of alternatives, such as would be required in a National Environmental Policy Act (NEPA) document, but rather focused on select concepts that were of immediate interest to stakeholders and the community.

The concepts considered are grouped into two categories:

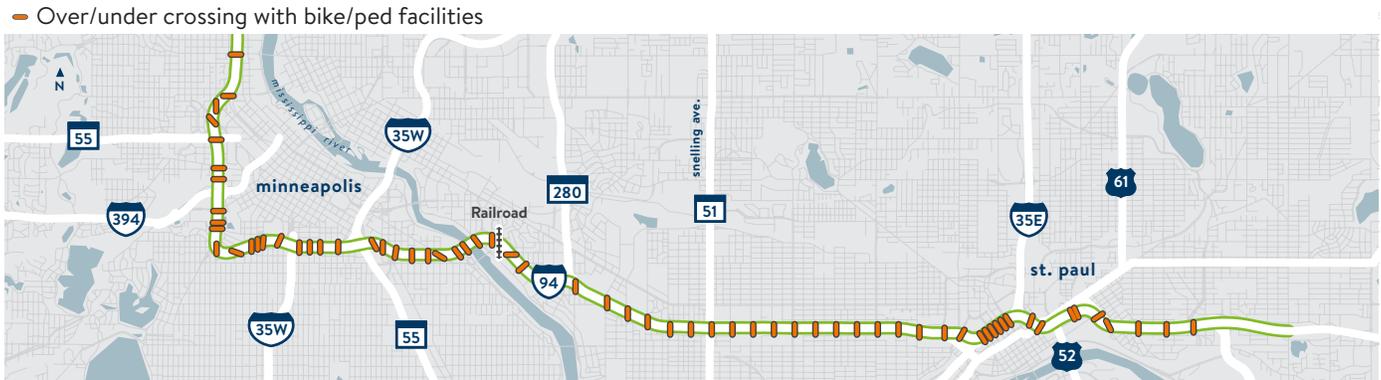
- Non-motorized crossings and parallel pedestrian and bicycle facility opportunities
- Freeway and interchange concepts

5.1 Non-motorized opportunities

Improvements to the non-motorized crossings of I-94 and the opportunity for parallel pedestrian and bicycle facilities both enhance multimodal transportation options across and parallel to I-94. In this way, both types of improvements seek to restore the multimodal network that existed prior to the construction of the freeway through established urban neighborhoods with pedestrian and bicycle scale street grids. During the engagement process, interest in, or concerns about, freeway crossings and multimodal connectivity were common themes, which motivated a more in-depth review of these issues.

5.1.1 NON-MOTORIZED CROSSINGS

The engagement process brought to light the degree of stakeholder interest in crossings. The original construction of I-94 severed a regularly spaced grid of pedestrian scale streets through many residential neighborhoods and replaced it with a much less-frequent spacing of streets that cross the freeway and often carry considerable volumes of motor vehicle traffic. As a result, walking and bicycling trips became longer and required crossing the freeway on facilities that were often less comfortable for the users. The purpose of the non-motorized crossings

**FIGURE 5-1 Existing pedestrian, bicycle, and multimodal crossings of I-94**

analysis is to review and document the existing pedestrian and bicycle crossings along with the Met Council bike and pedestrian plans in the Rethinking I-94 study area and identify a framework to guide future crossing improvement investments. The framework emphasizes serving the needs of those who are mostly likely to rely on pedestrian and bicycle travel (including access to transit) to meet their basic transportation needs as well as enhancing the quality of life for those who may not depend on these modes for basic transportation. The non-motorized crossings analysis is provided in [Appendix T12](#).

The analysis of non-motorized crossings included the following tasks, each of which is summarized below:

- Crossings inventory
- Spacing analysis
- User need indicators
- Crossing improvement factors

Crossings inventory. The study team created an inventory of the 67 street, trail, or rail crossings over or under I-94 between West Broadway Avenue in Minneapolis and Highway 61 in St. Paul. The crossings are spread over an approximately 15-mile distance with multiple owners and widely varying characteristics. The purpose of developing a crossings inventory was to bring all relevant information about the crossings into a single location for use by MnDOT staff as well as agency partners and community members. [Figure 5-1](#) shows all crossing locations.

Spacing analysis. Beyond conducting an inventory of existing crossings, the study team explored the question of whether the locations of the existing crossings are best suited to the needs of those who would use them.

