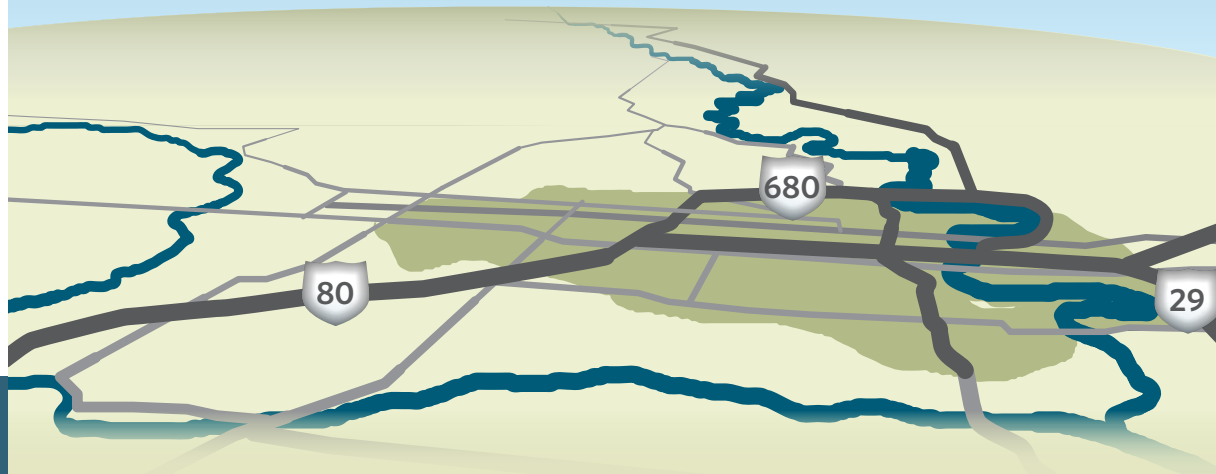


# Metro Area Travel Improvement Study

## Phase 3 Executive Summary

November 2019



**SYSTEM  
PRESERVATION**



**CONGESTION  
REDUCTION**



**MOBILITY &  
ACCESSIBILITY**



**STEWARDSHIP &  
ENVIRONMENT**



**SAFETY**



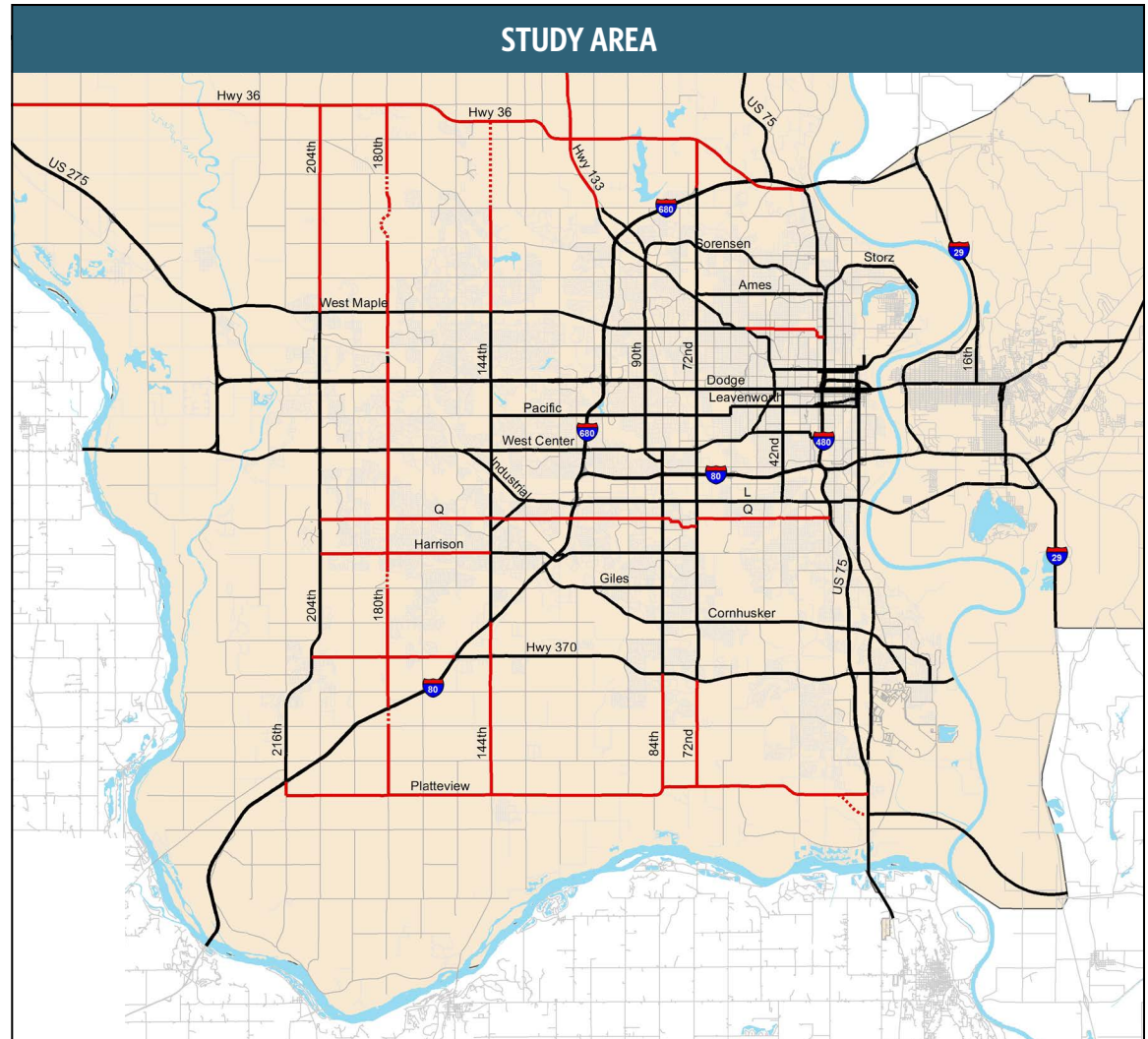
## Overview

The Metro Area Travel Improvement Study (MTIS) is a collaborative effort between the Nebraska Department of Transportation (NDOT) and the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA). MTIS is a comprehensive transportation study that recognizes future interstate and freeway system needs are intrinsically linked with arterial, local roads and transit system needs and investment decisions in the MAPA region. This approach has helped identify the transportation network that will best meet the long-term needs of the community and will take advantage of innovative strategies to guide decisions about funding. MTIS was conducted in coordination and collaboration with other regional planning studies and projects.

### MTIS has provided:

- A comprehensive, multi-modal plan for the interstate and major roadways in the region
- Prioritized projects for short-term, mid-term, and long-term
- Consideration of shortfalls in existing sources of local, state, and federal funding

The study area and study area roadways are shown to the right. The study area includes MAPA's designated Transportation Management Area. Study area roadways include all National Highway System (NHS) routes (shown in black) and non-NHS routes that were considered priority corridors by NDOT and MAPA (shown in red). The study area includes 83 miles of interstate freeway, 39 miles of other freeways/expressways, 180 miles of state highways and 176 miles of local roads.