To consider spacing, the study team produced a series of three maps that visually identify gaps between crossings of a half mile, a quarter mile, or an eighth mile. The half-mile spacing analysis shows only one location in the corridor where the distance between crossings is greater than a half mile (near TH 280). The quarter-mile analysis shows three areas where spacing is greater than a quarter mile: north of Dunwoody Boulevard in Minneapolis, near TH 280, and east of downtown St. Paul. The eighth-mile spacing analysis shows that for most of the corridor, crossing spacing is greater than an eighth mile (See [Appendix T12](#)).



A fourth map in the spacing analysis highlights the existing street grid (including existing street crossings of I-94) to indicate locations where a pedestrian scale street grid may be intact but where there are relatively few crossings.

User needs indicators. The next layer of analysis used socioeconomic data as a potential indicator of populations that are more reliant on walking, transit, and bicycling for their basic transportation needs. The following factors were mapped:

- Poverty (as defined by the U.S. Census Bureau)
- Racial minority
- People of color experiencing concentrated poverty
- Low wage worker household density
- Transit dependent populations (zero-car households)

Review of these maps suggests there are geographic areas with populations where more than one of the factors is indicated. Linking these areas to a combined walkshed and crossings map could be used to identify locations where investments in crossings would be more likely to benefit populations that are more dependent on walking, bicycling, and transit to meet their basic transportation needs.

Crossing improvement factors. Although this initial phase of Rethinking I-94 does not identify new crossings or improvements to existing crossings, the study team and stakeholder committees prepared two sets of factors that could be used to prioritize future investments. While these principles include input from the TAC and the Planning and Land Use Working Group, they are considered preliminary until a more thorough input process is conducted and further public input on this specific topic is gathered.

Draft factors suggesting a crossing need

- Distance to next crossing
- Proximity to destinations (consider schools, parks, places of worship, grocery, and other stores, etc.)
- Proximity to residential concentrations (equity considerations: seniors, children, high-poverty, minority (see “user needs indicators” above))
- Pedestrian trip generators
- User safety and comfort
- Others to be identified

Draft factors suggesting crossing location priority

- Addresses user comfort/safety/convenience
- Is part of an existing or planned walk/bike networks
- Serves a large number of people
- Connects to/provides access to mass transit
- Serves transit-dependent households
- Connects to schools and libraries
- Is identified as a priority in a city plan
- Others to be determined

**FIGURE 5-2** Potential I-94 parallel pedestrian/bicycle facility corridor

Non-motorized crossing conclusions and next steps. The crossings analysis is an example of the adaptive approach taken in the Rethinking I-94 in that additional analysis was undertaken on this issue as the engagement process brought to light the degree of stakeholder interest in crossings.

This first phase of crossings analysis developed an inventory of existing crossings that will be a useful resource to MnDOT and stakeholders as individual projects and needs are identified over time.

The crossing-needs analysis suggests factors that could be considered to guide investments over time, but will be refined with further public input during the NEPA process. It also suggests additional steps that could be taken to understand in greater detail and specificity whether users in certain geographic locations have different needs for crossing improvements and can help serve to form specific areas for future public input.

5.1.2 PARALLEL PEDESTRIAN AND BICYCLE FACILITY OPPORTUNITIES

The parallel bikeway opportunities analysis is provided in [Appendix T13](#). While the concept of improved pedestrian and bicycle facilities parallel to the freeway was not assumed at the beginning of Rethinking I-94, this idea was suggested by stakeholder agencies in response to general discussions about the future of I-94. Consistent with the adaptive approach to Rethinking I-94, the study team incorporated this consideration into their work.

The parallel pedestrian and bicycle facility concept envisions a range of possible parallel facility types running parallel to I-94 within or adjacent to the I-94 right-of-way ([Figure 5-2](#)). A protected bicycle facility type is envisioned as one that would provide a high level of user safety and comfort and support use by a wide range of cyclist types and ages. While there are extensive existing and planned pedestrian and bicycle facilities throughout the Rethinking I-94 corridor area, a facility that would generally follow I-94 had not been previously included in these existing or planned systems.



The analysis conducted for the potential parallel facility concept was preliminary and did not include a full stakeholder or technical process. The effort was instead intended to provide a vision of what such a facility or facilities could be, and to create a framework for future study and public input by local and regional partners.