## Study Goals and Performance Measures



### SYSTEM PRESERVATION

Achieve state-of-good-repair by effectively maximizing the life span of existing infrastructure.



### MOBILITY & ACCESSIBILITY

Reduce the growth of peak-period travel times for all modes and increase transit access and ridership.



### SAFETY

Reduce fatalities and serious injuries.



### CONGESTION REDUCTION

Reduce the growth of peak-period delay on freeways and improve system reliability and overall performance.



### STEWARDSHIP & ENVIRONMENT

Address air quality concerns, consider land use in all improvements and incorporate economic, social and environmental criteria in project selection and programming decisions.

## Study Approach

The study was conducted in phases:

- **Phase 1:** Existing/Future No-Build Conditions Review *(Complete - Fall 2015)*
  - Identify study area mobility and safety needs and issues
- **Phase 2:** Strategy/Alternative Development and Evaluation *(Complete - Summer 2017)*
  - Develop potential solutions and strategies
  - Screen potential strategies
  - Test packages of strategies
  - Develop preferred strategy package
  - Prioritize projects within preferred strategy package
- **Phase 3:** Freeway Alternative Design and Implementation Plan *(Complete - Summer 2019)*
  - Develop detailed freeway plan

## 2050 Long Range Transportation Plan (LRTP)

The technical analyses completed as part of MTIS will help drive MAPA's 2050 LRTP. The 2050 LRTP will align with the horizon year of MAPA's Heartland 2050 Plan, a community-driven process that developed future land use scenarios for the metropolitan area.

MTIS has assisted NDOT in developing its long term vision for the Omaha area freeway system. NDOT's last freeway master plan was completed in 1985 and was fully constructed over the following two decades. Although NDOT has continued to make improvements to address localized bottlenecks on the freeway system, MTIS has provided an updated system-wide vision to guide improvements in the decades to come.

## Recommended Freeway Improvements

Phase 3 of MTIS focused solely on the freeway corridors of the MTIS network to address the following questions:



*What is the "vision" for the freeway system in the Omaha metropolitan area?*



*How are we going to get there?*

Phase 3 included further development of critical areas of the freeway corridor-level concepts originally identified in Phase 2. The effort in Phase 3 included the development of conceptual alignments, profiles, and cross sections to the extent necessary to establish a reasonable level of confidence in concept feasibility and to identify potential right-of-way impacts.

Recommended freeway improvements were then identified based on an evaluation that considered the following:

- Safety
- Traffic Operations
- Right-Of-Way Impacts
- Constructability
- Construction Costs
- Potential Environmental Issues



## Key Elements

Key elements of the recommended plan for each freeway corridor include the following:



I-80

- ▶ Addition of one or two mainline lanes in each direction plus auxiliary lanes, depending on location
- ▶ Potential new interchange on I-80 between 180th Street and 192nd Street
- ▶ Reconfiguration to a Diverging Diamond Interchange at N-31, N-370, N-50, and L Street (US 275)
- ▶ Permanent closure of the 24th Street Interchange in Omaha



I-480

- ▶ Addition of one northbound mainline lane between I-80 and Leavenworth Street
- ▶ Addition of one southbound mainline lane between I-80 and Harney Street



I-680

- ▶ Addition of one or two mainline lanes in each direction, depending on location
- ▶ Reconfiguration of the collector-distributor road between Pacific Street and I-80
- ▶ Reconfiguration to a Diverging Diamond Interchange at Pacific Street
- ▶ Reconfiguration to a Partial Cloverleaf Interchange at Fort Street and Blair High Road



US 75 (KENNEDY FREEWAY)

- ▶ Addition of one or two mainline lanes in each direction, depending on location
- ▶ Reconfiguration to a Diverging Diamond Interchange at Cornhusker Road
- ▶ Reconfiguration to a Diamond Interchange at Q Street
- ▶ Reconfiguration to a Half Diamond Interchange (to the north) at L Street
- ▶ Reconstructed frontage roads between Q Street and L Street
- ▶ Permanent closure of the F Street interchange