If implemented, the parallel pedestrian/bicycle facility could take several forms ranging from improved sidewalks, to a protected bikeway adjacent to the frontage road, to a multiuse trail facility within MnDOT right-of-way, to a combination of these, or other design types. Two existing facilities that could provide inspiration for the idea are shown in **Figure 5-3** and **Figure 5-4**.

Potential route opportunity areas. The bikeway analysis included preliminary consideration of potential route options based on current understanding of potential constraints and opportunities (**Table 5-1**). Consistent with the conceptual nature of this study, the opportunity areas are intended to inform and inspire future study rather than dictate a specific solution.

Parallel bikeway next steps. Important issues to consider as part of further exploration and development of bikeway parallel pedestrian/bicycle facility in the I-94 corridor include:

- For pedestrian facilities, conduct inventory of existing pedestrian facilities parallel to I-94, including width and condition information, ADA compliance, etc.
- Conduct safety and crash history reviews to identify locations potentially requiring more immediate attention
- Move forward with a shared commitment between MnDOT and key stakeholders to develop a long-term protected bikeway and enhanced pedestrian facilities parallel to the I-94 corridor

TABLE 5-1 Potential parallel bike route options

SEGMENT <i>(West to East)</i>	POTENTIAL FACILITY OPTIONS
Hiawatha Avenue Trail to 20th Avenue	Explore opportunity to locate facility within I-94 right-of-way to the Hiawatha Avenue Trail or use existing facilities
20th Avenue to East River Road	New facility as part of future I-94 river bridge reconstruction combined with future protected/unprotected facility to the west
Huron Boulevard Interchange	Route options not specified at this time; assumed to be addressed if future interchange work presents opportunity
CP Railway Right-of-Way	New off-road facility in railroad corridor (requires future property acquisition)
Railroad to Prior Avenue	Route options not specified at this time; potential options to be explored if railroad right-of-way to west becomes an option
Prior Avenue to Downtown St. Paul	New parallel facility within or adjacent to I-94 public right-of-way (see detailed discussion on the following pages)

FIGURE 5-3

Protected bicycle lane with adjacent pedestrian facility at University of Minnesota campus

Credit: Community Design Group



FIGURE 5-4

Bike facility adjacent to Highway 56 in San Diego, California

Credit: Spinlister.com





- Conduct additional public outreach to ensure any potential solutions meet the needs of the residents and users along the corridor
- Agree and acknowledge that the successful development and implementation of any protected bikeway and enhanced pedestrian facility will be a cooperative effort of MnDOT, the Metropolitan Council, local governments, and community stakeholders
- Develop a protected bikeway/pedestrian facility as part of future programmed rehabilitation and enhancement projects along the I-94 corridor
- Develop intersection concepts that offer similar levels of user protection and comfort at intersections, both those with freeway entrances and exits (such as Lexington and Snelling) and those without (such as Victoria, Western, and Pascal)
- Develop intersection concepts to mitigate potential conflicts from neighborhood motor vehicle traffic accessing the frontage roads and crossing the bikeway facility

5.2 Freeway concepts

Although the first phase of Rethinking I-94 did not result in the formal evaluation of freeway improvement alternatives, significant effort was taken to develop potential concepts for future consideration. Two general types of concepts were developed: spot mobility improvement concepts and managed lane concepts. While these are assumed to be among the full range of concepts that would be considered in a NEPA process, they should not be considered comprehensive.