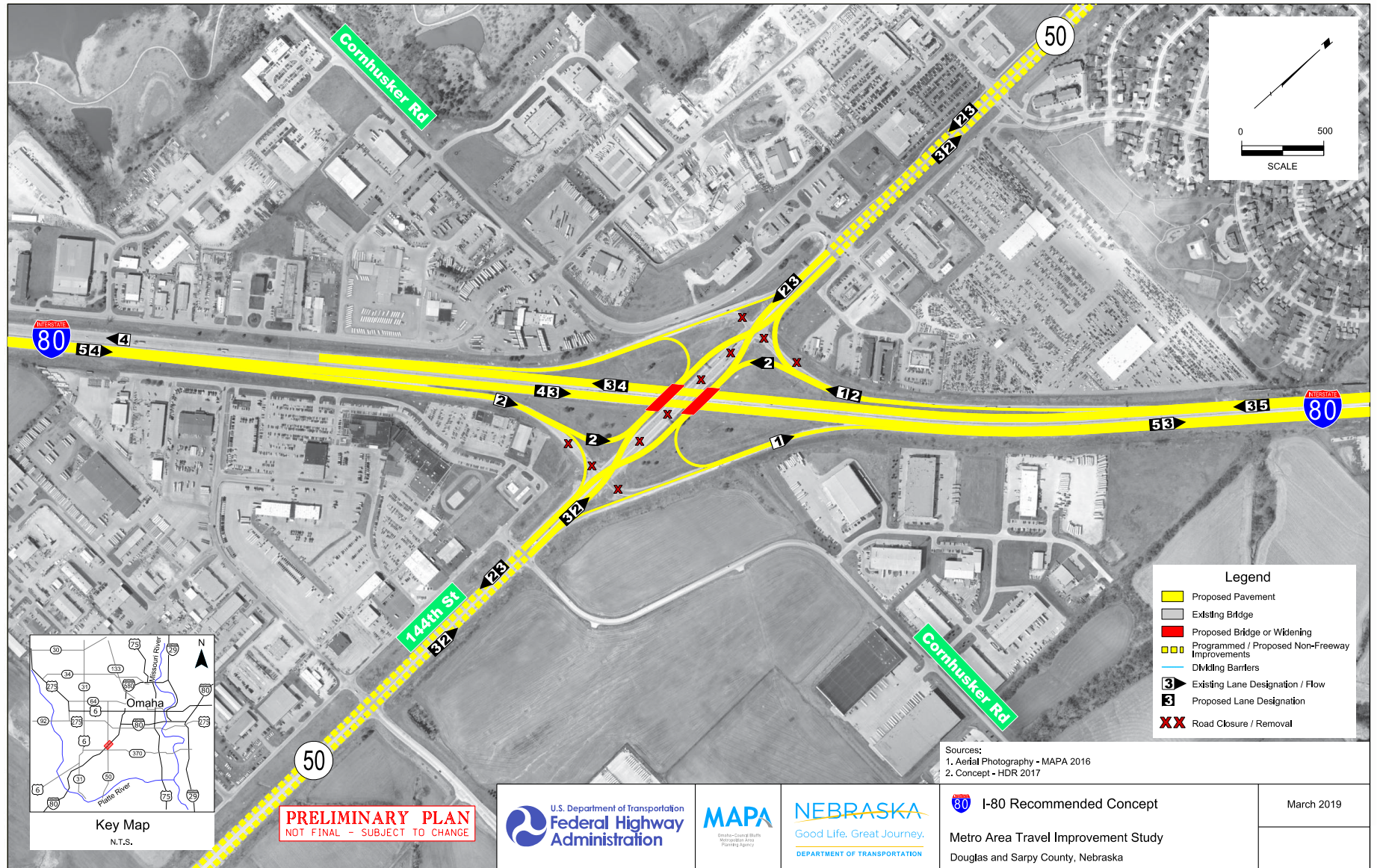


US 6 (WEST DODGE ROAD)

- ▶ Addition of one mainline lane in each direction plus auxiliary lanes, depending on location
- ▶ Narrow lanes (11-foot) and shoulders to provide four westbound lanes on the elevated portion of West Dodge Road Expressway (two lanes from westbound West Dodge Road and two lanes from I-680)
- ▶ Reconfiguration to a Diverging Diamond Interchange at 192nd Street
- ▶ Reconfiguration of a portion of the I-680 / West Dodge Road system interchange to eliminate weaving for traffic from I-680 heading westbound



**EXAMPLE RECOMMENDATION: DIVERGING DIAMOND INTERCHANGE AT I-80/N-50 (144TH STREET)**





## Non-Traditional Freeway Strategies

The following non-traditional strategies were evaluated further in Phase 3, either as alternatives to the recommended freeway concepts or as complimentary features of the recommended freeway concepts. None of these strategies are directly included in the recommended freeway plan. However, each strategy should continue to be evaluated for possible implementation in the future.



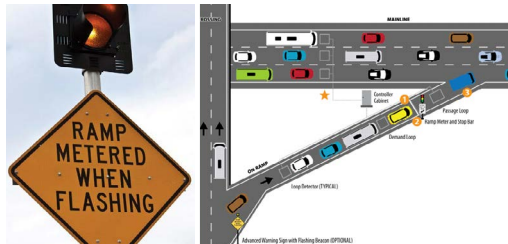
### HARD SHOULDER RUNNING (HSR)

In HSR, the shoulder is used as a travel lane only during those times of day when the general purpose lanes are likely to be heavily congested (for example, during peak hours, when congestion is detected, or when general purpose lanes are closed for construction or incidents). When the shoulder is not needed as an additional travel lane, it is restored to its original purpose as a “shoulder”.