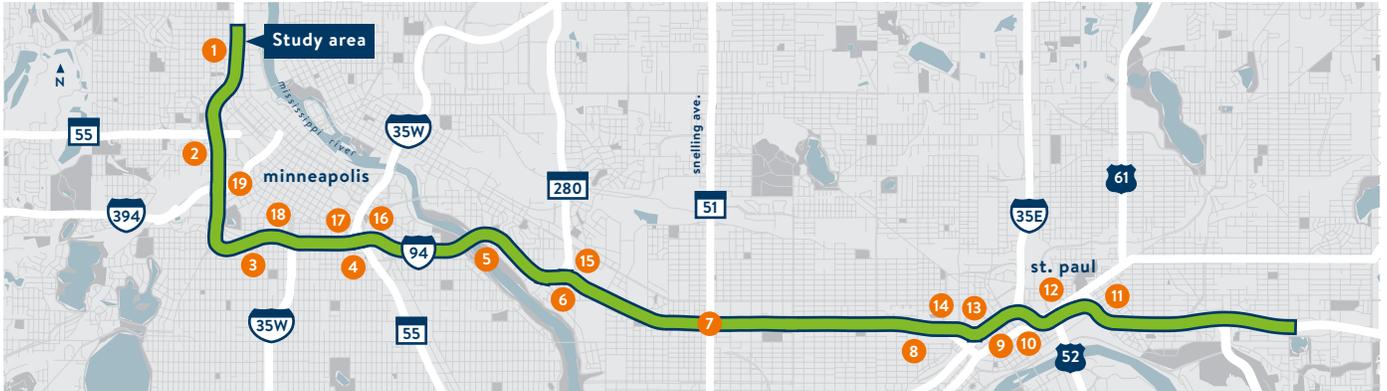
5.2.1 SPOT MOBILITY IMPROVEMENT CONCEPTS

MnDOT defines spot mobility improvement concepts as potential solutions that can address a mobility and/or safety issue in a specific location, typically with a smaller project that delivers benefits at a reasonable cost. Typical spot mobility projects are lane adjustments to remove or minimize an unsafe condition or bottleneck. While the projects can range in cost, they typically would cost considerably less than a corridor-length project (such as widening or adding a lane). Spot mobility improvements also have the potential to be implemented relatively quickly and affordably in the absence of funds to construct larger projects.

The study team completed the Rethinking I-94 Spot Mobility Study, which is provided in [Appendix T14](#). The spot mobility concept development process generally followed MnDOT's Congestion Management Safety Plan (CMSP) process and included three steps:

- Identify locations and potential improvements
- Review previous studies and potential improvements
- Verify issues and identify potential improvements

A fourth step — detailed traffic analysis and concept development and evaluation — would be conducted as part of the next (environmental assessment) phase of Rethinking I-94.

**FIGURE 5-5** Map of spot mobility concepts considered

Concepts. The study team developed 19 spot mobility concepts, shown in **Figure 5-5**. These concepts assume no corridor-level improvements (such as a MnPASS lane) have been implemented. If a solution such as a MnPASS lane were implemented, some of the spot mobility concepts would need to be re-evaluated.

- 1 2** **Queue warning system/DMS** (RTMC/area staff to review & recommend action); **Restriping: True 3 + 2** (no further analysis); **Restriping: Broadway Avenue merge** (no further analysis)
- 3** **Bridge braid** (further evaluation); **Left flyover** (further evaluation)
- 4** **Bridge braid** (further evaluation)
- 5** **Lengthen acceleration lane** (Complete when railroad bridge is replaced)
- 6** **TH 280 interchange reconfiguration** (further evaluation)
- 8** **Additional signing and restriping** (no further analysis)
- 9** **Ramp closure** (no further analysis); **Eliminate right-side ramp** (further evaluation)
- 10** **Restriping** (RTMC/area staff to review & recommend action)
- 11** **Extend fourth lane** (further evaluation)
- 12** **Auxiliary lane to I-35E** (further evaluation)
- 13** **Eliminate the right-side ramp** (further evaluation)
- 14** **Add lane at 12th Street with auxiliary lane** (further evaluation); **Bridge braid** (no further analysis); **CD system** (no further analysis)
- 15** **TH 280 interchange reconfiguration** (further evaluation)
- 17** **Stripe as five-lane segment** (further evaluation); **Separate entrance ramps** (no further analysis)
- 18** Issue to be addressed by I-35W at I-94: Downtown to Crosstown Project
- 19** Issue to be addressed by future I-394 projects



For each concept, preliminary information was developed for the following criteria:

- Annual user benefits (dollars)
- Estimated construction cost (dollars)
- Return on investment (years)
- Potential next steps

The initial list of spot mobility concepts was reviewed with the Rethinking I-94 project team, TAC, and the cities of Minneapolis and St. Paul for potential fatal-flaw issues — reasons that upon inspection suggest the concept is not worth further analysis. Following review against the criteria above, the spot mobility study resulted in the following:

- Two potential striping signing improvements (near-term); minor, low-cost projects that will be forwarded directly to MnDOT staff for discussion and action if warranted
- Eleven potential improvements to be considered further in the Environmental process
- Seven options not recommended for further analysis due to lack of benefit to justify cost

With respect to the potential interchange reconfiguration at TH 280, while a project of this magnitude may not fit the “low cost” intention of a spot mobility improvement, the TH 280 interchange area is one of the locations on the corridor with known congestion and high crash rates. Because of the constrained geometry in this location, the study team was requested to develop an initial concept to test whether an interchange improvement project was viable. For purposes of preliminary consideration, the study team developed a concept that includes a managed lane on I-94, three general purpose through lanes, and improved access ramps between I-94 and TH 280.