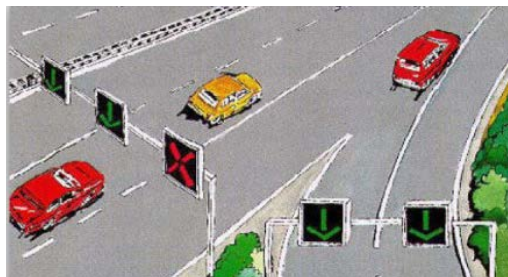
### BUS ON SHOULDER (BOS)

BOS operation allows authorized transit vehicles to use the shoulder to avoid congestion in the general purpose lanes. BOS is unique from other part-time shoulder use strategies because low volumes on the shoulder (compared to opening the shoulder to general traffic) minimize the need for updated signage, pavement markings, and Intelligent Transportation Systems equipment. BOS also minimizes the impacts for emergency response to incidents and storage of broken-down vehicles compared to HSR.



### RAMP METERING

Ramp metering has been successfully deployed and even expanded in many metropolitan areas across the United States. Ramp meters are traffic signals installed on freeway entrance ramps to control the frequency at which vehicles enter the flow of traffic on the freeway. Traffic is stored on the entrance ramp and is released one car at a time onto the freeway. Ramp metering reduces overall freeway congestion by managing the amount of traffic entering the freeway and by breaking up platoons that make it difficult to merge onto the freeway.



### DYNAMIC LANE ASSIGNMENT / MERGE CONTROL

Dynamic Lane Use / Merge Control was investigated as a means to address congestion in areas where adding additional lanes may be challenging. This concept applies to situations where the peaking characteristics of two merging traffic streams are opposed to one another. That is, one traffic stream may exhibit high traffic volumes in the AM peak period but not in the PM peak period, while the other traffic stream exhibits high traffic volumes in the PM peak period but not in the AM peak period. The concept involves using dynamic overhead signs to “passively” close lanes that are not needed during peak periods to allow heavier movements to merge easily with the traffic stream.

Images: Federal Highway Administration (FHWA)

## Implementation Plan

An implementation plan for the recommended MTIS freeway system improvements was developed in Phase 3. This plan included projects that addressed the system preservation needs of the freeway system as well as expansion projects that addressed the operational needs of the freeway system.

### System Preservation Projects

System preservation projects are recommended to improve or sustain the condition of the freeway system in a state of good repair. System preservation projects generally do not add capacity but are intended to restore the overall condition of the transportation facility. The following types of system preservation projects were included in the implementation plan:

- Full reconstruction
- Mill and overlay
- Diamond grinding
- Minor maintenance activities such as joint sealing, crack sealing, chip sealing, and joint and panel repair

### Expansion Projects

Expansion projects are recommended to address the operational deficiencies of the freeway system that were identified in Phase 2. These projects would generally add capacity to freeway corridors through the addition of mainline general purpose lanes and/or auxiliary lanes or would address weaving or other operational issues through the reconfiguration of interchanges and/or ramps. The expansion projects developed during Phase 3 represent the incremental steps necessary to implement the overall recommended freeway plan.

### Implementation Plan Timeline

The implementation plan was developed for a period beginning in the year 2025 and extending out to the year 2080. The year 2025 was identified as the first year for expansion projects based, in part, on the assumption that funding will not be available for these projects prior to the year 2025 and the assumption that design, environmental studies, and right-of-way acquisition will need to be performed prior to construction. The year 2080 was selected so as to include the next total reconstruction of each of the freeway corridors. However, all of the expansion projects necessary to implement the recommended freeway concepts are assumed to be constructed prior to the year 2045.



### CORRIDORS IMPACTED BY MAJOR EXPANSION PROJECTS OR SYSTEM PRESERVATION PROJECTS



- Build
- Complete
- Corridor Expansion or Reconstruction
- Interchange Expansion

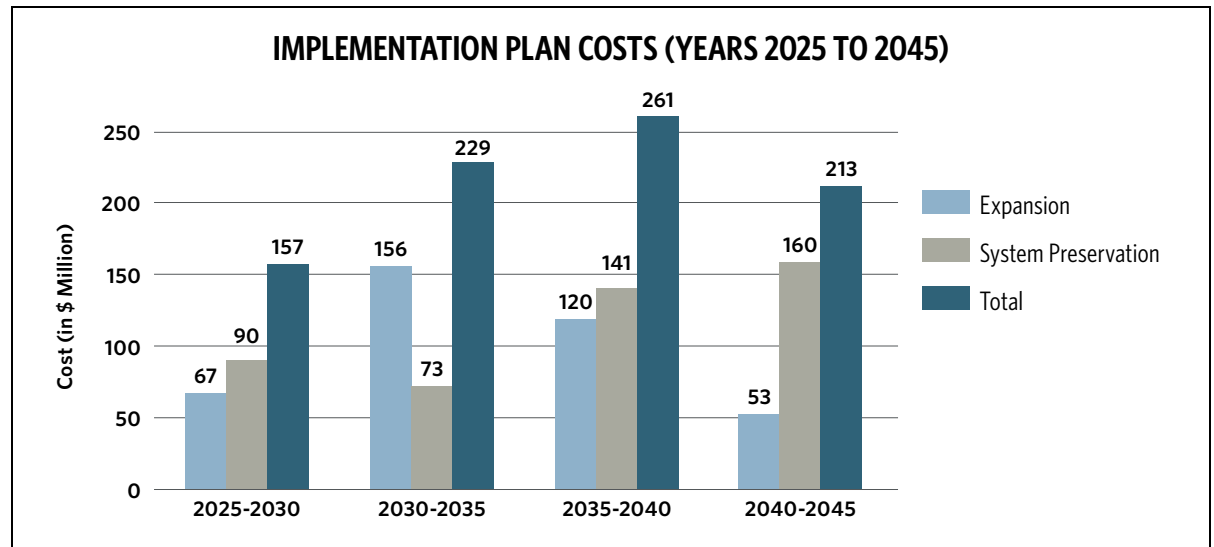




## Early Freeway Expansion Projects (Year 2025 – 2030)

The following expansion projects are expected to start prior to 2030:

- **Interchange Expansion**
  - *I-80 & N-370*: Reconfiguration to a Diverging Diamond Interchange
  - *I-80 & 180th/192nd Street*: Potential New Interchange
  - *West Dodge Road & 192nd Street*: Reconfiguration to a Diverging Diamond Interchange
  - *I-680 & West Dodge Road*: System Interchange Reconfiguration to eliminate weaving for traffic from I-680 to westbound West Dodge Road
- **Mainline Expansion**
  - *I-80 WB (Q Street to Giles Road)*: Addition of a westbound auxiliary lane
  - *I-80 WB (I-80/I-480/US 75 System Interchange to 42nd Street)*: Addition of one westbound mainline lane
  - *I-480 (I-80 to Harney Street)*: Addition of one mainline lane in each direction
  - *I-680 NB (Pacific Street to West Dodge Road)*: Addition of one northbound mainline lane under the Pacific Street bridge to the I-680/West Dodge Road System Interchange
  - *I-680 SB (Under Pacific Street)*: Addition of one southbound mainline lane under Pacific Street
  - *I-680 (Fort Street to Blair High Road)*: Addition of one mainline lane in each direction with auxiliary lanes
  - *US 75 NB (Chandler Road to F Street)*: Addition of one northbound mainline lane
  - *West Dodge Road WB (132nd Street to 144th Street)*: Addition of one westbound mainline lane
  - *West Dodge Road EB (137th Street to 132nd Street)*: Addition of one eastbound mainline



### Implementation Plan Costs

The total cost for the recommended expansion projects within the Omaha metropolitan area freeway system for:

- The 20-year period between years 2025 through 2045 is estimated to be \$396 million in 2019 dollars.

The total cost for the recommended system preservation projects within the Omaha metropolitan area freeway system for:

- The 20-year period between years 2025 through 2045 is estimated to be \$464 million in 2019 dollars.
- The 35-year period between years 2045 through 2080 is estimated to be \$1.41 billion in 2019 dollars.

### Going Forward

The implementation plan developed as part of MTIS is intended to be a living document that will continue to be refined by NDOT over time. The following considerations will need to be addressed during this refinement process in order to provide NDOT with maximum flexibility during implementation:

- Funding capacity of NDOT for any individual year, for any multi-year period, and for the overall program
- Combining system preservation and expansion projects where it makes sense
- When operational improvements are needed and the impacts of delaying these operational improvements
- Limiting disruptions to the traveling public
- Giving priority to certain freeway corridors over others
- Giving priority to projects in the core areas of the freeway system over projects in the fringe areas of the freeway system
- Phasing the expansion projects where it makes sense to reduce the fiscal impacts and to minimize disruptions to the traveling public