Linkage to asset replacement schedule. Because many of the developed spot mobility concepts are low cost and limited in scale, it could be cost-effective to implement them in combination with more routine asset maintenance or replacement projects. While this first phase of Rethinking I-94 is not recommending specific projects, the study team prepared a series of drawings showing planned and programmed asset improvement projects in relation to the potential spot mobility projects. As Rethinking I-94 continues and specific projects are advanced, these drawings can be updated to help coordinate the two types of projects to minimize impacts and save cost.

5.2.2 MANAGED LANE CONCEPTS

The MnPASS System Study II, prepared in 2010 by MnDOT, the Metropolitan Council, and other project partners, identified I-94 as a corridor that could potentially benefit from a MnPASS lane (a lane restricted during peak travel times to transit, motorcycles, vehicles with two or more occupants, or solo motorists who pay a fee). Given this history, the Rethinking I-94 Phase 1 study included



preliminary analysis regarding potential MnPASS solutions on the corridor. While a detailed evaluation or recommendation of a specific MnPASS solution was premature for this project phase, the team developed a preliminary understanding of the value and potential costs and benefits of MnPASS in the Rethinking I-94 corridor. The detailed analysis is provided in [Appendix T15](#).

Preliminary MnPASS concepts were developed taking into account existing operations information (safety and mobility), origin/destination data, and existing transit service. Concepts were developed and analyzed based on the following criteria:

- Annual travel time savings (transit)
- Annual travel time savings (non-transit vehicles)
- Job accessibility
- Incremental cost for implementation (assumes any underlying needs are addressed separately)
- Return on Investment (ROI)

Seven preliminary concepts were developed that include MnPASS in the I-94 corridor (see [Appendix T15](#)). The concepts vary in length and the extent to which they provide direct connections to another MnPASS lane or a major destination. Six of the concepts assume an additional MnPASS lane would be added to the cross-section and one assumes an existing general-purpose lane would be converted to a MnPASS lane. Given the preliminary nature of the Phase 1 study, the intent of these concepts is to understand whether, and how, a MnPASS lane could benefit mobility in the corridor and the general parameters (length/end points) of the lane that would be recommended for further analysis. Locations of the managed lane connections are approximate and were only intended to serve as a general location for use in the travel-demand modeling evaluation.

While there are many considerations involved in advancing a MnPASS concept as part of the next study phase, the ROI is a useful screen because it incorporates both travel times savings and cost. For the purposes of this preliminary analysis, the ROI calculation is based on an estimate of the incremental cost of the proposed project, meaning just the cost of that improvement by itself (and not including costs to bring the existing facility up to standards or other related cost that would likely need to be included).

Based on the preliminary analysis, the following MnPASS concepts ranked the highest in ROI (See [Table 5-2](#) on the following page).

- **Concept C** (Downtown Minneapolis to TH 61): 16.0 years
- **Concept D** (Downtown Minneapolis to Downtown St. Paul): 8.9 years
- **Concept E** (I-35W South to I-35E North): 17.8 years

**TABLE 5-2** Return on investment for MnPASS concepts

MNPASS CONCEPT		PRELIMINARY RETURN
A1	I-394 to TH 61 w/MnPASS Ramps	26.7 years
A2	I-394 to TH 61 w/o MnPASS Ramps	25.2 years
B	I-394 to Downtown St. Paul	47.1 years
C	Downtown Minneapolis to TH 61	16.0 years
D	Downtown Minneapolis to Downtown St. Paul	8.9 years
E	I-35W to I-35E	17.8 years
F	Downtown to Downtown Lane Conversion	36.0 years

Additional traffic modeling was conducted to better understand the potential benefits and/or adverse impacts on corridor mobility. For more information, see [Appendix T16](#).

5.2.3 TRANSIT CONSIDERATIONS

The results identified in this analysis do not include the potential benefits of motorists switching from passenger vehicles to buses under a lane conversion condition (Concept F). The City of Minneapolis and Metro Transit are currently considering this potential, which is assumed to continue as the process enters the environmental phase. In addition, as MnPASS concepts are evaluated in the upcoming environmental phase of the project, MnPASS concepts and benefits also should be evaluated in comparison to a wider range of alternatives, such as additional general-purpose lanes and high-occupancy-vehicle (HOV) lane improvements. To this end, a preliminary analysis was conducted to identify potential travel time benefits of improved bus-on-shoulder operations on I-94 compared to a MnPASS lane. This analysis assumed that the existing condition was expanded so that bus-on-shoulder operations were feasible for most of the corridor. This will provide a starting point for future analysis of corridor improvements. For more information, see [Appendix T17](#).

5.2.4 MANAGED LANE DOWNTOWN CONNECTIONS

As the preliminary MnPASS concepts were developed, an important consideration was whether, and how, a new managed lane would connect into downtown Minneapolis and downtown St. Paul. To advance this discussion, the study team developed five potential MnPASS connection options for each downtown. The initial concepts were then reviewed with staff from each city to identify options that warranted further consideration. This process and the concepts considered are documented in [Appendix T18](#). Two preliminary traffic modeling studies were conducted to better understand how direct downtown MnPASS connections would affect operations on the highway ([Appendix T16](#) and [Appendix T19](#)).



The connection concepts were developed to provide the most benefit for all users (including transit users) while minimizing impacts to the local roadway system. Each was analyzed with respect to:

- Transit needs
- Local street considerations
- Geometric feasibility

Based on this preliminary analysis, which included input from local agency partners, one potential option in Minneapolis and two potential options in St. Paul were considered worth advancing to the next study phase. Assuming managed lane options that support direct connections to the downtowns continue to be advanced, this preliminary analysis should guide further development of direct downtown connections. The specifics of any connections would continue to be coordinated with the needs and plans of Metro Transit and the cities of Minneapolis and St. Paul.

5.3 Conclusions

Because this initial phase of work was conducted at a high level and prior to the formal environmental process, this study does not conclude with a formal evaluation of design concepts or recommendations of specific options. Instead, the value of this preliminary work is to provide a framework for future concept development and preliminary concepts for consideration at that time.

FIGURE 5-6





Section 6

Accomplishments & next steps



Phase 1 of Rethinking I-94 concludes with this report documenting the engagement work and technical analysis conducted between 2016 and 2018.

The primary accomplishments of Phase 1 include:

Engagement

- Extensive engagement with a wide range of I-94 stakeholders to gain an understanding of their issues and concerns
- Development and strengthening of relationships between MnDOT staff and community members
- Creation of a communications infrastructure to foster ongoing communications.
- Development and beginning of a training process for MnDOT staff to continue to apply the Rethinking I-94 process on projects going forward

Technical

- Development of an evaluation framework ([Appendix T20](#)) that can provide a bridge to connect the input from Phase 1 with the alternatives development and evaluation process in Phase 2
- Understanding and documentation of asset condition and transportation performance in the corridor
- Development of initial concepts to improve transportation performance on I-94
- Understanding of the existing non-motorized I-94 crossings and considerations for making future crossing investments
- Initial consideration of a parallel pedestrian and bikeway facilities that could be implemented over time
- Providing clear and concise documentation of Phase 1 work as a resource and foundation to Phase 2

6.1 Next steps: Phase 2

Phase 2, anticipated to begin in Summer 2018, will center on the preparation of a corridor-level environmental document that complies with both NEPA and the Minnesota Environmental Policy Act. The purpose of the environmental document is to formally document the transportation needs in the Rethinking I-94 corridor and then develop and evaluate a range of alternatives to address those needs and maintaining a transparent, open process that provides numerous opportunities for public input throughout. The environmental document is expected to begin with the development of a Purpose and Need Statement (informed by Phase 1) and conclude with the identification of specific actions to address transportation and transportation-related needs in the corridor. The public will be afforded numerous opportunities to comment on alternatives and impacts, make suggestions, and offer ideas for improving the livability for neighborhoods abutting the interstate.

Learn more at dot.state.mn.us/i-94minneapolis-stpaul